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HEALTH PROTECTION REPORT 2012•13

First Nations and Inuit Health Branch – Alberta

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MESSAGE FROM THE MEDICAL OFFICER OF HEALTH

TO ALL OUR RELATIONS, WELCOME TO THE 2012–13 HEALTH PROTECTION REPORT.

This year marks the 10th anniversary since the publication of the first annual regional Health Protection report. From the beginning, these reports, as well as the annual community-specific reports, have been disseminating information about evidence-based communicable disease and environmental health program planning, implementation and monitoring at the community and regional levels. The information in these reports has also contributed to the data required by senior management to seek the funding necessary to develop and maintain programs at the national, regional and community levels, notably those programs to do with immunization, safe drinking water, tuberculosis, sexually transmitted infections and bloodborne infections.

The performance measures and indicators included in these reports show trends and impacts of health protection interventions. For example, although measured differently in 2002–03, the regional community water sampling rate increased from 39% in that year to 89% in 2012–13, a great success story for First Nations communities in Alberta. In addition, on-reserve tuberculosis rates have declined significantly over the last 12 years due to the excellent collaborative work of community, regional and provincial staff. Other positive developments are noted in the highlight section of this year's report.

A number of First Nations communities utilize electronic immunization record systems. Early-adopter communities' programs indicate more effective data-gathering, more efficient recall for childhood immunization appointments and, importantly, improved vaccine coverage that results in better community protection against vaccine-preventable diseases. As more First Nations collaborate in the local implementation of such electronic systems, sharing information by agreement with various partners in the public health circle of care, especially the province of Alberta, a more accurate picture of the immunization record of each child is emerging. Communication between providers delivering these services in the communities is also improving.



It is not that all objectives and priorities of health protection have been attained; partners in the communities and regional staff continue to strive together toward the common goal and vision of healthy First Nations living in healthy communities. 2012–13 has been a time of realignment and change in our regional organization with respect to Health Assessment and Surveillance. In Alberta, the Health Assessment and Surveillance team has joined forces with our regional policy team to form the Strategic Health Intelligence and Partnership (SHIP) directorate. This team is led by a dyad: Nathalie Lachance, director, and Dr. Parminder Thiara, medical lead. They will continue to work with First Nations, the First Nations and Inuit Health Branch (FNIHB) Health Protection team and the **Health Co-Management Health Protection Subcommittee** to ensure that surveillance information is collected, analyzed and disseminated in a timely manner to facilitate public health actions.

We look forward to collaborating further and walking farther together on this journey.

Sincerely,



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HIGHLIGHTS

IMMUNIZATION

- The overall combined immunization uptake and coverage for one- and two-year-old First Nations children living on-reserve or on Crown land in Alberta increased by 4% to 13% in 2012 from 2011 for all vaccines.
- For the Grade 5 Hepatitis B vaccine, immunization coverage rate increased by 9% between the 2011–12 and 2012–13 school years.
- The immunization coverage rate for all vaccines for seven-year-olds declined by 2% to 3% between 2011 and 2012. However the coverage rate in 2012 is higher in seven-year-olds than in two-year-olds, indicating that a better protection is achieved by age seven.
- The overall combined immunization coverage and uptake for Grade 5 and Grade 9 vaccines declined by 4% to 12% between the 2011/12 and 2012/13 school years.
- Vaccine-preventable disease rates are higher among First Nations in Alberta than the general population in the province.

NOTIFIABLE DISEASES

- In 2012, seven active cases of pulmonary tuberculosis were reported among five First Nations communities – down from 13 new cases in 2011.
- Approximately 85% of notifiable diseases reported were sexually transmitted infections (STIs).
- The combined rates of chlamydia, gonorrhea and syphilis continue to increase in the on-reserve First Nations population.
- Individuals aged 15 to 29 years were disproportionately affected by STIs. The need remains to target education and programming towards younger ages including young adults.
- The most common risk exposure among newly diagnosed First Nations HIV cases was through a heterosexual partner or else through an unidentified risk.
- On average, one-third of new First Nations HIV cases are co-infected with hepatitis C as opposed to one-tenth of non-First Nations cases.
- Enteric diseases accounted for 56% of notifiable diseases that were not STIs. A large proportion was due to shigellosis outbreaks in some communities.
- Invasive pneumococcal disease (IPD) rates remained much higher than the rate in the Alberta general population.

ANIMAL BITES

- Overall, 808 animal bites were reported between 2010 and 2012. Of these, 84% were from domestic animals, particularly dogs and cats.
- Children in the youngest age groups, 0–4 and 5–9 years, are the most likely to be bitten in the head, face and neck.



DRINKING WATER SAFETY MONITORING PROGRAM

- The regional sampling/testing rate for the public water supply for 2012–13 was 89%, indicating an increase over the past two fiscal years.
- In 2012–13, 24% of the private homes serviced by cisterns and 25% of the private homes serviced by wells were positive for total coliforms; 2% of the houses on wells and 3% of the homes on cisterns tested positive for *Escherichia coli* as well.
- In 2012–13, there were 63 drinking water advisories (DWAs) in 26 First Nations communities in Alberta. Of these DWAs, 35 were new advisories and 28 were carried forward from previous years; 58 were boil-water advisories, 2 were do-not-consume advisories, and 3 were do-not-use advisories; 28 were related to public water supplies (median 29 days) and 35 to semi-public water supplies (median 365 days).
- The single greatest operational contributor to DWAs in public water supplies was inadequate disinfection residuals in the line (18%). Of the water quality indications for DWAs in public water supplies, 36% were due to total coliforms in the drinking water supply.
- A damaged or inadequately maintained cistern or holding tank accounted for 34% of operational reasons for DWAs in semi-public water supplies. The predominant water quality issue was coliform bacteria in the drinking water system (89%).

PUBLIC HEALTH INSPECTION PROGRAM

- A total of 1,883 facility inspections were carried out in 2012–13. Housing and food facility inspections constituted the majority (65%) of these inspections.
- Fifty-eight percent of housing deficiencies were related to exterior (31%) and interior (27%) housing structural issues. Deficiencies in windows (28%), doors (25%), gutters/downspouts/extensions (19%) and decks/steps/patios (10%) made up 82% of all observations related to the exterior of a house. Fifty-six percent of the interior deficiencies observed were for flood/moisture damage (23%), floors (21%), and walls (12%).
- A total of 197 private sewage disposal systems (PSDSs) were inspected upon request in First Nations communities in Alberta.

CHAPTER 1



Communicable Disease Control

The First Nations and Inuit Health Branch (FNIHB) Communicable Disease Control (CDC) program aims to:

- reduce the incidence, spread and effects of communicable diseases on-reserve and
- improve health through disease prevention and health promotion activities.

The burden of communicable diseases remains of particular concern in some First Nations communities in Alberta. Significantly elevated levels of communicable diseases (such as invasive pneumococcal disease) are further complicated by issues of remoteness, limited access to health services and socio-economic issues.

The CDC program supports measures to mitigate these underlying risk factors by:

- preventing, treating and controlling cases and outbreaks of communicable diseases;
- promoting public education and awareness to encourage healthy practices;
- strengthening community capacity; and
- identifying risks.



IMMUNIZATION

“Immunization is the process whereby an individual is made resistant to an infectious disease, typically by the administration of a vaccine”¹. Immunization is one of the most cost-effective ways of preventing and controlling infectious disease. Proven strategies make immunization accessible to even the most hard-to-reach and vulnerable populations^{1,2}. The positive influence of immunization on health, well-being and mortality reduction is second only to that of access to clean and safe drinking water³.

If a critical number of people within a community are immunized against a particular disease, the entire community becomes less likely to get the disease⁴. If people in a community have not been protected by immunization, any one person who becomes ill with a vaccine-preventable disease can quickly pass the disease to the entire population in the community⁵.

Immunization against common vaccine-preventable diseases is an integral component of the CDC activities that aim to prevent and control communicable diseases and to promote the health and well-being of First Nations.

First Nations communities in Alberta support health surveillance activities by reporting immunization coverage data to the FNIHB regional CDC office every year. This annual reporting is very important for developing and improving strategic processes to maximize the effectiveness of immunization programs in the communities and the region, as well as to monitor levels of protection.

The data submitted by community nurses to the regional office include:

- the number of individuals within specific age groups who are eligible to be immunized;
- the number of individuals within a specific age group immunized as recommended (immunization coverage);
- the number of individuals within a specific age group who have started immunization but have not completed the recommended immunization schedule (immunization uptake); and
- individuals’ history of chicken pox disease (i.e. chicken pox vaccine may not be needed if the person has had the disease).

The number of recommended doses of a vaccine depends on the particular vaccine, the individual’s age and their immunization history (see **Appendix 1**).

This section examines coverage and uptake rates of immunizations against vaccine-preventable diseases among First Nations in Alberta based on the recommended immunization schedule for the 2008 to 2012 calendar years and 2008–09 to 2012–13 school years. The results in this report are based only on data from 39 to 42 (out of 44) communities that reported their immunization coverage to FNIHB – Alberta Region. All non-reporting communities were from Treaty 8.

1 World Health Organization (WHO). (2013). *Health Topics: Immunization*. Retrieved from www.who.int/topics/immunization/en/

2 Alberta Health. (2007). *Alberta Immunization Strategy, 2007–2017*. Retrieved from www.health.alberta.ca/documents/Immunization-Strategy-07.pdf

3 Plotkin, S. L., and Plotkin, S. A. (2013). A short history of vaccination. In S. A. Plotkin, W. A. Orenstein, and P. A. Offit (Eds.), *Vaccines* (6th ed., pp. 1–13). Edinburgh: Saunders.

4 National Institute of Allergy and Infectious Diseases (NIAID). (2010). *Vaccines*. Retrieved from www.niaid.nih.gov/topics/vaccines/understanding/pages/vaccinebenefits.aspx

5 Alberta Health. (2013). Immunization. Retrieved from www.health.alberta.ca/health-info/immunization.html

DATA SOURCE

Health Canada, First Nations and Inuit Health Branch – Alberta Region, Communicable Disease Control (CDC) Database.

DATA LIMITATIONS

- Coverage and uptake may not reflect the true coverage and uptake of the total population on-reserve, as data for individuals receiving immunizations off-reserve is not captured.
- Data may include non-First Nations individuals who have accessed services on-reserve.
- Rates for communities with small populations can be greatly impacted by the actions of one individual. Hence, care should be taken in interpreting community rates.

FNIHB – Alberta Regional Office would like to recognize and commend all communities for their efforts to support the collection of these important health data. It is also recognized that many issues including staffing levels impact coverage and/or uptake rates.

Throughout this section of the report, the phrase “First Nations children” or “First Nations” refers to children living on or receiving services from health centres in First Nations communities in Alberta.

IMMUNIZATIONS FOR ONE-YEAR-OLD CHILDREN

A series of vaccines is recommended throughout the childhood years, the most intensive schedule being during the first two years of life. **Appendix 1** summarizes the recommended immunization series by age.

The vaccines recommended for the first two years of life are 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 (chicken pox) (VZV).

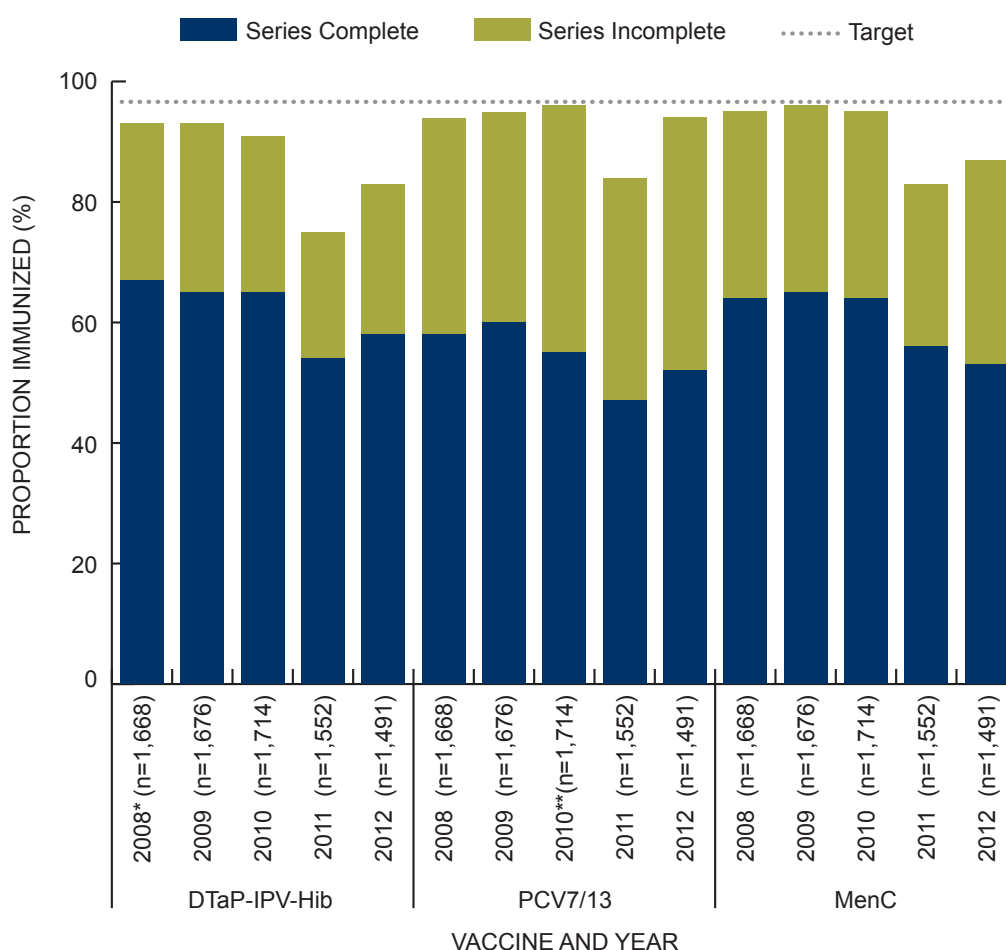
The schedule (see **Appendix 1**) is designed to maximize the impact of immunization protection for children. In order to achieve optimal protective effects of immunization, at least 97% of one-year-olds should have completed the recommended immunizations series. **Figure 1.1** shows the proportion of First Nations children who started immunization, and may or may not have completed the routine immunization series by one year of age according to the recommended schedule. Immunization coverage and uptake for one-year-olds is consistently below the target of 97% immunization coverage, though uptake and coverage rates are approaching this target.



All recommended vaccines should be administered at the same visit. However, the data presented in Figure 1.1 indicate that this is not happening consistently as the combined immunization coverage and uptake is different for the three vaccines. The combined immunization uptake and coverage for one-year-olds increased slightly in 2012 from 2011 for all vaccines. However, immunization coverage for meningococcal type C (MenC) declined to 53% in 2012 from 56% in 2011. The combined immunization uptake and coverage for one-year-olds in 2011 and 2012 are lower than those achieved between 2008 and 2010, however, 2012 combined rates increased over 2011. Approximately 3 in every 1,000 one-year-olds have documented refusals in 2012.

“Complete and on-time immunization series offers the best protection at one year of age.”

Figure 1.1: Immunization coverage and uptake for DTaP-IPV-Hib, PCV7/13 and MenC, age 1 year, First Nations in Alberta, 2008–12



* DTaP-IPV and Hib coverage rates were reported separately. The rate shown is the reported rate for DTaP-IPV only.

** The 7-valent pneumococcal conjugate vaccine (PCV7) was used for children up to 2009. The 13-valent pneumococcal conjugate vaccine (PCV13) was introduced in July 2010.

Abbreviations: DTaP-IPV-Hib = diphtheria, tetanus, pertussis, polio, *Haemophilus influenzae* type b vaccine; MenC = meningococcal type C vaccine; PCV7/13 = pneumococcal conjugate vaccine.

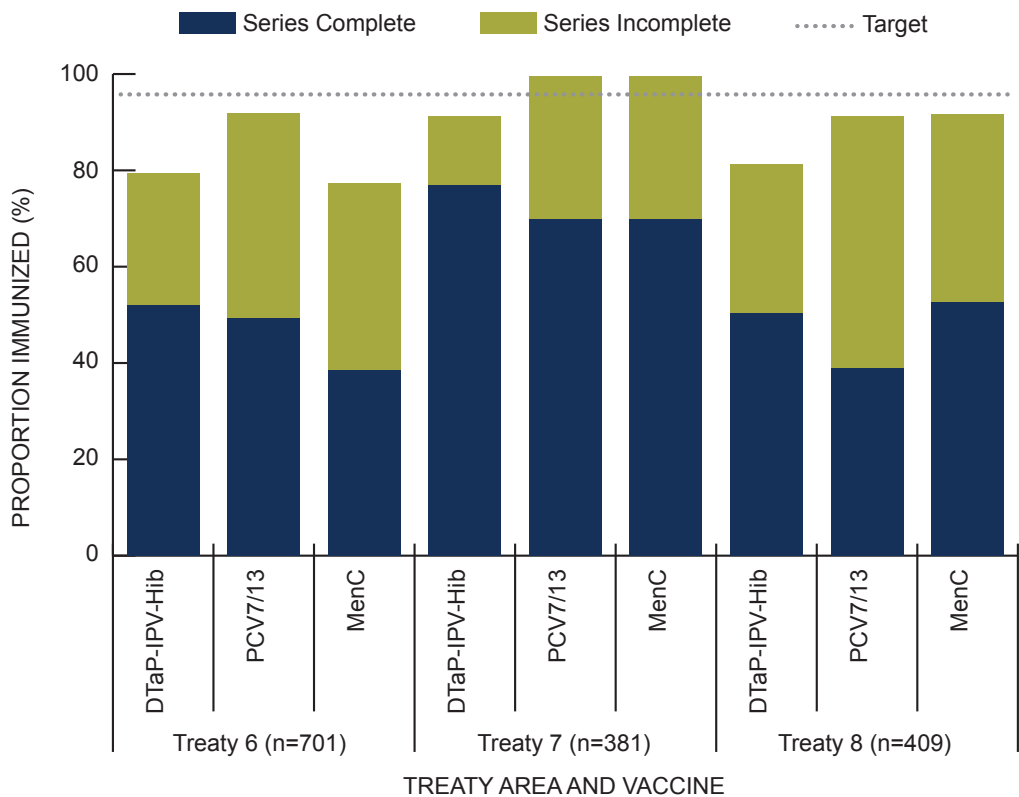
Source: Health Canada, FNIHB - Alberta Region, Communicable Disease Control Database.

Figure 1.2 shows that a high number of one-year-olds began but did not complete their immunization series on time. The combined immunization coverage and/or uptake rates are different for the three vaccines, indicating that recommended vaccines are not being administered at the same visit.

In 2012, Treaty 7 had the highest coverage rate for all vaccines, Treaty 8 had the lowest coverage rate for DTaP-IPV-Hib and PCV13, and Treaty 6 had the lowest coverage for MenC. Treaty 8 had a higher combined coverage and uptake rate for DTaP-IPV-Hib and MenC than Treaty 6 but lower than Treaty 7.



Figure 1.2: Immunization coverage and uptake for DTaP-IPV-Hib, PCV7/13 and MenC, age 1 year, First Nations Treaty area in Alberta, 2012



Abbreviations: DTaP-IPV-Hib = diphtheria, tetanus, pertussis, polio, *Haemophilus influenzae* type b vaccine; MenC = meningococcal type C vaccine; PCV7/13 = pneumococcal conjugate vaccine.

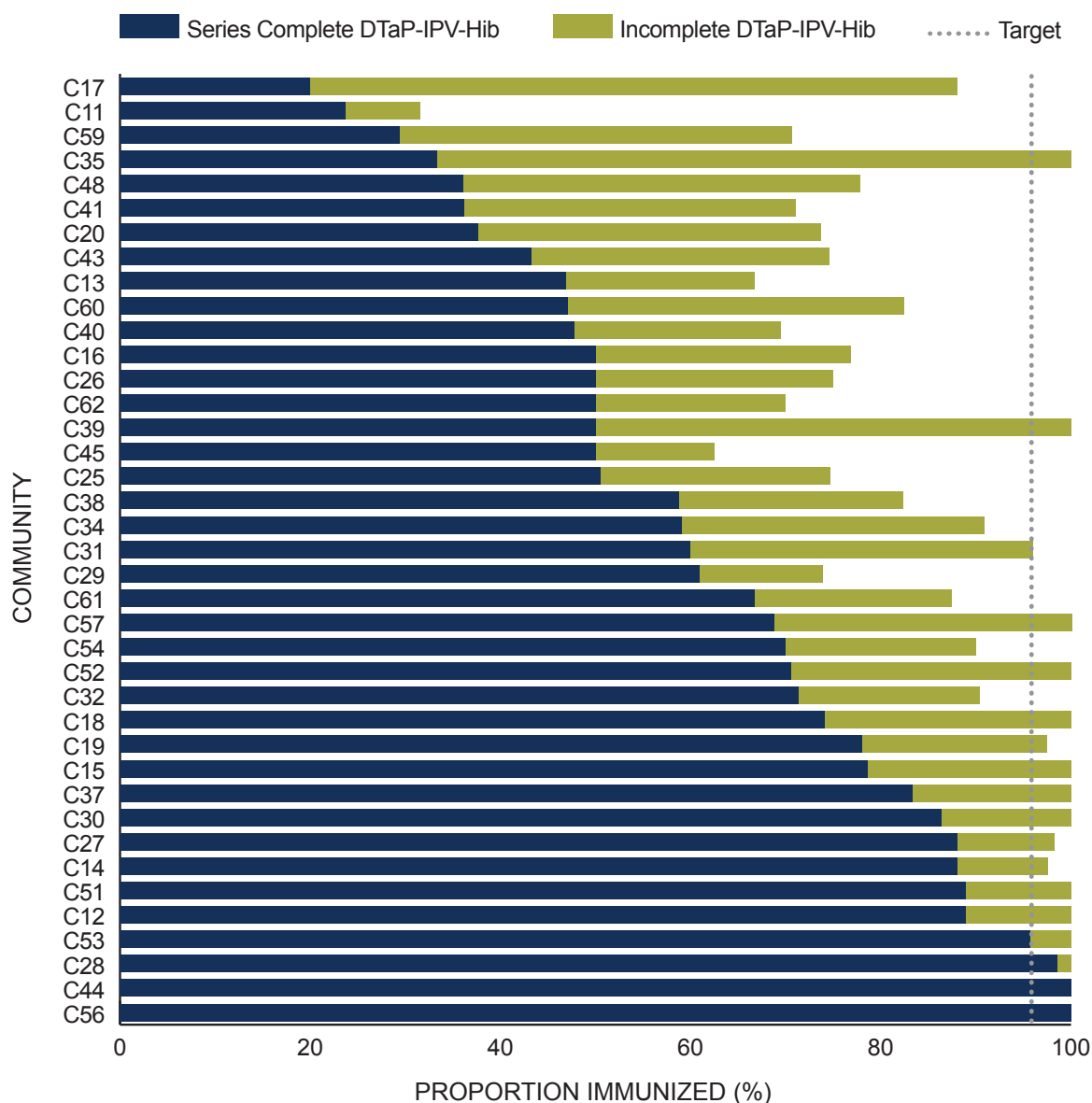
Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

Figure 1.3 shows immunization coverage and uptake of DTaP-IPV-Hib by community in 2012, with community names replaced with a code. This analysis is done for only one vaccine to show the variability in immunization coverage and uptake between communities. Of the 39 communities reporting immunization data in 2012, 10 had immunization coverage of over 80% while 2 had 100% immunization coverage for DTaP-IPV-Hib. In addition, 14 communities had 100% combined immunization uptake and coverage, and 3 had over 97% combined uptake and coverage. Only one community had a combined immunization uptake and coverage rate of less than 60%.

These data show that if every one-year-old who started immunization was able to complete the series in the recommended time, coverage would be much higher.

Uptake and coverage were similar for the PCV13 vaccine and slightly higher for the MenC vaccine in 2012 (data not shown).

Figure 1.3: Immunization coverage and uptake for DTaP-IPV-Hib, age 1 year, First Nations communities in Alberta, 2012



Abbreviations: DTaP-IPV-Hib = diphtheria, tetanus, pertussis, polio, *Haemophilus influenzae* type b vaccine.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database

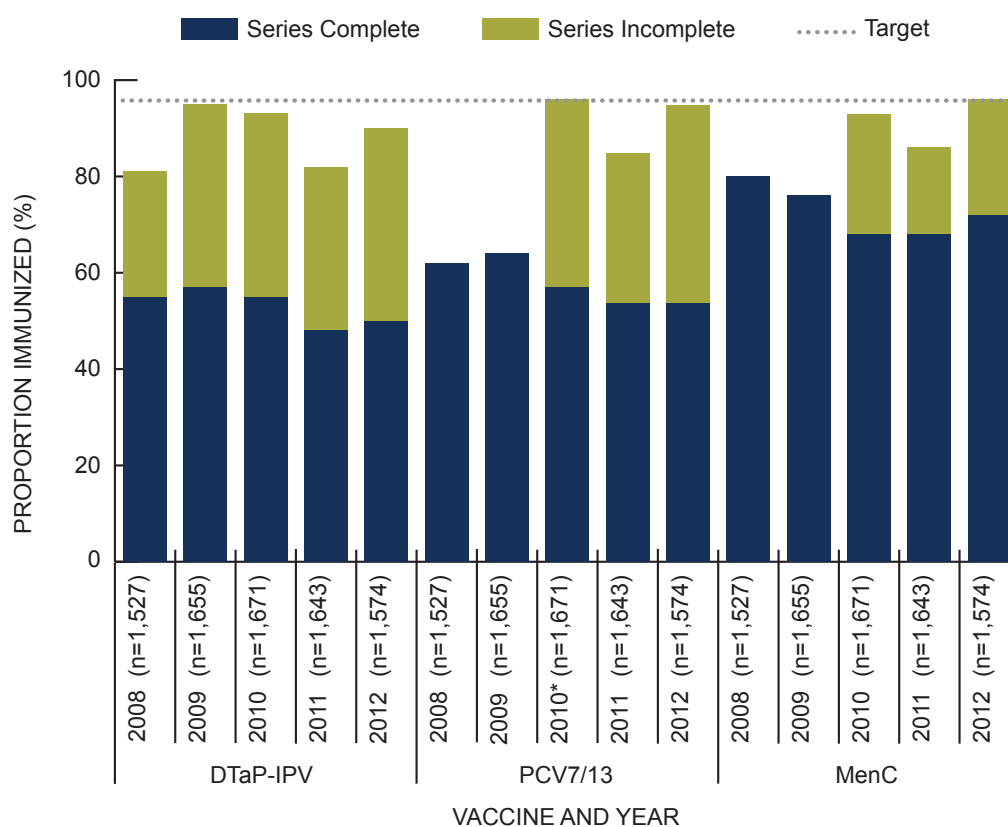
IMMUNIZATIONS FOR TWO-YEAR-OLD CHILDREN

There are documented refusals for approximately 1 in every 1,000 on-reserve First Nations two-year-olds for DTaP-IPV, Hib, PCV7/13 and MenC, and for 3 in 1,000 for MMR and VZV in 2012.

A series of four doses of *Haemophilus influenzae* type b (Hib) is recommended before a child reaches two years of age. However, one dose of Hib after 15 months is considered series complete or coverage for two-year-olds. The Hib coverage rate for two-year-olds increased from 62% in 2008 to 68% in 2009, decreased to 58% in 2011, and then increased to 60% in 2012.

Collection of data for PCV7/13 and MenC uptake for two-year-old children began in 2010. Figure 1.4 shows that a significant proportion of children started the series of multiple-dose immunization but either did not complete the series or did not complete the series according to the recommended schedule.

Figure 1.4: Immunization coverage and uptake for DTaP-IPV, PCV7/13 and MenC, age 2 years, First Nations in Alberta, 2008–12



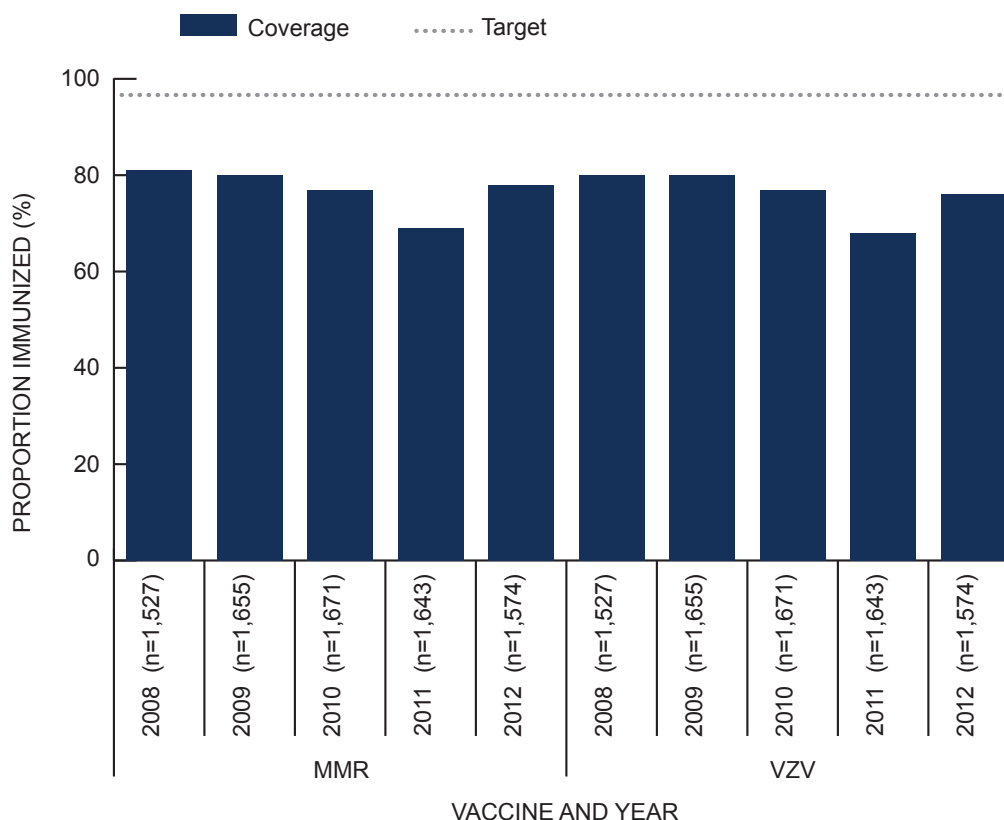
* The 7-valent pneumococcal conjugate vaccine (PCV7) was used for children up to 2009. The 13-valent pneumococcal conjugate vaccine (PCV13) was introduced in July 2010.

Abbreviations: DTaP-IPV = diphtheria, tetanus, pertussis, polio vaccine; MenC = meningococcal type C; PCV7/13 = pneumococcal conjugate.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

Figure 1.5 shows the proportion of two-year-old First Nations immunized on time for MMR and VZV vaccines.

Figure 1.5: Immunization coverage for MMR and VZV, age 2 years, First Nations in Alberta, 2008–12



Abbreviations: MMR = measles, mumps, rubella vaccine; VZV = varicella (chicken pox) vaccine.

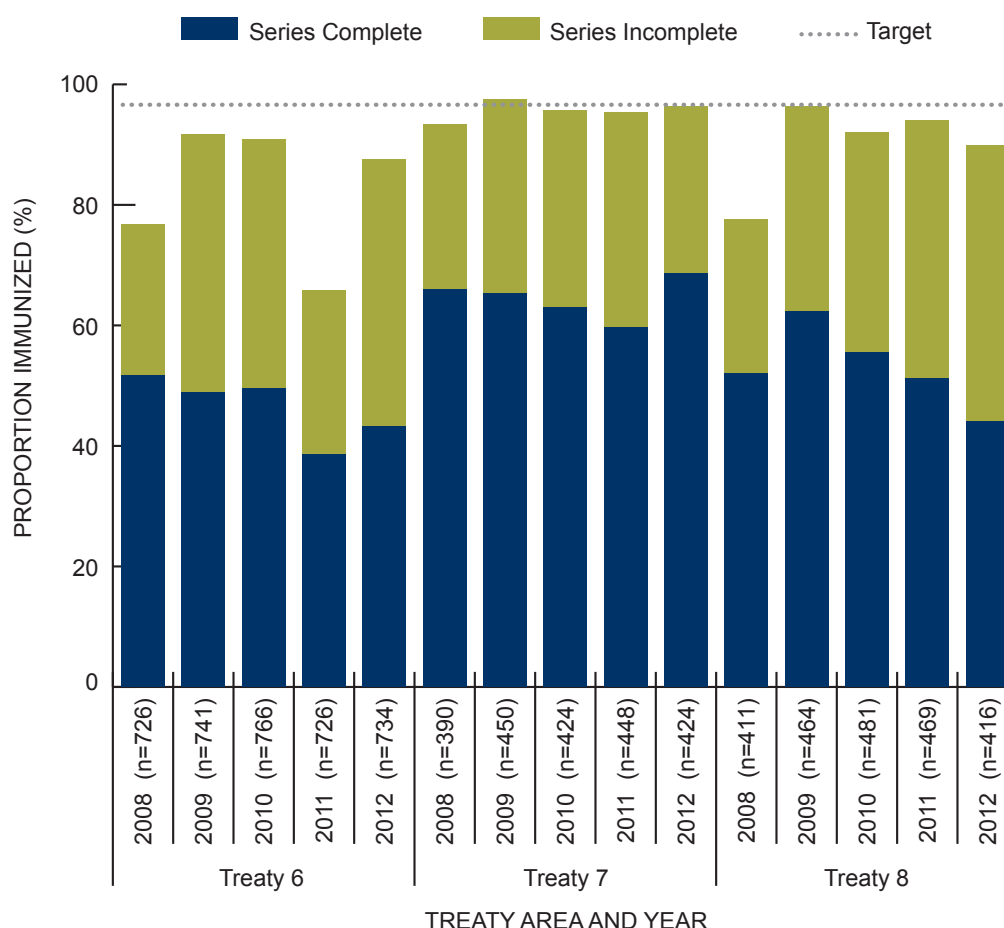
Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

Excluding PCV7/13, the immunization coverage for all vaccines due at or before two years of age was higher in 2012 than in 2011, coming closer to the coverage rates achieved in 2008 and 2009.

In order to achieve optimal protective effects of immunization, at least 97% of two-year-old children should have completed the recommended immunizations series for DTaP-IPV-Hib, PCV7/13 and MenC, and 98% for MMR and VZV. The combined immunization uptake and coverage for two-year-olds for all vaccines was consistently below target (Figure 1.4 and Figure 1.5), though rates are improving and approaching the target. The variation in both coverage and uptake of different vaccines indicates that all vaccines are not administered at the same visit as recommended.

DTaP-IPV immunization coverage rate for two-year-old First Nations children was lower than the coverage rate for this age group in the overall Alberta population (50% versus 73%). Similarly, MMR immunization coverage in 2012 for First Nations children was lower than the coverage rate for all the two-year-old children in Alberta (72% versus 84%).

Figure 1.6: Immunization coverage and uptake for DTaP-IPV, age 2 years, First Nations Treaty Area in Alberta, 2008–12



Abbreviations: DTaP-IPV = diphtheria, tetanus, pertussis, polio vaccine.

Source: Health Canada, FNIHB - Alberta Region, Communicable Disease Control Database.

As shown in Figure 1.6, between 2008 and 2012:

Treaty 6:

- Treaty 6 had the lowest year-to-year combined immunization coverage and uptake rates for DTaP-IPV and the lowest immunization coverage rates overall among two-year-olds.
- The combined immunization coverage and uptake for DTaP-IPV among 2-year-olds was 77% in 2008, 92% in 2009, 91% in 2010, 66% in 2011 and 87% in 2012.
- The DTaP-IPV immunization coverage rate among two-year-olds was 52% in 2008, 49% in 2009, 50% in 2010, 37% in 2011, and 43% in 2012.

Treaty 7:

- Treaty 7 had the highest annual combined immunization coverage and uptake rate for DTaP-IPV and the highest annual immunization coverage rate among two-year-olds.
- The combined immunization coverage and uptake rate for DTaP-IPV was 93% in 2008, 98% in 2009, 96% in 2010, 95% in 2011 and 96% in 2012 among two-year-olds.
- The immunization coverage rate was 66% in 2008, 65% in 2009, 63% in 2010, 60% in 2011 and 69% in 2012 among two-year-olds.

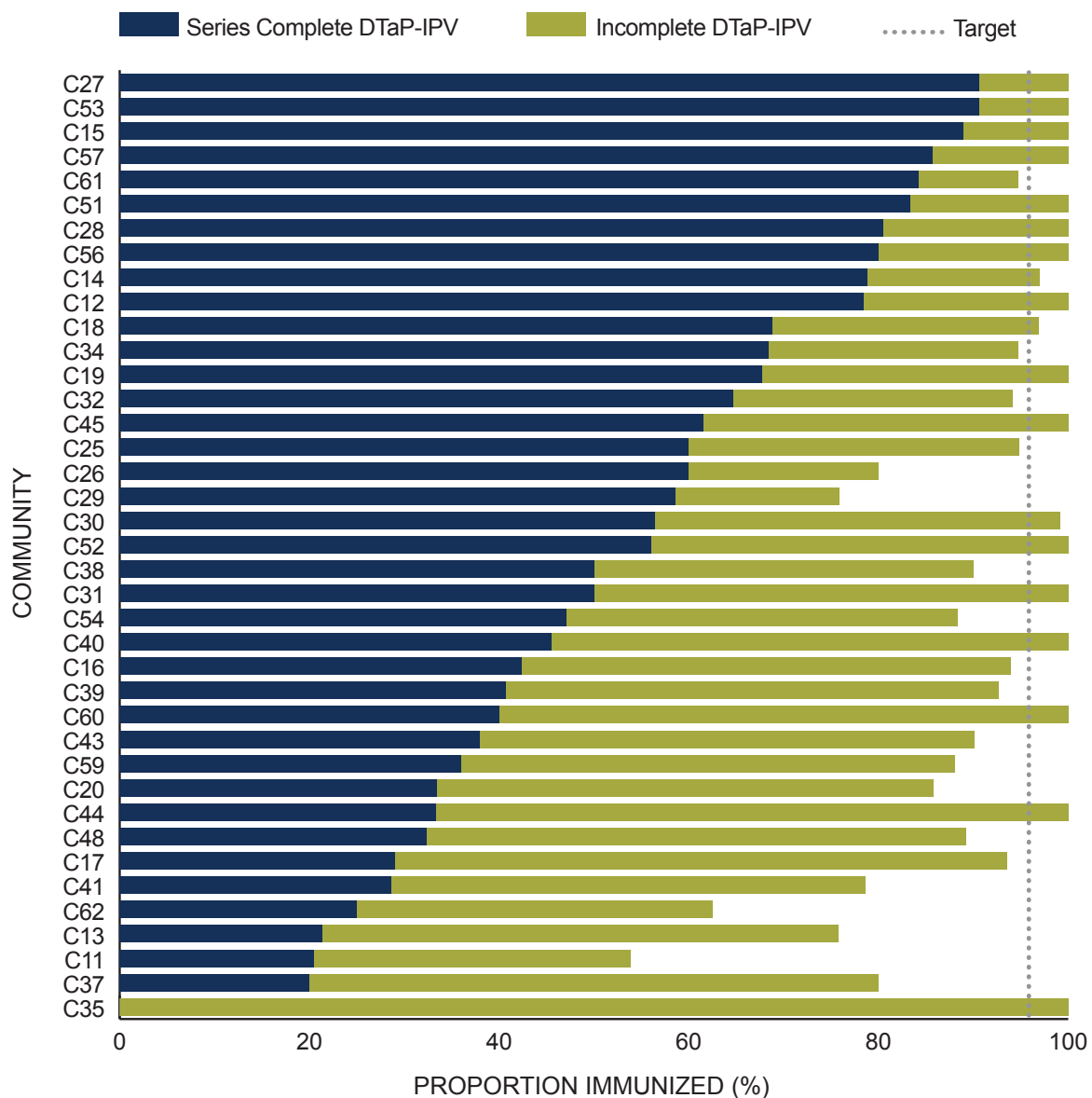
Treaty 8:

- The combined immunization coverage and uptake for DTaP-IPV among two-year-olds was 78% in 2008, 96% in 2009, 92% in 2010, 94% in 2011 and 90% in 2012.
- Immunization coverage rate was 52% in 2008, 62% in 2009, 51% in 2011 and 44% in 2012.

The 2012 immunization coverage and uptake by community (community names have been replaced with a code) for DTaP-IPV (example of vaccines requiring multiple doses) and MMR (example of vaccines requiring single dose) by 2 years of age are shown in Figure 1.7 and Figure 1.8 respectively. These figures show that 24 out of 39 communities had a coverage of 80% or higher for MMR with 6 communities having over 96% coverage. In contrast, 8 communities had over 80% coverage for DTaP-IPV, with no community reaching the 97% coverage target, suggesting that it is easier to achieve coverage for vaccines requiring a single dose than for those requiring multiple doses.

A large proportion of two-year olds started DTaP-IPV immunization as 19 out of the 39 reporting communities had over 97% combined immunization coverage and uptake. Thirty-four communities had over 80% combined immunization coverage and uptake, with only one community having less than 60% combined coverage and uptake (Figure 1.7). This shows that if every two-year-old who started immunization was able to complete the series in the recommended time, the coverage would be much higher. Similar uptake and coverage were observed in 2012 for other vaccines that require multiple doses (not shown).

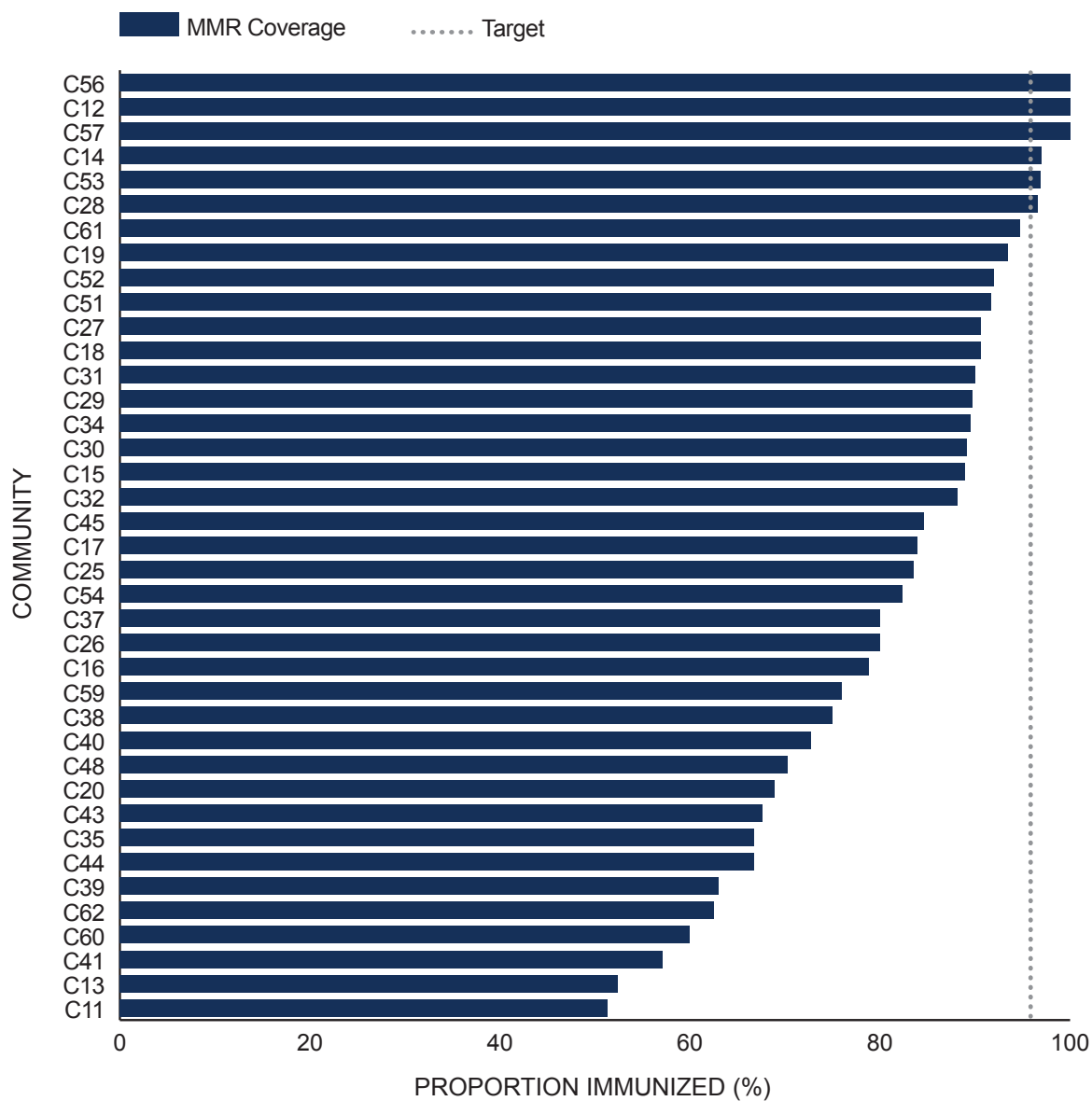
Figure 1.7: Immunization coverage and uptake for DTaP-IPV, age 2 years, First Nations communities in Alberta, 2012



Abbreviations: DTaP-IPV = diphtheria, tetanus, pertussis, polio vaccine.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

Figure 1.8: Immunization coverage for MMR, age 2 years, First Nations communities in Alberta, 2012



Abbreviations: MMR = measles, mumps, rubella vaccine.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

IMMUNIZATIONS FOR SEVEN-YEAR-OLD CHILDREN

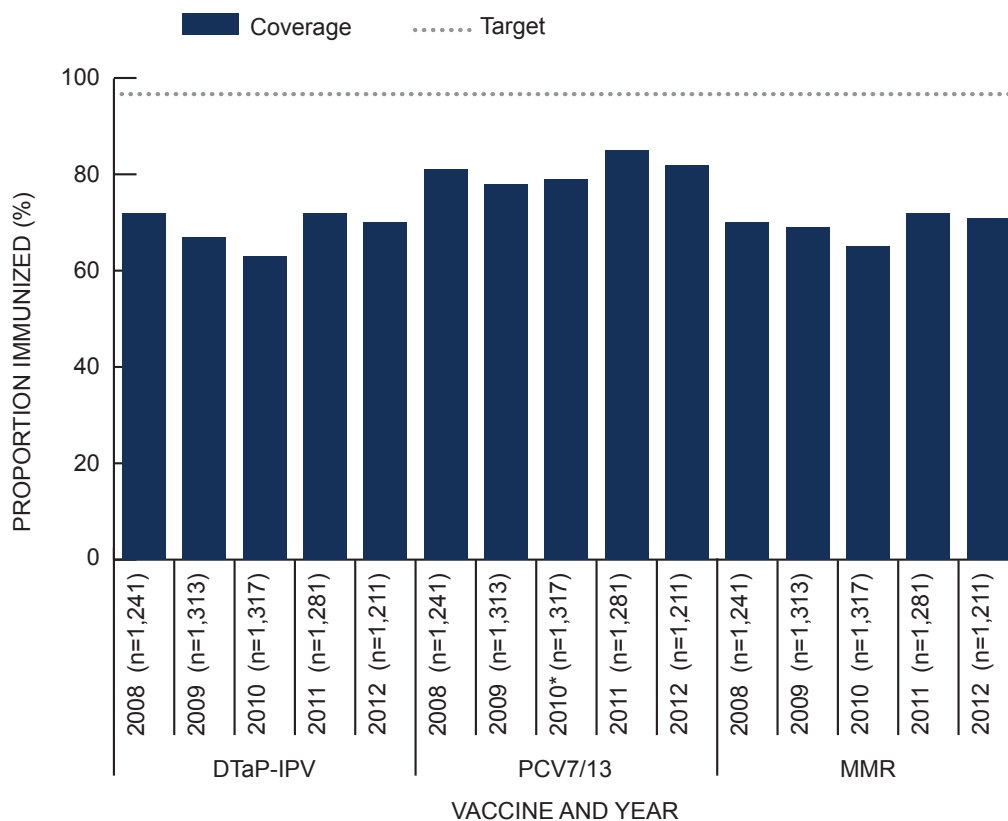
Routine childhood immunizations should be completed by age six. An assessment at seven years of age provides a review of the level of completion for the recommended preschool vaccines (see [Appendix 1](#)). A community health nurse assesses the immunization histories of seven-year-old children. DTaP-IPV and MMR immunizations are provided as required while PCV7/13 and MenC are evaluated as a final measure of coverage. (Note: Reporting for immunization coverage changed from the six-year-old to the seven-year-old population in 2011.)

The recommendation for a second dose of VZV was introduced in 2012. This second dose of VZV was added to the recommendations for four- to six-year-old children—at the same time as the DTaP-IPV booster and second dose of MMR. For the first year of the program, those children who had already received their second dose of MMR would not have been re-called for the second dose of VZV. In 2012, approximately 26% of seven-year-olds were reported to have had a second dose of VZV vaccine or a history of chicken pox disease after 12 months of age.

In 2012, immunization coverage rates for seven-year-olds declined slightly from 2011 for DTaP-IPV, PCV7/13 and MMR. In 2012, the coverage rates for DTaP-IPV and MMR were approximately 71% and that for PCV7/13 was approximately 82% ([Figure 1.9](#)). These rates are well below the recommended target for optimal protection but are better than the coverage for two-year-olds. In other words, greater protection is achieved by age seven.



Figure 1.9: Immunization coverage for DTaP-IPV, PCV7/13 and MMR, age 7 years, First Nations in Alberta, 2008–12



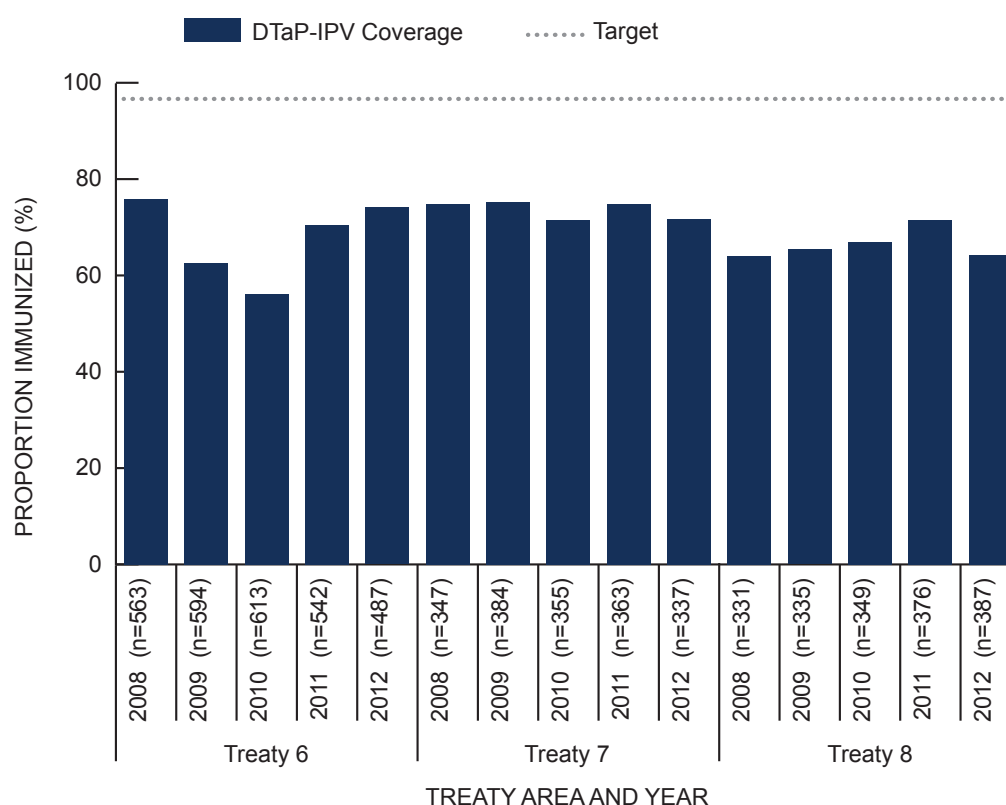
* The 7-valent pneumococcal conjugate vaccine (PCV7) was used for children up to 2009. The 13-valent pneumococcal conjugate vaccine (PCV13) was introduced in July 2010.

Abbreviations: DTaP-IPV-Hib = diphtheria, tetanus, pertussis, polio vaccine; MMR = measles, mumps, rubella vaccine; PCV7/13, pneumococcal conjugate vaccine.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

*“Greater immunization protection
is being achieved in seven-year-olds
than two-year-olds.”*

Figure 1.10: Immunization coverage for DTaP-IPV, age 7 years, by Treaty Area, Alberta, 2008–12



Abbreviations: DTaP-IPV = diphtheria, tetanus, pertussis, polio vaccine.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

Figure 1.10 shows the year-to-year fluctuations in immunization coverage rates for DTaP-IPV among seven-year-olds in all Treaty areas. **Figure 1.6** and **Figure 1.10** show that not every child who started DTaP-IPV immunization was able to complete the series by age 7. Although these coverage rates are below the recommended target for optimal protection, the coverage rates for seven-year-olds are higher than those for two-year-olds, indicating that better protection is achieved by age seven.

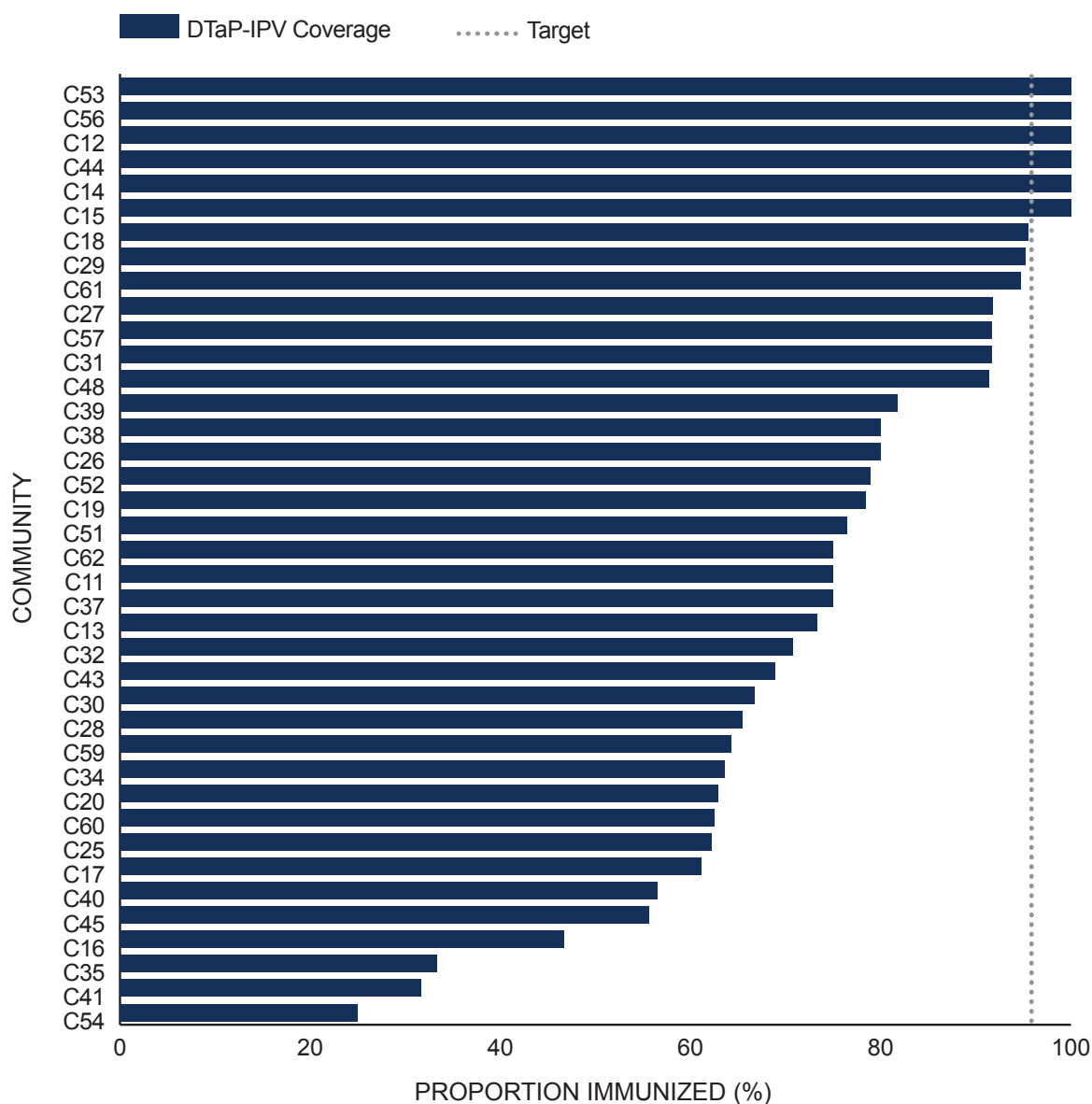
Table 1.1: Immunization coverage for DTaP-IPV, age 7 years, by Treaty Area, Alberta, 2008–12

	2008	2009	2010	2011	2012
Treaty 6	76%	63%	56%	71%	74%
Treaty 7	75%	75%	72%	75%	72%
Treaty 8	64%	65%	67%	72%	64%

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

In 2012, 16 out of the 39 reporting communities had over 80% immunization coverage for DTaP-IPV vaccine among seven-year-olds, with 6 communities recording 100% coverage (**Figure 1.11**).

Figure 1.11: Immunization coverage for DTaP-IPV, age 7 years, First Nations communities in Alberta, 2012



Abbreviations: DTaP-IPV = diphtheria, tetanus, pertussis, polio vaccine.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database

IMMUNIZATIONS FOR GRADE 5 STUDENTS

The data presented in this section come from 28 to 35 communities out of the 35 communities with on-reserve Grade 5 schools that report immunization coverage and uptake to the region.

A three-dose hepatitis B vaccine (HBV) series is offered to all Grade 5 students. At the time of reporting, the three-dose human papillomavirus vaccine (HPV) series was offered only to female Grade 5 students,

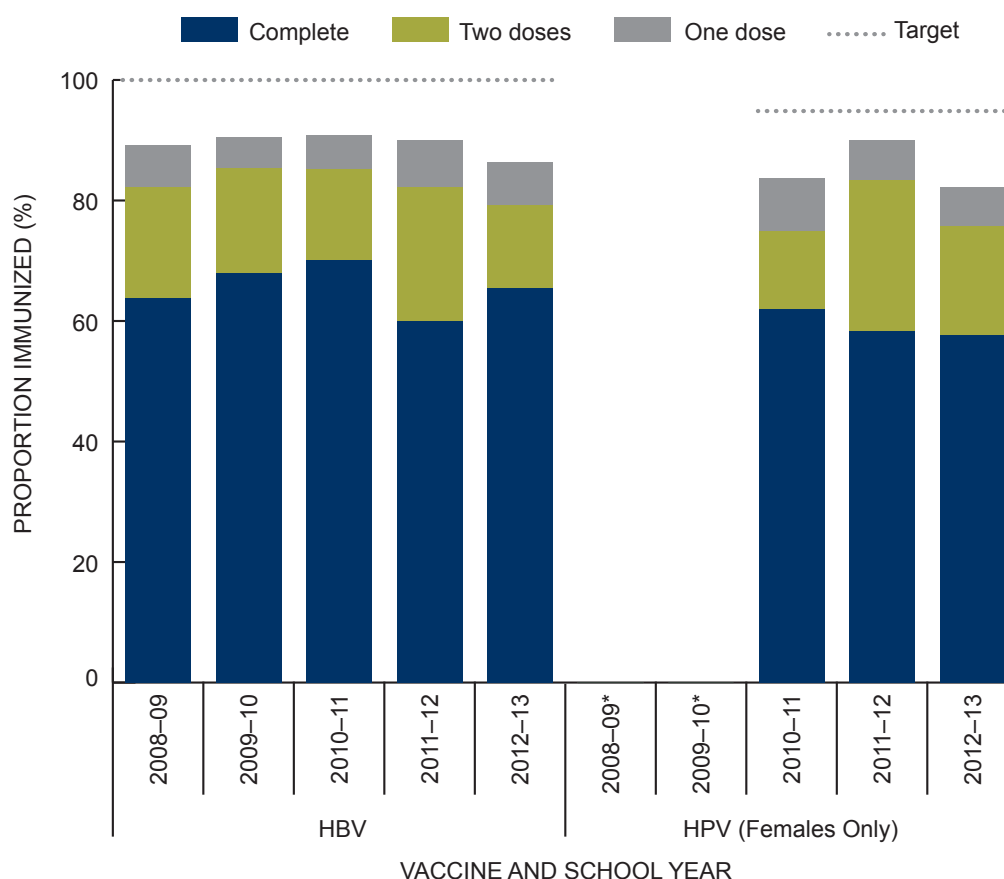
although it is now available to both male and female students attending Grade 5 on-reserve. Grade 5 students' charts are also assessed for history of chicken pox disease or varicella immunization, and those students who are not immune are offered protection against varicella.

In the 2012–13 school year, approximately 85% of Grade 5 students were protected against chicken pox disease, which is lower than in the 2011–12 school year (93%).

The combined HBV immunization coverage and uptake among Grade 5 students decreased slightly, from 90% in 2011–12 school year to 86% in 2012–13. However, HBV coverage increased from 60% in 2011–12 to approximately 66% in 2012–13.

The combined coverage and uptake for HPV among Grade 5 female students declined from 90% in the 2011–12 school year to 82% in 2012–13, although the coverage remained stable (Figure 1.12).

Figure 1.12: Immunization coverage and uptake for HBV and HPV, Grade 5 students, First Nations in Alberta, 2008–09 to 2012–13

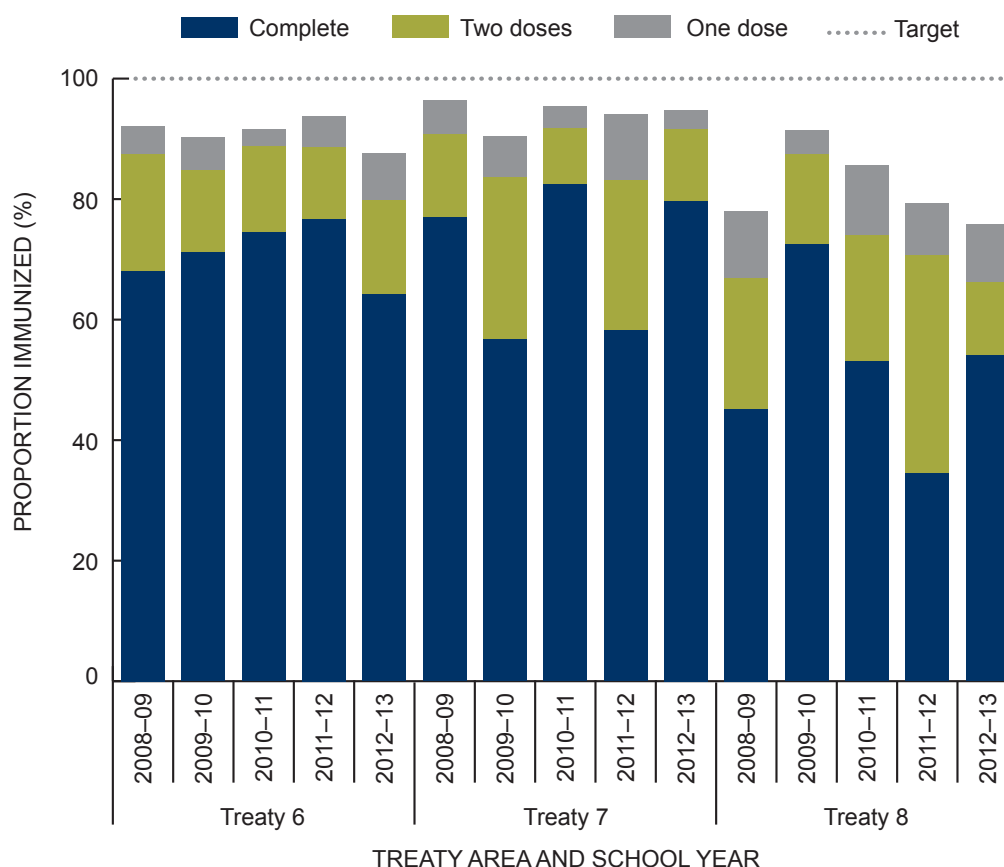


* Data is only available for combined Grade 5 and Grade 9 female students.

Abbreviations: HBV = hepatitis B vaccine; HPV = human papillomavirus vaccine.

Source: Health Canada, FNIHB - Alberta Region, Communicable Disease Control Database

Figure 1.13: Immunization coverage and uptake for HBV, Grade 5 students, First Nations Treaty area in Alberta, 2008–09 to 2012–13



Abbreviations: HBV = hepatitis B vaccine.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

Between the 2008–09 and 2012–13 school years, the combined immunization coverage and uptake for Grade 5 students ranged between 88% and 94% in Treaty 6, 90% and 97% in Treaty 7 and 76% to 91% in Treaty 8 (Figure 1.13).

Table 1.2: Immunization coverage and uptake for HBV, Grade 5 students, First Nations Treaty area in Alberta, 2008–09 to 2012–13

	2008–09	2009–10	2010–11	2011–12	2012–13
Treaty 6	68%	71%	75%	77%	64%
Treaty 7	77%	57%	82%	58%	80%
Treaty 8	45%	73%	53%	35%	54%

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

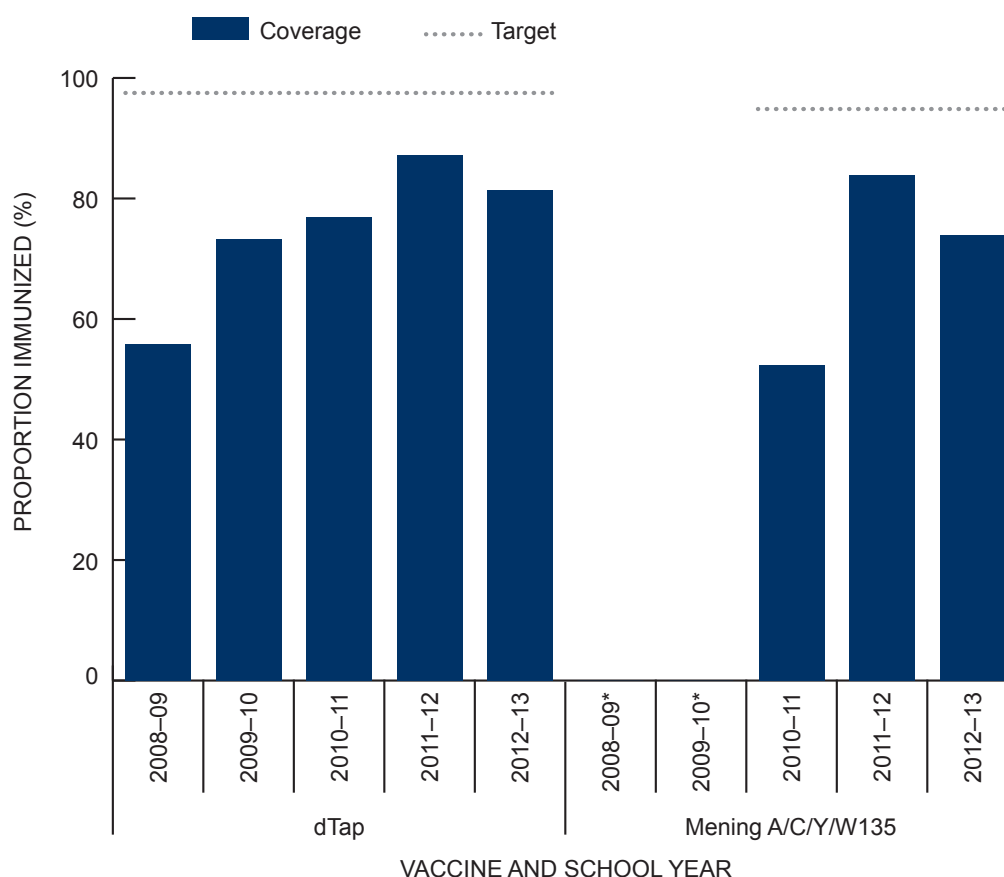
IMMUNIZATIONS FOR GRADE 9 STUDENTS

The data shown in this section come from 25 to 32 communities out of the 33 communities with on-reserve Grade 9 schools that report immunization coverage to the FNIHB – Alberta regional office.

The meningococcal vaccine offered in Grade 9 provides protection against serogroups A, C, Y and W135. The vaccine is offered at the same time as the dTap booster. Mening A/C/Y/W135 was first introduced to Grade 9 students in February 2011. By June 2011, reported coverage was 52%, and a coverage rate of 84% was reported in the 2011–12 school year, reflecting the roll-out of the new program. Coverage of Mening A/C/Y/W135 in the 2012–13 school year was 74%.

Grade 9 dTap immunization coverage rate increased from 56% in 2008–09 to 87% in 2011–12, and then declined to 81% in 2012–13 school year (Figure 1.14).

Figure 1.14: Immunization coverage for dTap and Mening A/C/Y/W135, Grade 9 students, First Nations in Alberta, 2008–09 to 2012–13



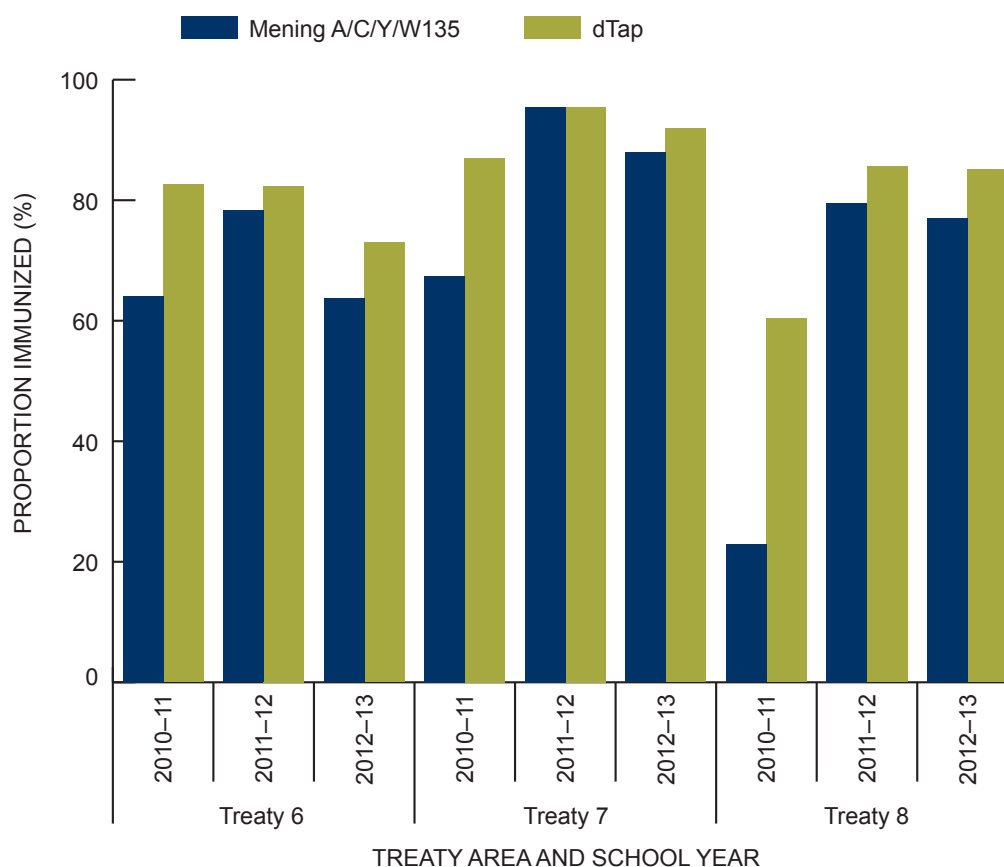
* Not applicable. Mening A/C/Y/W135 was first introduced to Grade 9 students in February 2011.

Abbreviations: DTaP = diphtheria, tetanus, and pertussis vaccine; Mening A/C/Y/W135 = meningococcal vaccine against serogroups A, C, Y and W135.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

Grade 9 is also a final opportunity to evaluate and/or complete the recommended vaccines: MMR, HBV, VZV and HPV. The immunization coverage rate for Grade 9 students increased slightly from approximately 95% in 2011–12 to 96% in the 2012–13 school year for MMR, 86% to 87% for HBV and 83% to 85% for VZV. The coverage rate for HPV increased from approximately 51% in 2011–12 to 75% in 2012–13.

Figure 1.15: Immunization coverage for Mening A/C/Y/W135 and dTap, Grade 9 students, First Nations Treaty area in Alberta, 2010–11 to 2012–13



Abbreviations: DTaP = diphtheria, tetanus, pertussis, polio vaccine; Mening A/C/Y/W135 = meningococcal vaccine against serogroups A, C, Y and W135.

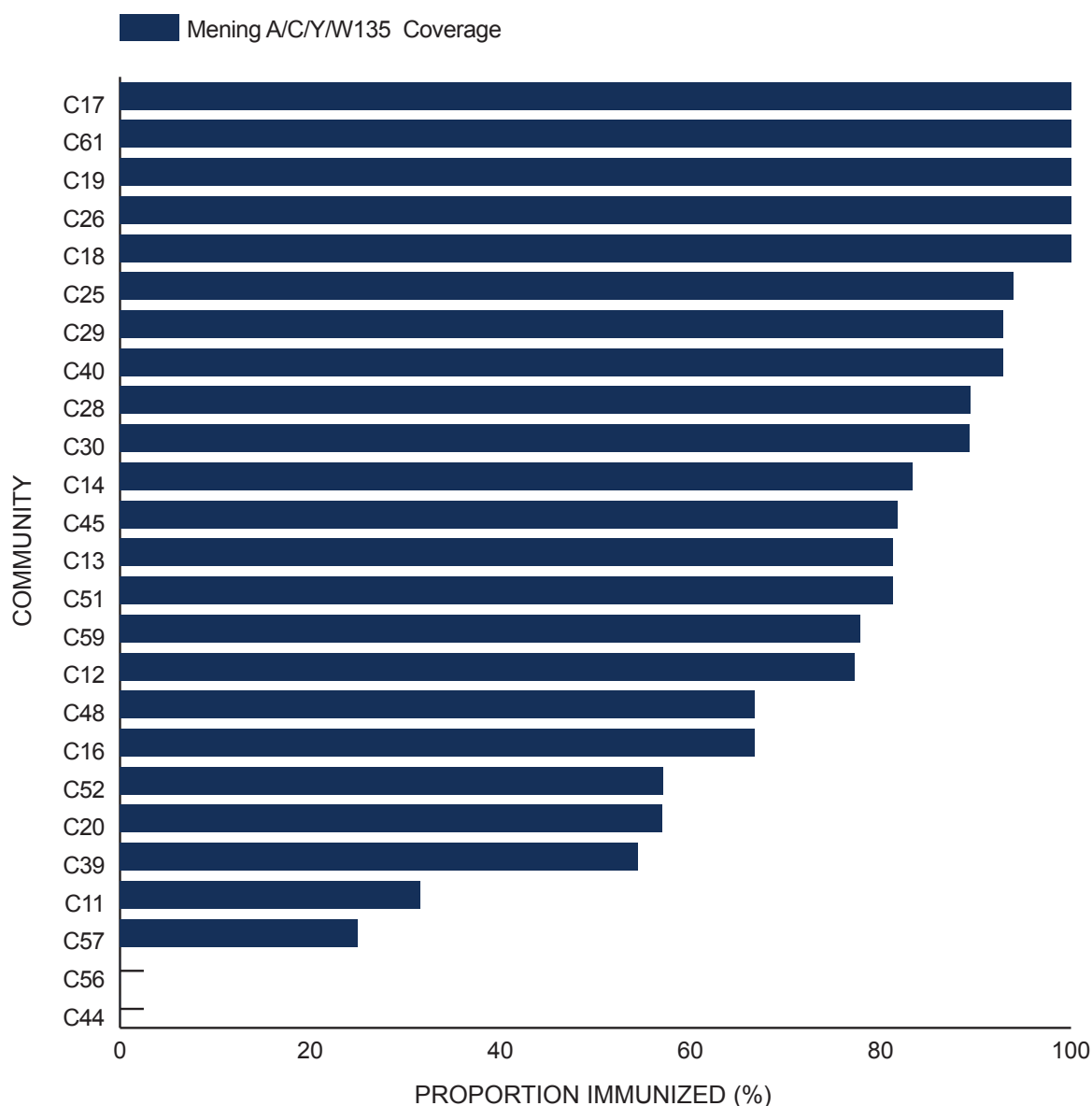
Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

Figure 1.15 shows that the year-to-year immunization coverage for Mening A/C/Y/W135 was lower than the coverage for dTap, and the coverage rate for Mening A/C/Y/W135 and dTap declined in 2012–13 from 2011–12 in all treaty areas.

Treaty 7 communities had the highest rates overall for Mening A/C/Y/W135 and dTap vaccines; and Treaty 8 immunization coverage rate was higher than that of Treaty 6 for both Mening A/C/Y/W135 and dTap in the 2011–12 and 2012–13 school years.

More than half of the communities (14 out of 25 Grade 9 reporting communities in 2012–13) had over 80% immunization coverage for Mening A/C/Y/W135, with five of these having 100% coverage (Figure 1.16). Similarly, 16 communities had over 80% immunization coverage for dTap in the 2012–13 school year, with eight of these having 100% coverage (not shown).

Figure 1.16: Immunization coverage for Mening A/C/Y/W135, Grade 9 students, First Nations communities in Alberta, 2012–13



Abbreviations; Mening A/C/Y/W135 = meningococcal vaccine against serogroups A, C, Y and W135.

Source: Health Canada, FNIHB - Alberta Region, Communicable Disease Control Database.

INFLUENZA AND PNEUMOCOCCAL IMMUNIZATION

Seasonal influenza immunization is offered every year because small changes occur continuously within the influenza virus. These changes mean that a new influenza vaccine must be made every year to provide protection against the viruses most likely to cause illness in that year.

It is very important for individuals, especially those at high risk of influenza-related complications and their contacts, to be immunized every year at the beginning of the influenza season (mid-October to November). Individuals at high risk include:

- people 65 years and older;
- people living in group settings such as continuing and long-term care and designated assisted living environments;
- health care workers / health care students;
- people with certain chronic conditions such as heart conditions, diabetes and respiratory conditions (e.g. asthma);
- pregnant women;
- children 6 months to 5 years old;
- severely overweight individuals; and
- household contacts of the above.⁶

The results in this section are based only on data from communities that reported seasonal influenza immunizations to First Nations and Inuit Health Branch – Alberta Regional Office. The denominators (i.e. population within an age or a risk group) are not readily available and hence this section only reports counts.

The number of people in each target group who received the seasonal influenza immunization in fall–spring 2012–13 was lower than their counterparts the year before, in fall–spring 2011–12 for every Target group (**Table 1.3**).



6 Alberta Health. (2014). Influenza Vaccine. Retrieved from www.health.alberta.ca/health-info/imm-influenza.html

Table 1.3: Immunization for seasonal influenza vaccine, by target group, First Nations communities in Alberta, 2010–11 to 2012–13

Target Group		Number of individuals immunized		
		Fall–Spring 2010–11	Fall–Spring 2011–12	Fall–Spring 2012–13
Age Group	6–23 months	226	326	186
	24–59 months	591	634	586
	5–8 years	963	852	576
	9–64 years	7733	6670	6323
	65+ years	893	942	938
Health Care Workers		733	665	556
Pregnant Women		211	191	160
Number of communities reporting		41	42	43

Source: Health Canada, FNIHB - Alberta Region, Communicable Disease Control Database.

Pneumococcal 23-valent polysaccharide vaccine (PPV23), a vaccine that protects against 23 types of pneumococcal bacteria, is offered to eligible individuals. PPV23 is usually given once in a lifetime and the number of individuals who are protected in a given age group is reported to the region.

The results (Table 1.4) in this section are based only on data from communities that reported PPV23 immunizations to First Nations and Inuit Health Branch – Alberta Regional Office. The denominators (i.e. population within an age or a risk group) are not readily available and hence only counts are reported in this section.

Table 1.4: Immunization for pneumococcal bacteria with PPV23 by age group, First Nations communities in Alberta, by target group, 2010–11 to 2012–13

Target Group		Number of individuals protected		
		Fall–Spring 2010–11	Fall–Spring 2011–12	Fall–Spring 2012–13
2–64 years with chronic condition(s)		733	809	881
65+ years		640	667	829
Number of communities reporting		22	26	26

Abbreviation: PPV23 = pneumococcal 23-valent polysaccharide vaccine.

Source: Health Canada, FNIHB – Alberta Region, Communicable Disease Control Database.

The number of individuals aged 2–64 years with chronic condition(s), and those aged 65 years and older, who have documented PPV23 protection has been increasing in recent years.

NOTIFIABLE INFECTIOUS DISEASES

The *Alberta Public Health Act* identifies specific communicable diseases that are required to be reported to the Chief Medical Officer of Health for the province at Alberta Health. Community-based staff in Alberta ensure that appropriate follow-up is carried out to prevent further spread of disease. The combination of identifying underlying risk factors, treating and controlling cases, strengthening community capacity (e.g. emergency preparedness) and educating the public on health promotion activities supports the FNIHB's vision of healthy First Nations communities

First Nations notifiable diseases data are based on reports received from community-based staff and are maintained in the regional Notifiable Diseases Report (NDR) database. Some of the notifiable diseases can be prevented by following the recommended vaccination schedule. The vaccine-preventable diseases that are included in the routine immunization program are:

- diphtheria
- human papillomavirus (HPV)
- *Haemophilus influenzae* type b (Hib)
- hepatitis B (HBV)
- influenza
- invasive meningococcal disease (IMD)
- invasive pneumococcal disease (IPD)
- measles
- mumps
- pertussis
- poliomyelitis
- rubella
- tetanus
- varicella (chicken pox)

For this report, the notifiable diseases were grouped into four categories:

- **sexually transmitted infections (STIs)** – chlamydia, gonorrhea, syphilis
- **vaccine-preventable diseases** – pertussis, invasive pneumococcal disease, invasive meningococcal disease, mumps, varicella zoster (shingles), varicella (chicken pox), hepatitis B, diphtheria, measles, polio, rubella, tetanus, influenza
- **enteric diseases** – campylobacteriosis, giardiasis, E.coli O157:H7, salmonellosis, cryptosporidiosis, amoebiasis, aeromonas, *Blastocystis hominis*, *Dientamoeba fragilis*, shigellosis, yersiniosis, haemolytic uremic syndrome
- **others** – AIDS, HIV, hepatitis C, invasive group A streptococcal disease, tuberculosis

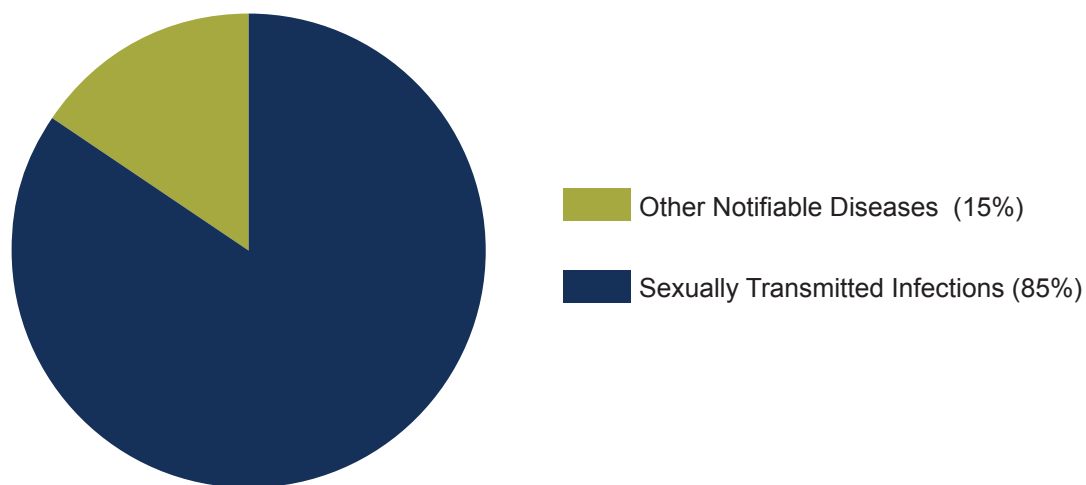
DATA SOURCES

- Health Canada, First Nations and Inuit Health Branch – Alberta Region (FNIHB-AB), Notifiable Diseases Database.
- Alberta Health Services
- Government of Alberta, Alberta Health
- Indian Registry System, Aboriginal Affairs and Northern Development Canada (AANDC)

DATA LIMITATIONS

- Data may include non-First Nations individuals who have accessed services on reserve.

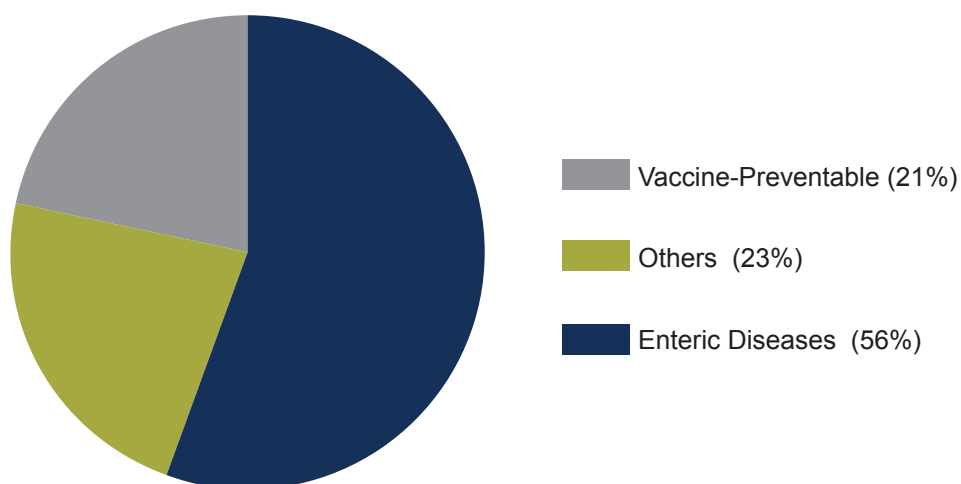
Figure 1.17: Proportion of notifiable diseases reported by First Nations communities in Alberta, 2012



Source: Health Canada, FNIHB – Alberta Region; Government of Alberta, Alberta Health.

In 2012, the majority (85%) of notifiable diseases reported from both on- and off-reserve were STIs (Figure 1.17). This is a common trend often observed over time in both on and off reserve populations (data not shown). Enteric diseases accounted for 56% of the remaining notifiable diseases (Figure 1.18).

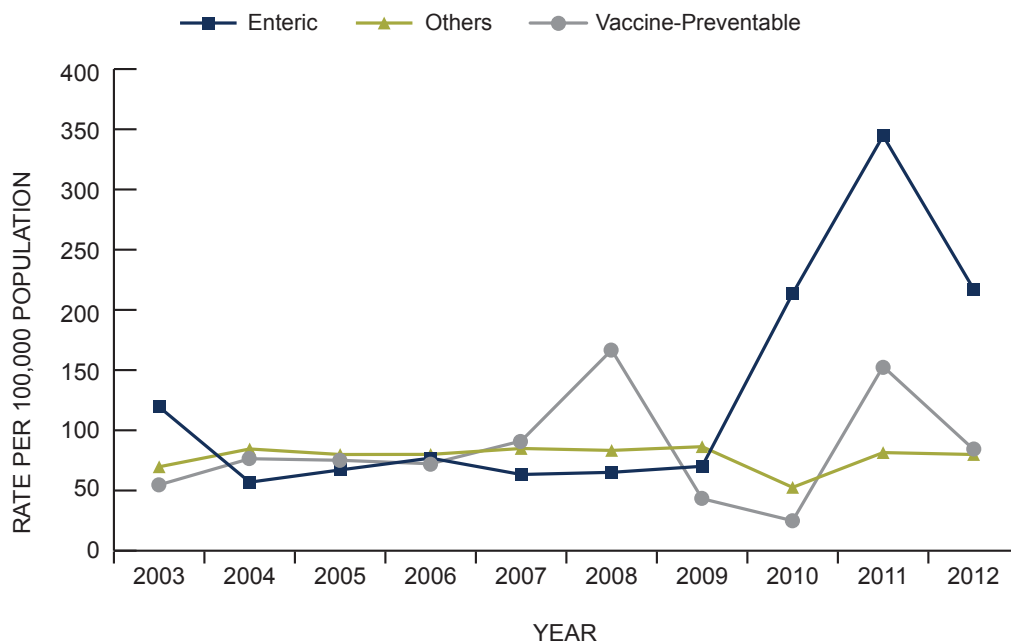
Figure 1.18: Proportion of notifiable diseases (excluding STIs) reported by First Nations communities in Alberta, 2012



Abbreviation: STI = sexually transmitted infection.

Source: Health Canada, FNIHB – Alberta Region; Government of Alberta, Alberta Health

Figure 1.19: Rates of notifiable infectious diseases (excluding tuberculosis and STIs) in First Nations communities by disease group, Alberta, 2003–12



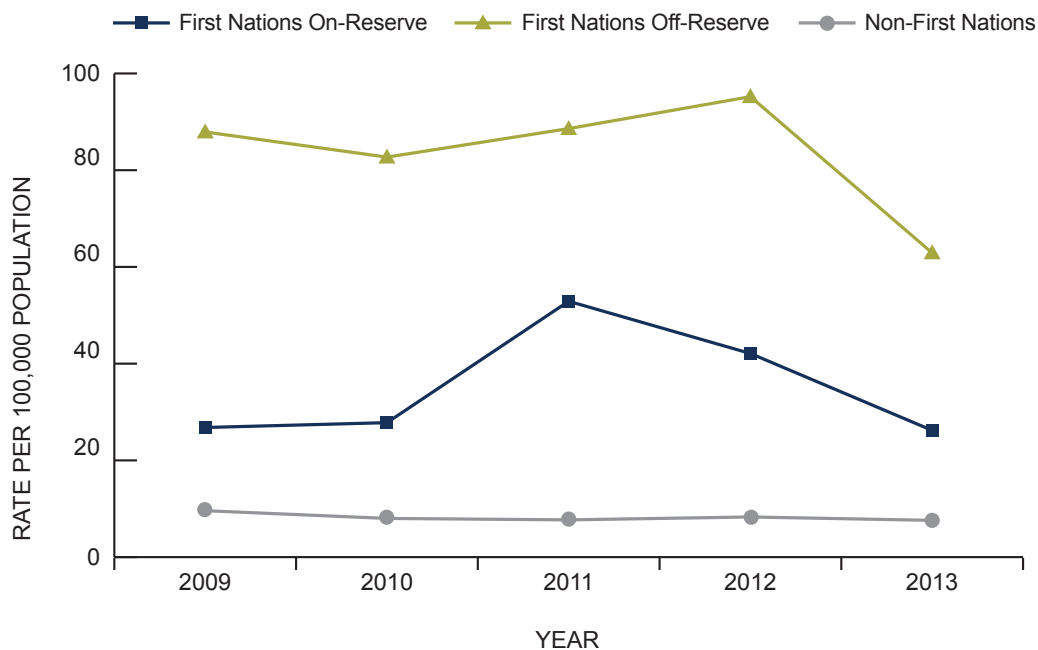
Abbreviation: STI = sexually transmitted infection.

Source: Health Canada, FNIHB – Alberta Region; Alberta Health; AANDC, Indian Registry System

The rate of enteric diseases was higher between 2010 and 2012 compared to previous years (2003–09) because of shigellosis and salmonellosis outbreaks. Shigellosis accounted for 78% of all enteric cases reported in 2010 and 82% of these in 2011. In 2012, a salmonellosis outbreak accounted for 25% of all enteric cases and shigellosis accounted for the remaining 75% of cases. Although the number of people infected with shigellosis declined, the subsequent increase in the number of salmonellosis cases supports the need for continuous efforts to reduce the incidence and spread of enteric diseases.

The shigellosis cases differed in age from the salmonellosis cases. The majority (60%) of shigellosis cases were under 18 years of age, while over 60% of salmonellosis cases were over 30 years old. Both children and adults were affected by enteric illnesses indicating the importance of community awareness and education.

Figure 1.20: Rates of invasive pneumococcal disease among First Nations and non-First Nations living in Alberta, 2009–13*

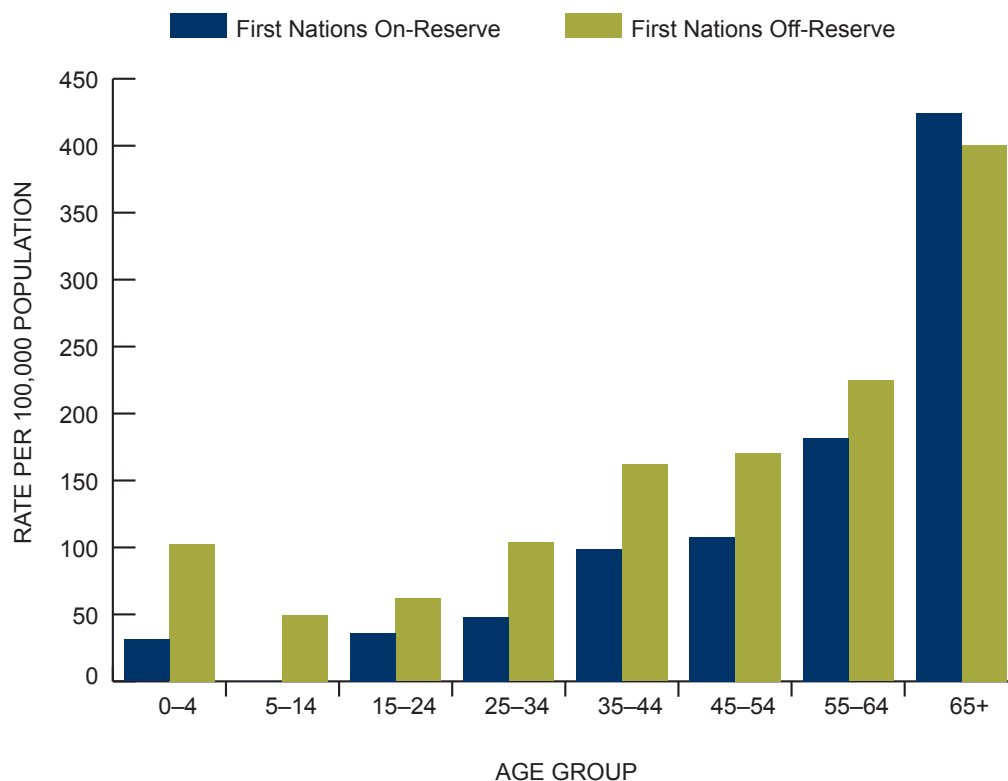


* 2009–13: Non-First Nations, n = 1507; on-reserve First Nations, n = 129; off-reserve First Nations, n = 176.

Source: Health Canada, FNIHB – Alberta Region; Alberta Health; AANDC, Indian Registry System.

The rates of invasive pneumococcal disease (IPD) for First Nations in Alberta are substantially higher than for the non-First Nations in Alberta. However, the average rate over the five-year period among the on-reserve population is twice as low as the five-year average rate among First Nations living off-reserve. The trend in IPD cases appears to be declining as the pneumococcal immunization program has successfully reduced IPD rates in recent years.

Figure 1.21: Rates of invasive pneumococcal disease among First Nations living in Alberta, by age group, 2009–13



Source: Health Canada, FNIHB – Alberta Region; Alberta Health; AANDC, Indian Registry System

With the exception of those over 65 years, rates of IPD are higher among First Nations living off-reserve than among those living on-reserve. Children under 15 years of age that live on-reserve show much lower rates compared to children living off-reserve.

Reports of IPD cases increased from 2011 after a decline from 2005 to 2010. Over half of the IPD cases in 2012 were among individuals over 50 years of age.

Multiple possible risk factors are attributed to the disproportionate burden of IPD among the Aboriginal population in Canada⁷. This includes crowded living conditions, low socio-economic status, underlying medical conditions and increased exposure to smoking.

Two vaccines are available that protect against some strains of pneumococcal disease. Continued effort to improve coverage for pneumococcal immunization will potentially reduce the risk of IPD infection (see **Figures 1.1** and **1.4** and **Table 1.4**).

⁷ Helferty, M., Rotondo, J., Martin, I., and Desai, S. (2013). The epidemiology of invasive pneumococcal disease in the Canadian North from 1999 to 2010. *International Journal Of Circumpolar Health*, 72. doi:10.3402/ijch.v72i0.21606

OVERALL NOTIFIABLE DISEASE CASE SUMMARY

The overall rates of notifiable diseases reported in 2012 for First Nations living on- and off-reserve and non-First Nations living in Alberta are shown in Table 1.5.

Table 1.5: Notifiable disease cases and incidence rates among First Nations living on- and off-reserve and non-First Nations in Alberta, 2012

Notifiable diseases reported in 2012	Number of cases reported by First Nations on-reserve	Rate per 100,000 Population		
		First Nations on-reserve	First Nations off-reserve	Non-First Nations
Shigellosis	85	119.2	29.5	3.3
Salmonellosis	41	57.5	61.3	20.4
Pneumococcal Disease, Invasive	30	42.1	95.4	8.3
Hepatitis C	21	29.4	338.5	27.4
Pertussis	20	28.0	63.6	7.5
Streptococcal Disease - Group A, Invasive	20	28.0	40.9	5.4
Campylobacteriosis	8	11.2	45.4	24.0
Giardiasis	6	8.4	11.4	11.3
<i>Haemophilus influenzae</i> – non-serotype b, Invasive	6	8.4	2.3	1.3
Cryptosporidiosis	3	4.2	9.1	5.2
Varicella Zoster (Shingles)	5	7.0	52.3	23.0
Escherichia coli Verotoxigenic Infections (includes O157:H7)	NR	NR	9.1	2.4
Meningococcal Disease, Invasive	NR	NR	6.8	0.3
Legionellosis	NR	NR	4.5	0.5

Abbreviation: NR = not reported due to small counts.

Sources: Health Canada, FNIHB – Alberta Region; Alberta Health; AANDC, Indian Registry System

As a result of the outbreak, rates of shigellosis were higher among First Nations living on-reserve than among off-reserve First Nations and non-First Nations. For most other diseases, rates were lower among First Nations living on-reserve compared to rates among First Nations living off-reserve.

SEXUALLY TRANSMITTED INFECTIONS

STIs accounted for 85% of the notifiable infectious diseases reported in First Nations communities in 2012. In 2012, there were 1466 reported cases of chlamydia, gonorrhea and syphilis among on-reserve First Nations communities in Alberta.

Improving diagnosis, treatment and prevention remain key factors in reducing the spread of STIs. To help mitigate the burden, the FNIHB Blood-borne Pathogens and Sexually Transmitted Infections (BBP STI) program works with communities to improve access to diagnosis and treatment and direct prevention messaging at higher-risk individuals.

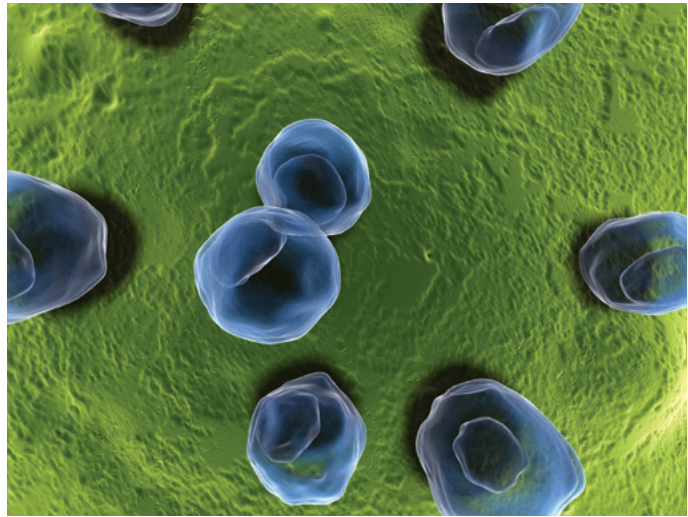
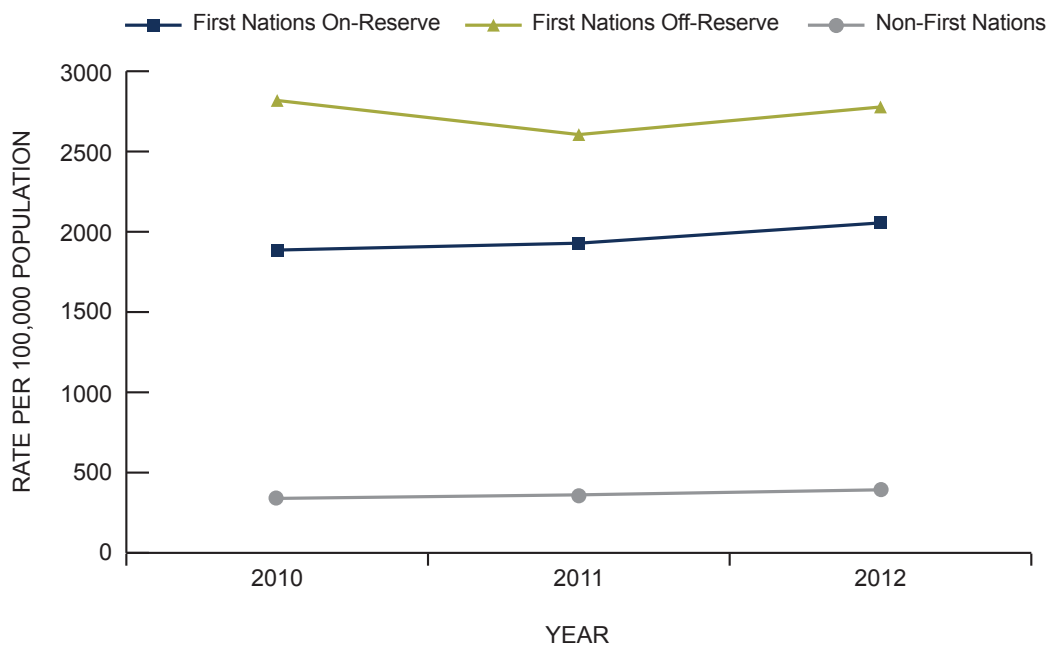


Figure 1.22: STI rates among First Nations living on and off-reserve and non-First Nations populations in Alberta, 2010–12



Abbreviation: STI = sexually transmitted infection.

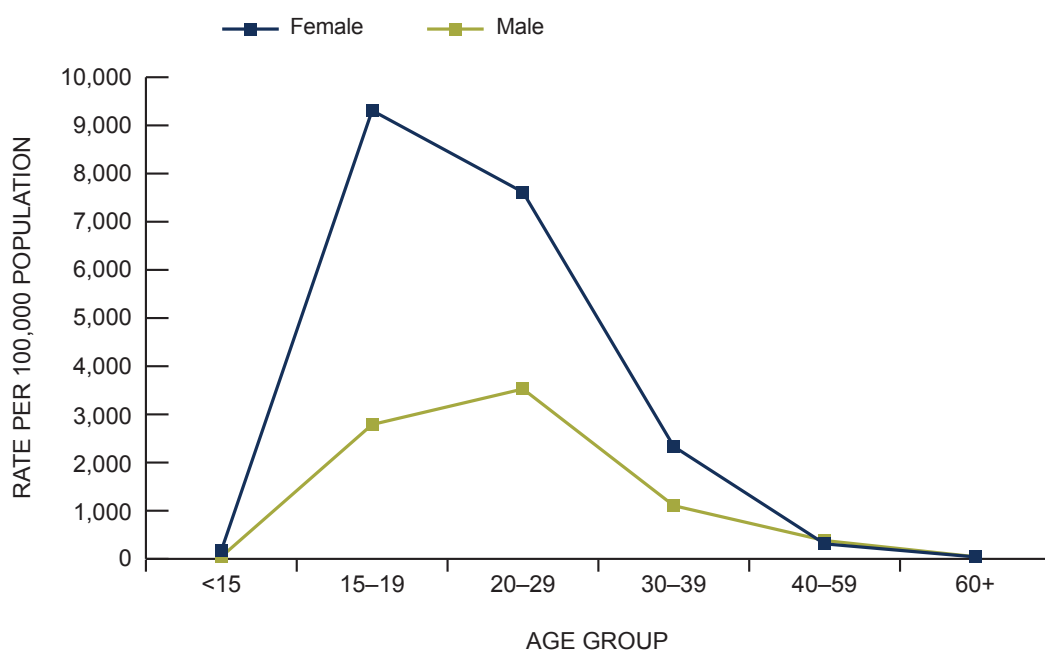
Source: Government of Alberta, Alberta Health; AANDC, Indian Registry System.

“Improving diagnosis, treatment and prevention remain key factors in reducing the spread of STIs.”

Rates of STIs are generally lower among on-reserve First Nations than among off-reserve First Nations in Alberta (**Figure 1.22**), although STI rates among First Nations living on-reserve increased from 2010 to 2012. While STI rates among non-First Nations also increased between 2010 and 2012, rates among First Nations are over five times higher than the rates reported among non-First Nations in Alberta.

The combined rates of chlamydia, gonorrhea and syphilis infection continue to increase in the on-reserve First Nations population. Although this increase may be due to more cases of infection, it may also be due to improved routine screening for STIs as a result of increased awareness among community members. Chlamydia continues to be the most commonly reported, accounting for 78% of reported STIs. Gonorrhea and syphilis rates remain fairly stable (data not shown).

Figure 1.23: STI rates among First Nations by sex and age group, Alberta, 2012



Abbreviation: STI = sexually transmitted infection.

Source: Government of Alberta, Alberta Health; AANDC, Indian Registry System.

STIs disproportionately affect females and males aged between 15 and 29 years (Figure 1.23), which is consistent with the provincial trend.⁸ There is a continuous need to target education and programming towards young adults within the region. Examples of such targeted efforts include the participation of the FNIHB BBP STI program in annual youth gatherings and partnerships with National Native Alcohol and Drug Abuse Program (NNADAP), mental health programs, maternal and child health programs and schools on-reserve.

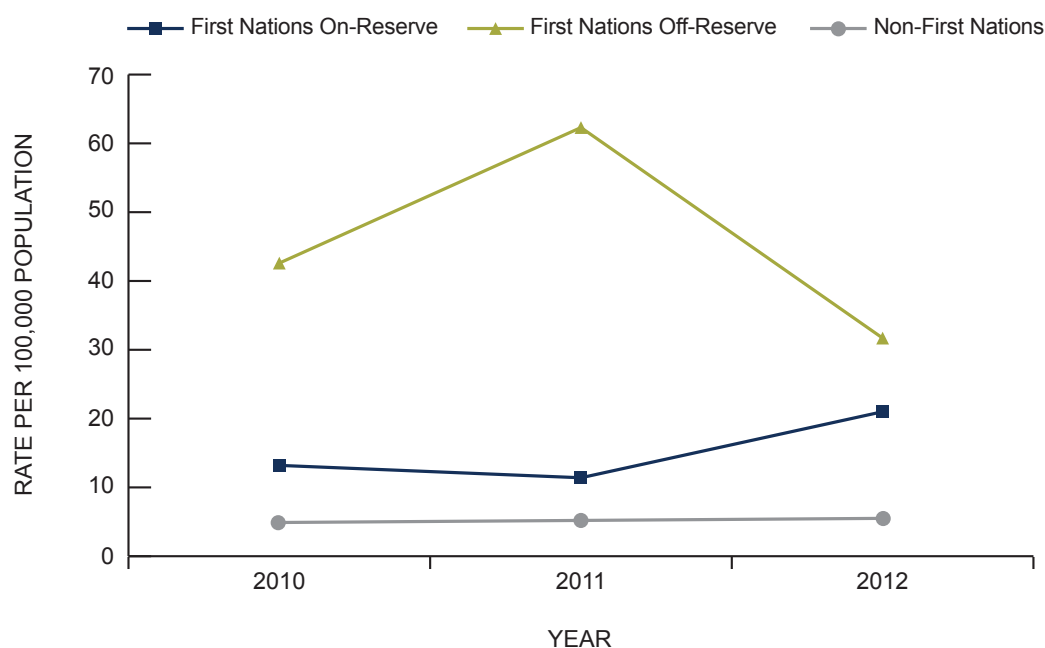
⁸ Alberta Health, Surveillance and Assessment. *Notifiable Sexually Transmitted Infections and HIV – 2012 Annual Report*. Edmonton: Government of Alberta, 2014

HIV AND AIDS

In 2012, there were 31 new cases of HIV infection (15 on-reserve, 14 off-reserve and 4 unknown residence) among First Nations living in Alberta. These reported cases represented 17% of newly diagnosed cases in the province. The majority (58%) of First Nations cases were males between the ages of 30 and 34.

Between 2010 and 2012, HIV rates among on-reserve First Nations were, on average, three times lower than rates among First Nations living off-reserve but three times higher than rates among non-First Nations (see Figure 1.24). Ongoing efforts are needed to highlight the importance of testing for STIs as well as educate about prevention and safer sexual practices.

Figure 1.24: Rates of new HIV cases among First Nations living on- and off-reserve and non-First Nations living in Alberta, 2010–12

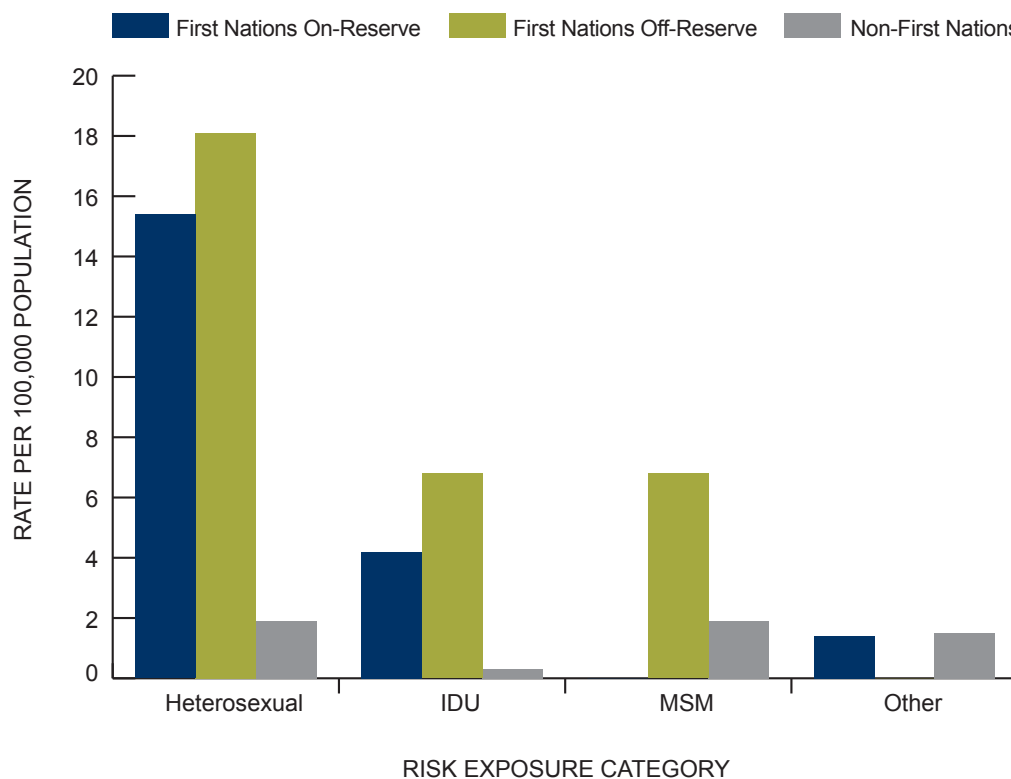


Abbreviation: HIV = human immunodeficiency virus.

Source: Government of Alberta, Alberta Health; AANDC, Indian Registry System.

In 2012, compared with rates for the non-First Nation population, First Nations had higher rates of HIV infection across all age groups except adults aged over 70. First Nations females experienced the greatest burden of HIV infection in the 20–24, 25–29, 40–44 and 50–54 year age groups. First Nations males had higher rates of HIV infection in the remaining age groups. In particular, rates for HIV were higher among First Nations males than non-First Nations males in the 60–64 and 65–69 year age groups (data not shown).

Figure 1.25: Rates of new HIV cases among First Nations living on- and off-reserve and non-First Nations living in Alberta, by risk exposure category, 2012



Note: Cases associated with combined risk exposure of MSM and IDU were coded as MSM.

The "Other" risk exposure category includes risk factors such as recipient of blood transfusion, out of country, perinatal, unknown, and no other identified risks.

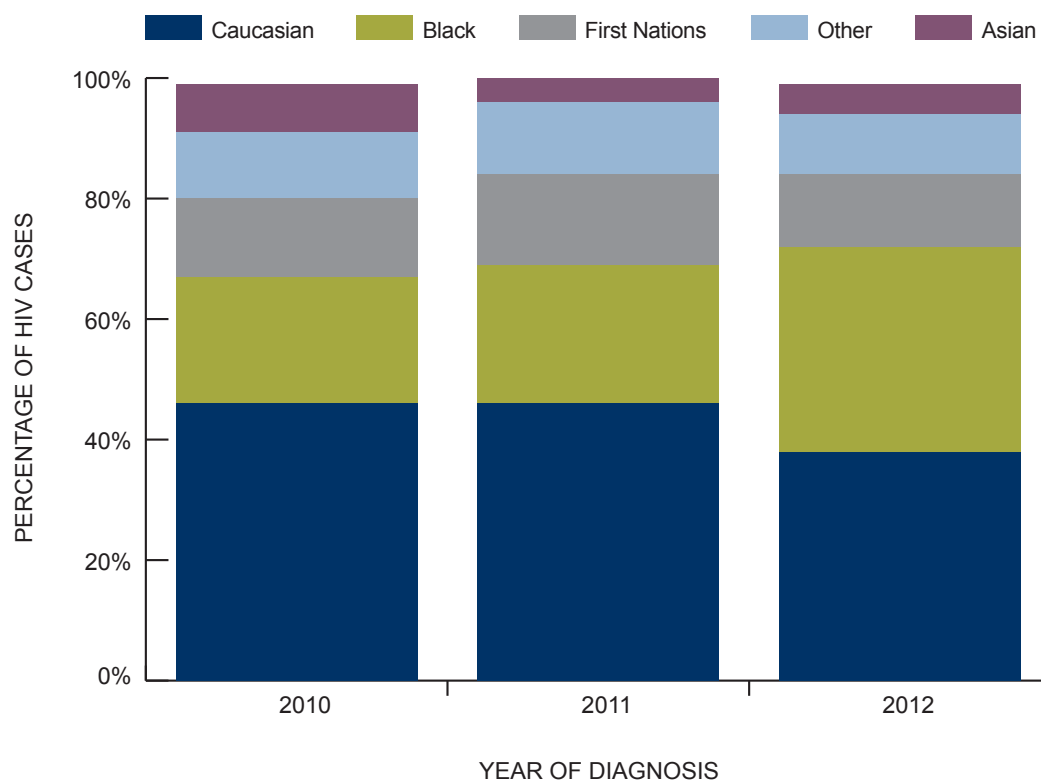
Abbreviation: IDU = injection drug use; HIV = human immunodeficiency virus; MSM = men who have sex with men.

Source: Government of Alberta, Alberta Health; AANDC, Indian Registry System

Higher-risk behaviours are often associated with HIV transmission. These behaviours include unprotected sex, men who have sex with men (MSM), and sharing of needles among intravenous drug users (Figure 1.25).

For all categories except "Other," the rates by risk exposure are higher among First Nations living off-reserve than First Nations living on-reserve or non-First Nations in Alberta. The largest proportion of cases among on-reserve First Nations are in the heterosexual category, with second largest in the injection drug use (IDU) category.

Figure 1.26: Proportion of reported HIV cases by self-defined ethnicity/race, Alberta, 2010–12



Source: Government of Alberta, Alberta Health; AANDC, Indian Registry System

Between 2010 and 2012, on average 13% of newly reported HIV cases in Alberta occurred among First Nations.

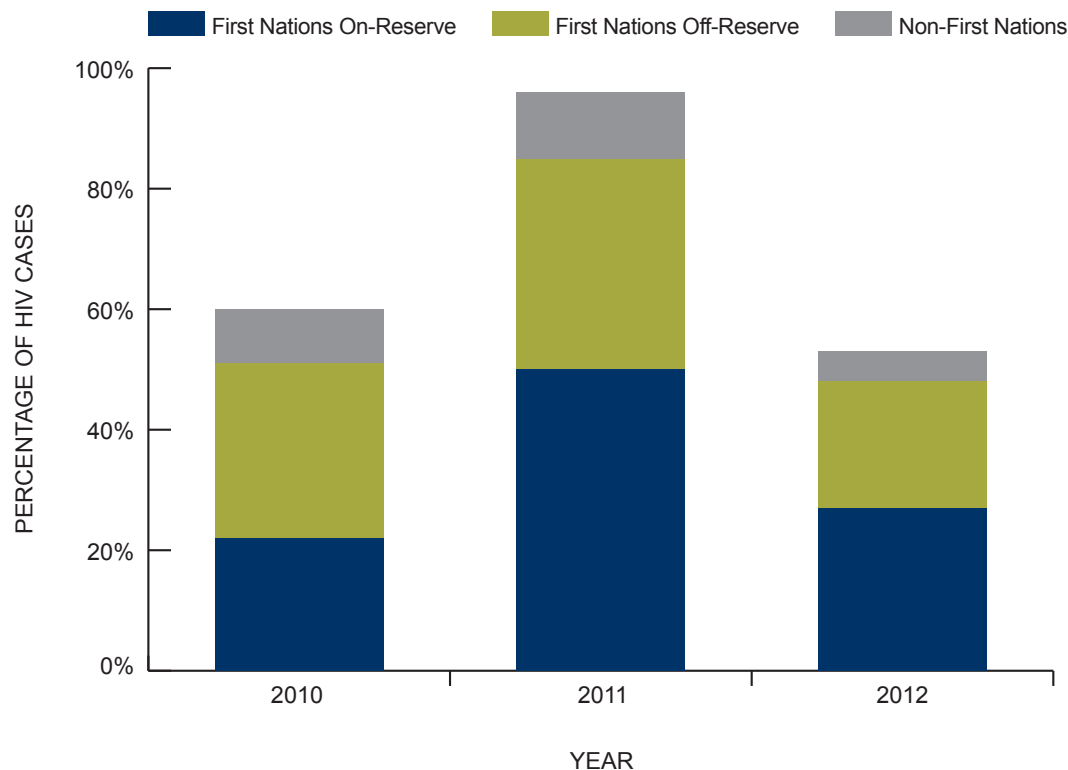
HIV Co-Infection

Person-to-person transmission of infected blood is the underlying risk factor in both HIV and hepatitis C (HCV) infection. As HCV transmits more easily through infected blood than does HIV, behaviours that put individuals at risk of HIV infection also predispose them to HCV infection. The literature shows that HCV infection rates are increasing in First Nations populations in Canada.^{9,10}

9 GY Minuk, J Uhanova. Viral hepatitis in the Canadian Inuit and First Nations populations. *Can J Gastroenterol* 2003; 17(12):707–712.

10 J Uhanova, RB Tate, DJ Tataryn, GY Minuk. *The epidemiology of hepatitis C in a Canadian Indigenous population*. *Can J Gastroenterol* 2013; 27(6):336–40.

Figure 1.27: Proportion of HIV cases co-infected with Hepatitis C among First Nations living on- and off-reserve and non-First Nations living in Alberta, 2010–12



Source: Government of Alberta, Alberta Health

Compared to non-First Nations, First Nations had a greater proportion (50%–85%) of newly diagnosed HIV cases co-infected with hepatitis C between 2010 and 2012 (Figure 1.27).

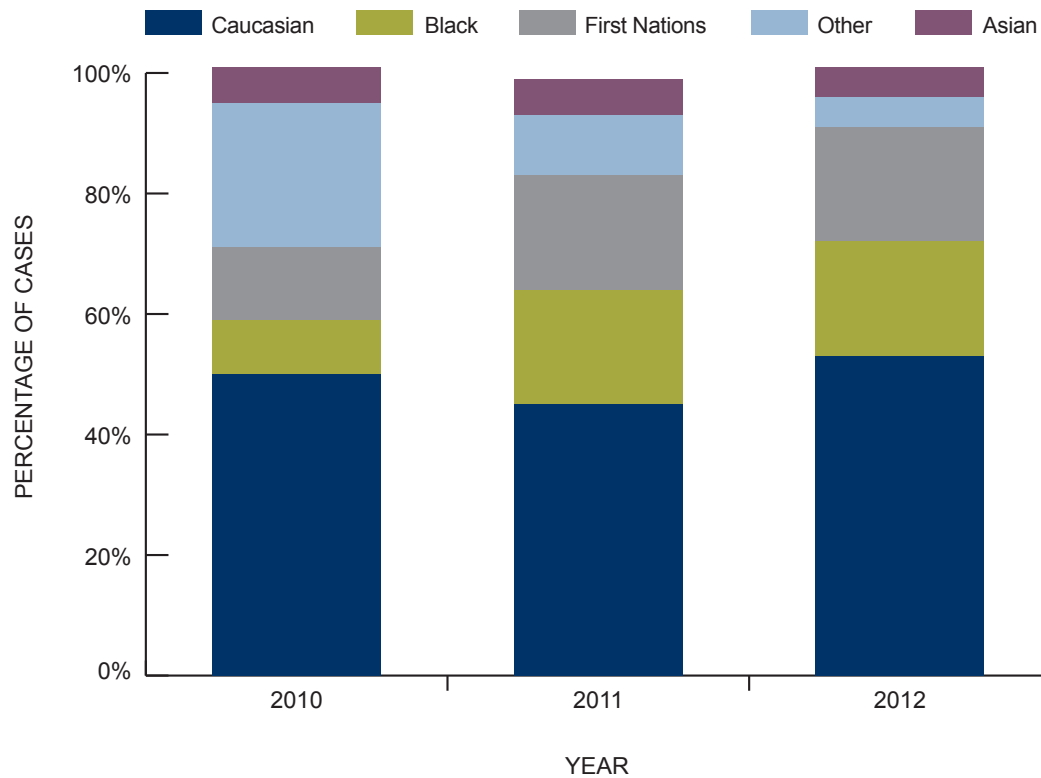
On average, one-third of new HIV cases among First Nations living on-reserve are infected with HCV compared to one-tenth of non-First Nations cases. Studies have shown that IDU is the primary source of the majority (70%–80%) of HCV infections in Canada.¹¹ As IDU was the second highest risk factor for HIV transmission among on-reserve First Nations in 2012 (Figure 1.25), the FNIHB BBP STI program is working with communities to increase awareness of HIV and HCV co-infection.

¹¹ Public Health Agency of Canada (PHAC). 2008. *Hepatitis C*. Retrieved from: <http://healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/hepc-eng.php>

AIDS

In 2012, five new cases of AIDS were identified among First Nations living on-reserve in Alberta.

Figure 1.28: Proportion of reported AIDS cases by self-defined ethnicity/race, Alberta, 2010–12



Source: Government of Alberta, Alberta Health

HIV infection will often progress to AIDS, and most cases of AIDS have previously been reported as HIV infected. On average, 17% of all reported AIDS cases in Alberta occurred among First Nations from 2010 to 2012 (Figure 1.28).

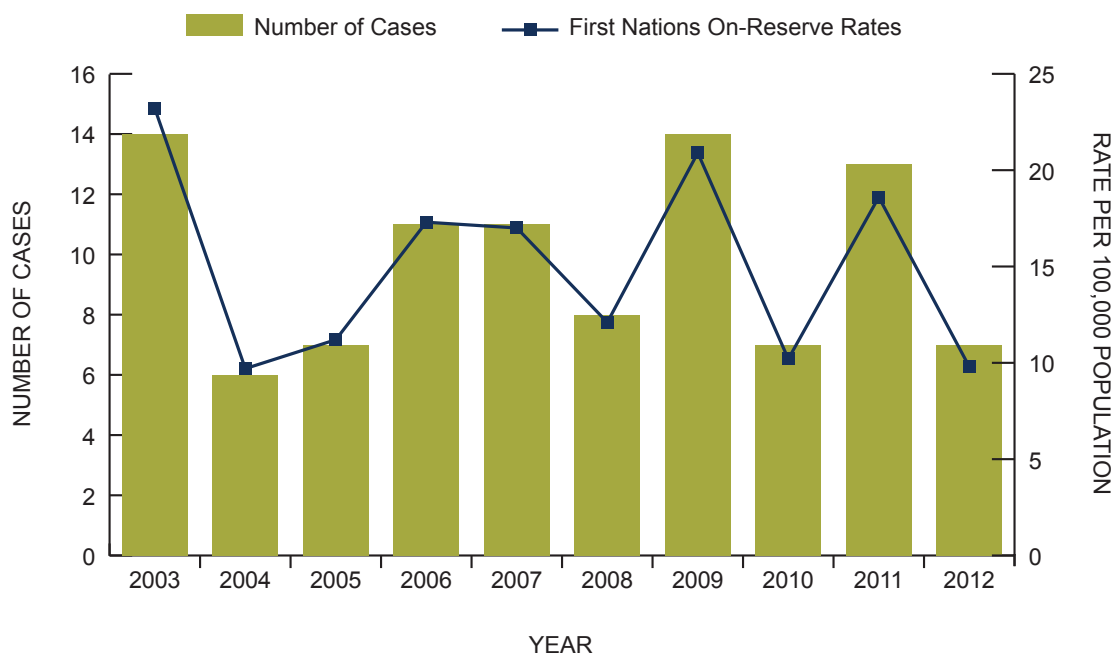
TUBERCULOSIS

The rate of active tuberculosis (TB) decreased by nearly 58% in First Nations communities within Alberta between 2003 and 2012, with the annual number of cases ranging from 6 to 14 (averaging 10 cases per year). The rate of active disease ranged from 9.7 to 23.2 per 100,000 population in this period.

In 2012, seven active cases of TB were reported in five First Nations communities, a rate of 9.8 per 100,000 population (Figure 1.29). These cases ranged in age from 11 to 76 years, and the majority (86%) were males.

“Since 2003, the rate of active tuberculosis (TB) decreased by nearly 58% in First Nations communities within Alberta.”

Figure 1.29: Number and rate of active TB cases among First Nations communities in Alberta, 2003–12



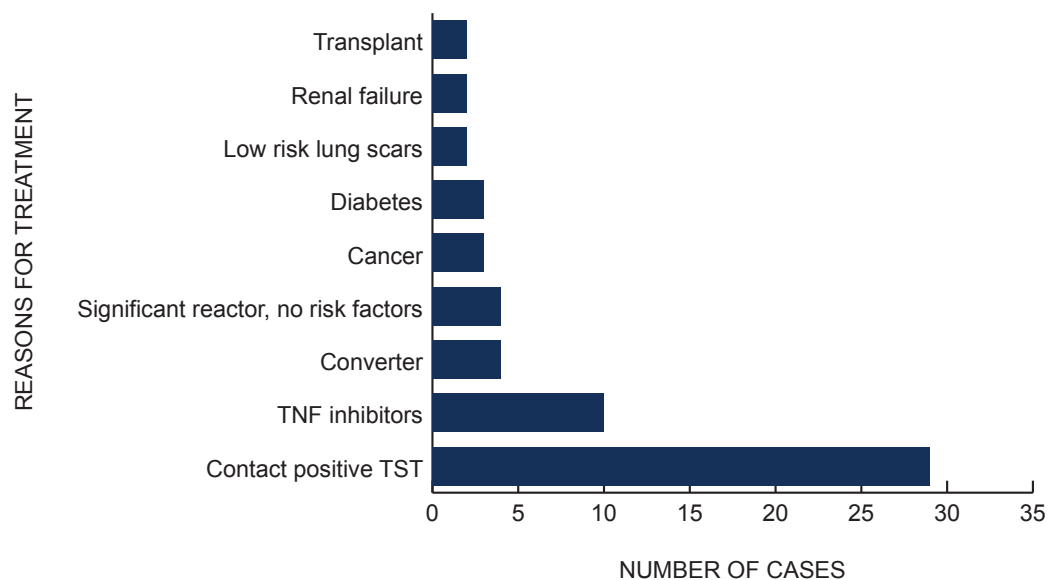
Abbreviation: TB = tuberculosis.

Source: Government of Alberta, Alberta Health; AANDC, Indian Registry System.

Treatment to prevent TB is offered once a person is diagnosed with an inactive or latent TB infection (LTBI). Although someone with LTBI does not show disease symptoms and cannot spread the germ to others, they have a 10% lifetime risk of developing active TB disease.¹²

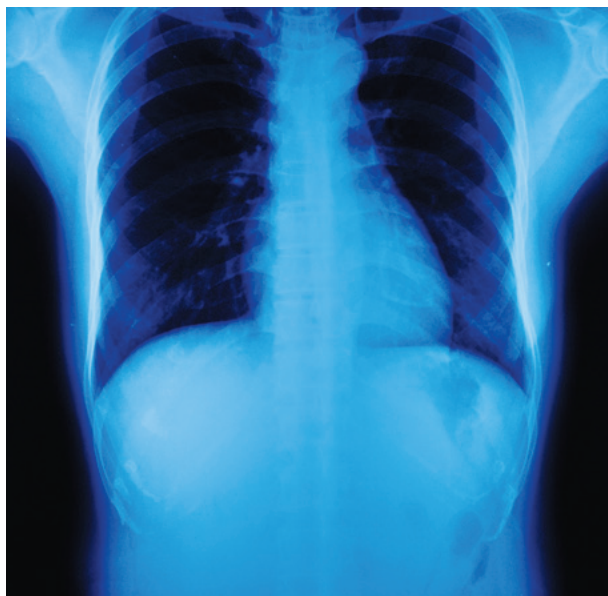
12 Public Health Agency of Canada. (2011) *Tuberculosis*. Retrieved from <http://travel.gc.ca/travelling/health-safety/diseases/tuberculosis>

Figure 1.30: Distribution of LTBI among on-reserve First Nations in Alberta by treatment recommendation, 2012



Abbreviation: LTBI = latent tuberculosis infection.

Source: Government of Alberta, Alberta Health



In 2012, 59 individuals (27 females and 32 males) were recommended for LTBI treatment. Of these, almost half were recommended for preventative treatment after they were identified having recent contact with infectious TB through the contact follow-up process. Of the 59 individuals recommended for LTBI treatment, 11 (19%) completed an adequate course of treatment in 2012.

ANIMAL BITES

The number of reported animal bites in First Nations communities in Alberta increased between 2010 and 2012, although this is likely due to an increase in reporting (Figure 1.31). As animal bites become a greater burden on communities, awareness and reporting will probably continue to increase.

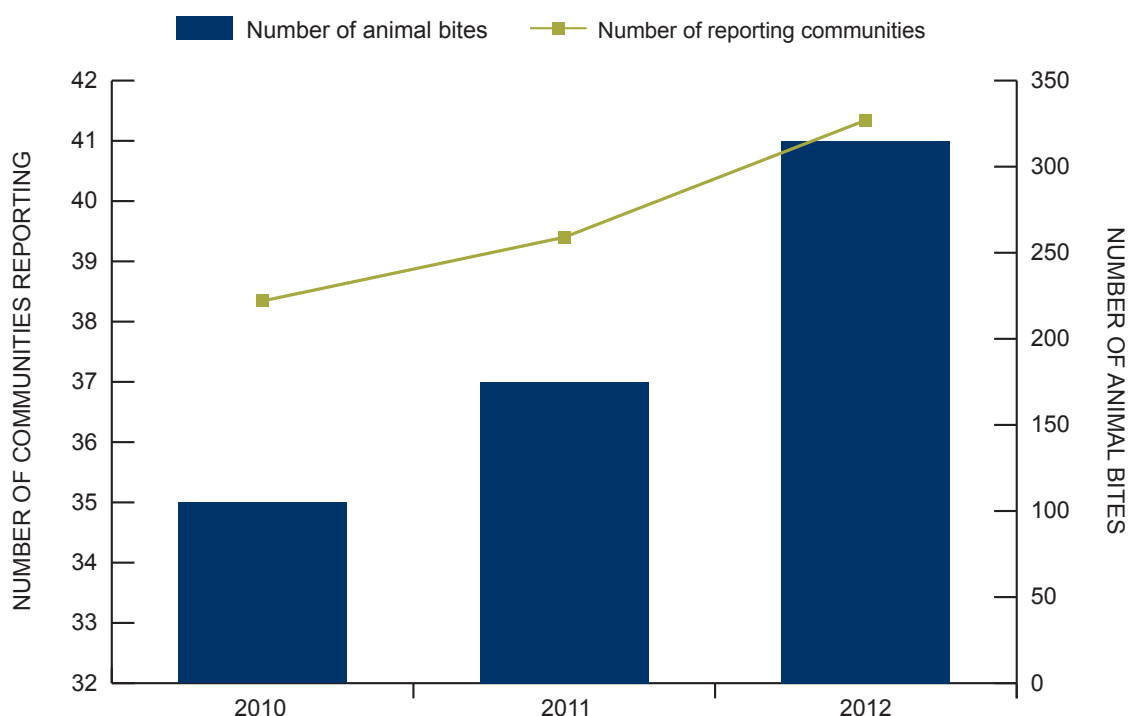
DATA SOURCE

Health Canada, First Nations and Inuit Health Branch – Alberta Region, Communicable Disease Control (CDC) Database.

DATA LIMITATION

This analysis includes only animal bite incidents reported to FNIHB-AB by health centre staff on-reserve in Alberta.

Figure 1.31: Number of reported animal bites and number of communities that reported animal bites in First Nations communities in Alberta, 2010–2012



N = 808.

Source: Health Canada, FNIHB – Alberta Region.

Overall, 808 animal bites were reported between 2010 and 2012. The most frequently reported animals involved were dogs and cats (84%). Where data on the type of animal were complete, 84% of these bites were from domestic animals.¹³

The majority (47%) of victims were adults, although 29% were children under 15 years of age. Males (overall 56%) were bitten more often than females across all age groups. As many as 98% of the cases involving victims under 15 years old were classified as provoked¹⁴.

Increased education and awareness about how to be safe around animals, particularly for younger individuals, is a recognized need that is being addressed in some communities.



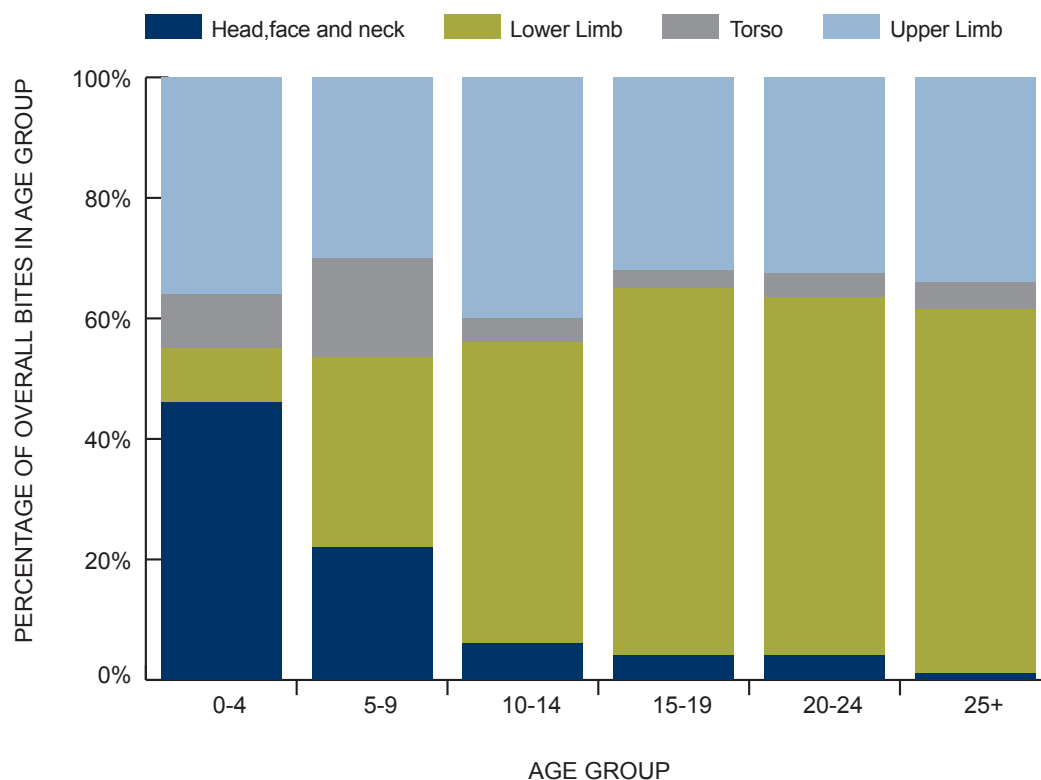
The proportion of injuries to head, face and neck decreases and the proportion of injuries to lower limbs increases as age increases (Figure 1.32). Children in the youngest age groups, 0–4 and 5–9 years, are most likely to be bitten in the head, face and neck, probably because of their smaller height. The fact that the majority of bites are classified as provoked indicates close proximity to the animal. Head, face and neck bites are of particular concern because of the potential severity of these injuries.

“Increased education and awareness around animals, particularly among younger individuals, is key to reducing the number of animal bites.”

¹³ n = 748 (excluded 61 that were unknown)

¹⁴ A case is classified as provoked when the animal responded within its nature with a defensive bite even if the individual may not have done anything intentionally to provoke the animal.

Figure 1.32: Site of animal bites in First Nations communities in Alberta, by age group, 2010–12



*n = 749 (8 injuries were excluded because of missing information).

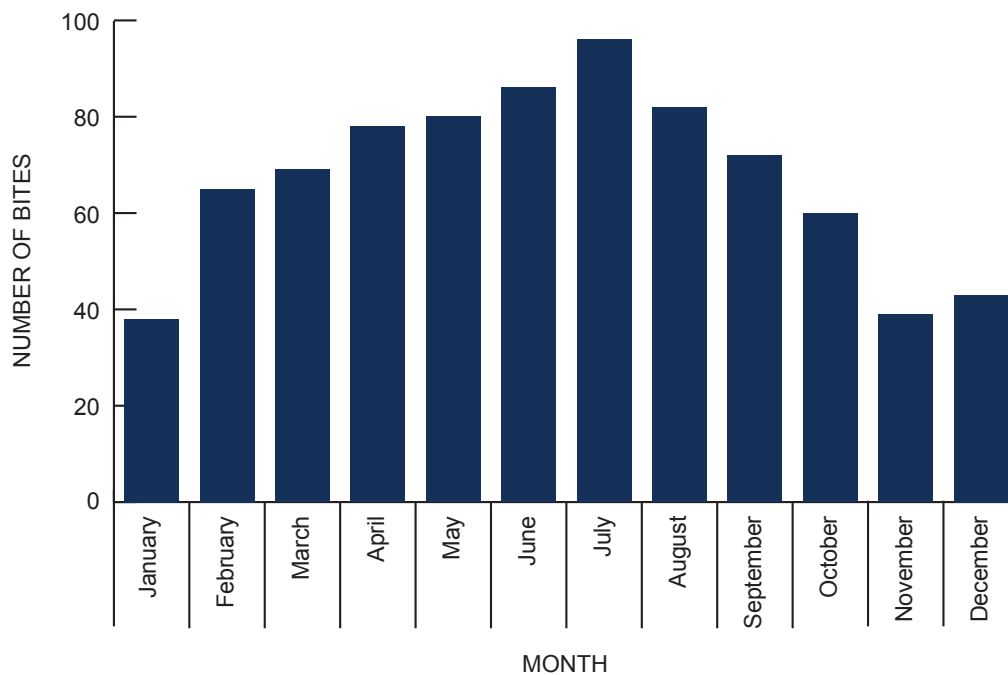
Source: Health Canada, FNIHB – Alberta Region.

Similar trends have been observed in numerous studies investigating animal bite injury sites and age¹⁵. The majority of injuries, regardless of age, were to the lower limbs (53%) and the upper limbs (34%).¹⁶

15 Health Surveillance and Epidemiology Division (Public Health Agency of Canada). *Injuries Associated with Non-Fatal Dog Bites*: Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) database, 1990–2003 (cumulative to January 2005), All ages, 13,921 records. Retrieved from www.phac-aspc.gc.ca/injury-bles/chirpp/pdf/CHIRPP_INJURY_BRIEF_DOG_BITE_update.pdf

16 53 injuries were excluded from this calculation because of missing information.

Figure 1.33: Number of reported animal bites in First Nations communities in Alberta, per month, 2010–12



n = 808

Source: Health Canada, FNIHB – Alberta Region

The number of animal bites peaked in July, and January had the lowest number of incidents (Figure 1.33). Overall, one-third (33%) of animal bites occurred in the summer months and just under one-third (28%) in the spring.

CHAPTER 2

Environmental Public Health

Both the natural and the built environments impact a person's ability to achieve and maintain good health. A healthy environment includes safe water, food, air and physical environments. It also includes, but is not limited to, properly designed, constructed and maintained housing and community facilities and effective treatment and disposal of wastewater and solid waste¹⁷. Environmental Public Health Services (EPHS) in Alberta Region works to identify, prevent and mitigate environmental public health risks that may impact the health of First Nations communities.

Working with the communities, Environmental Health Officers (EHOs) provide advice, guidance, education, public health risk assessments, inspections, investigations and recommendations to First Nations officials and community members. EHOs also work with the communities to assist in the management of public health risks associated with the environment.



¹⁷ Council of Managers–Environmental Health. (2001). A Common Reference System and Operational Standards for Alberta Regional Health Authority Environmental Health Programs. Retrieved from www.ciphi.ab.ca/Documents/Other/DC9_TheBlueBook.pdf

DATA SOURCES

- Environmental Public Health Information Suite (ELPHIS) Database, First Nations and Inuit Health Branch, Health Canada
- Canadian Network for Public Health Intelligence (CNPHI) Water Advisory Database, First Nations and Inuit Health Branch, Health Canada
- Hedgehog Inspection Database, First Nations and Inuit Health Branch, Health Canada.

DATA LIMITATIONS

- The total number of private water supplies in First Nations communities in Alberta cannot not be confirmed, so this report includes the results from the homes sampled.
- The manner in which private drinking water advisories (DWAs) are addressed is not standardized but left to the discretion of the EHO and community health staff. The priority is to notify users of possible adverse effects of the affected water supply and the necessary actions they need to take to protect health. Information about private DWAs was not included.
- Information from facility inspections is limited by how the data are coded in the database system. Currently, with the exception of housing inspections, information about the facility inspection results can only be reported at the facility level and not the regional level.
- House inspections are conducted on request. As such, the findings are not necessarily representative of overall public health housing conditions in First Nations communities in Alberta.



MAJOR ENVIRONMENTAL PUBLIC HEALTH OCCURRENCES

SALMONELLA HEIDELBERG OUTBREAK

In December 2012, a large, foodborne outbreak of *Salmonella heidelberg* in a First Nations community in Alberta resulted in 32 laboratory-confirmed cases of salmonellosis and 7 probable cases; 14 people were hospitalized due to the illness. The joint First Nations Inuit Health Branch / Alberta Health Services investigation determined that an unapproved caterer had prepared and provided food to multiple Christmas dinner events in the community between December 11 and December 23. The majority of cases had attended and consumed food at one or more of these events. A specific source of the outbreak (i.e. specific food) could not be identified.

This outbreak clearly highlights the importance of using approved caterers for public events. Companies or individuals preparing and providing food for such events must meet basic food safety standards. They need to be approved by FNIHB – EPHS (if the company/individual is based on-reserve) or Alberta Health Services (if the company/individual is based off-reserve). Organizers of public events where food is being provided are responsible for the event being catered by an approved caterer. (For more information on approved caterers, the approval process or safe food handler training, please contact your community EHO.)

“Preparing and providing food for events must meet basic food safety standards and approval by public health services.”

WILDFIRES

In 2012, 178 wildfires affected First Nations communities in Alberta (**Table 2.1**). Of these, wildfires affecting Dene Tha', Chipewyan Prairie and Little Red River Cree Nation (LRRCN) accounted for 69%, and affected hundreds of First Nation homes. FNIHB staff were involved in all these events in a variety of supportive roles.



Wildfire smoke can cause eye and respiratory tract irritation, reduced lung function, bronchitis, exacerbation of asthma and, in rare cases, premature death. Particulate matter and carbon monoxide from wildfire smoke are the chief pollutants of concern for the relatively short-term exposures (hours to weeks) typically experienced by the public. In several cases, entire communities were forced to relocate to smoke-free areas.

Leaving an area of thick smoke is a good protective measure especially for people with underlying and/or existing health conditions. However, it is often difficult to predict the duration, intensity and direction of smoke. EHOs issue Air Quality Advisories (AQA) to help keep communities up-to-date with information to protect their health during these events. AQAs are usually issued with input from local First Nations community officials, Alberta Health, Alberta Health Services and the Environment and Water Sustainable Resources Development agencies.

OTHER EMERGENCY EVENTS

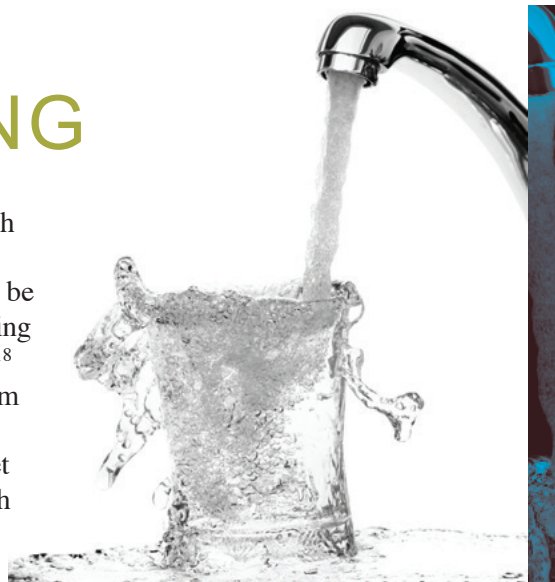
Other emergency events, such as the July 2012 flooding that affected the Enoch Cree Nation and the August 2012 severe storm that affected the Siksika First Nation, were also supported by FNIHB and EPHS staff. Emergencies are usually managed in partnership by the affected communities, the Alberta Emergency Management Agency and FNIHB's Health Protection staff. These partners worked in a co-ordinated manner to support First Nations communities' response during these 2012 events.

Table 2.1: Number of major natural public health occurrences in First Nations communities in Alberta, 2012

Treaty 6		Treaty 7		Treaty 8	
Community	Occurrence	Community	Occurrence	Community	Occurrence
Beaver Lake Cree Nation	3 wildfires	Blood Tribe	1 wildfire	Beaver First Nation	1 wildfire
Cold Lake First Nations	1 wildfire	Siksika Nation	Severe storm	Chipewyan Prairie First Nation	36 wildfires
Enoch Cree Nation	Flood	Stoney Tribe	11 wildfires	Loon River First Nation	3 wildfires
Heart Lake Nation	2 wildfires			Mikisew Cree First Nation	1 wildfire
O'Chiese First Nation	1 wildfire			Sucker Creek First Nation	1 wildfire
Sunchild First Nation	5 wildfires			Whitefish Lake First Nation (Atikameg)	6 wildfires
				Bigstone Cree Nation	8 wildfires
				Dene Tha' First Nation	35 wildfires
				Little Red River Cree Nation	51 wildfires
				Sturgeon Lake Cree Nation	1 wildfire
				Swan River First Nation	3 wildfires
				Woodland Cree First Nation	8 wildfires

DRINKING WATER SAFETY MONITORING

Access to safe drinking water is a basic need for good health. With growing populations and the stresses placed on drinking water supplies, safeguards such as routine water sampling/testing must be in place to prevent waterborne diseases. Implementation of a drinking water monitoring system is a component of multi-barrier approach¹⁸ shown to be the most effective way to manage drinking water from source to tap. Regular water sampling/testing, which includes bacteriological, disinfectant 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*¹⁹.



EHOs partner with key community individuals and organizations to maintain, provide and/or monitor safe drinking water in First Nations communities in Alberta. These include Chiefs and Councils, public works departments, water treatment plant operators, water truck drivers, community health representatives, circuit riders and Aboriginal Affairs and Northern Development Canada representatives.

WATER MICROBIOLOGICAL SAMPLING/TESTING FOR PUBLIC AND SEMI-PUBLIC SUPPLIES

All First Nations communities in Alberta are required to conduct scheduled²⁰ microbiological water sampling/testing²¹ of public²² and semi-public²³ water supplies at locations identified by an EHO in consultation with the band's community-based water team. Water sampling/testing at these sites is necessary to determine the safety of the drinking water and to support informed decisions that protect the public's health. All drinking water results are assessed by the EHO in accordance with the *Guidelines for Canadian Drinking Water Quality*²¹. For any adverse water results, the appropriate DWA is issued with the community health centre and the necessary actions are recommended to the community.

18 Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Environmental and Occupational Health and the Water Quality Task Group of the Canadian Council of Ministers of the Environment. *Multi-Barrier Approach*. Retrieved from www2.ccme.ca/sourcetotap/mba.html

19 Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. (2012). *Guidelines for Canadian Drinking Water Quality*. Retrieved from www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index-eng.php

20 All public water supplies are monitored on a weekly basis and semi-public water supplies monitored according to a set schedule. Semi-public water supplies include a wide range of water supply infrastructure that may be used sporadically and affect small populations. As a result, sampling is conducted according to a set schedule although not always at weekly intervals.

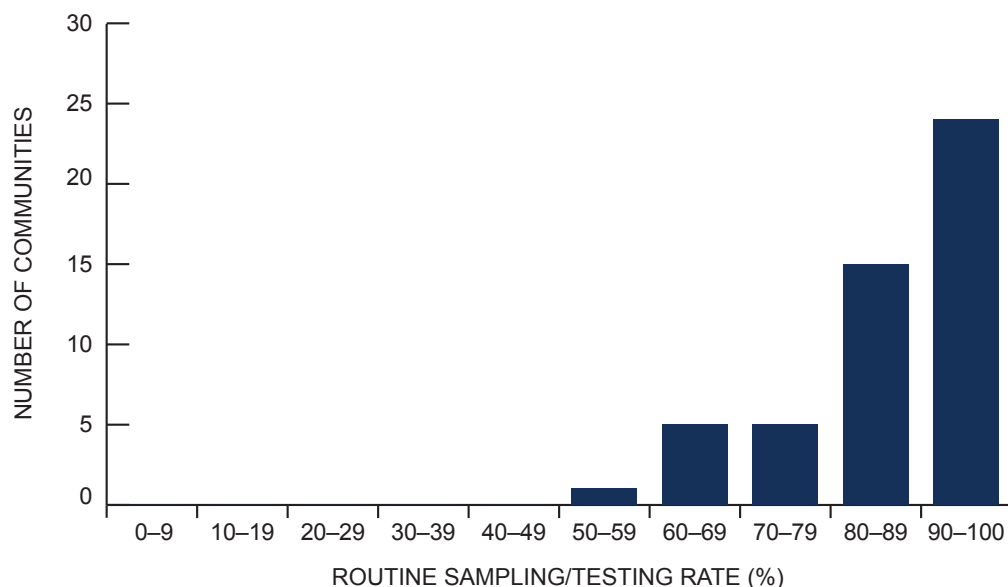
21 A microbiological water sample involves testing for total coliforms and *E.coli*.

22 A public water system is defined as drinking water that services more than 5 buildings or facilities and involves the distribution of water through pipes or other conveyances such as water trucks. This type of water supply typically serves from 50 to 1,000 people.

23 A semi-public water system provides water to the public for human consumption, potentially, but not necessarily, through pipes or other structures such as cisterns or wells. This type of water supply typically serves fewer than 50 people.

The rate of microbiological sampling/testing is used as the performance indicator for each community. The water sampling/testing rates are calculated by dividing the number of weeks a water supply was sampled by the number of weeks eligible²⁴ for sampling/testing that water supply. This rate has implications for public health as well as community funding. Figure 2.1 shows that about four-fifths of communities' water sampling/testing rates for public water supplies were above 80% and about half of communities' water sampling/testing rates were above 90%.

Figure 2.1: Distribution of microbiological sampling/testing rates for public water supplies, First Nations communities in Alberta, 2012–13



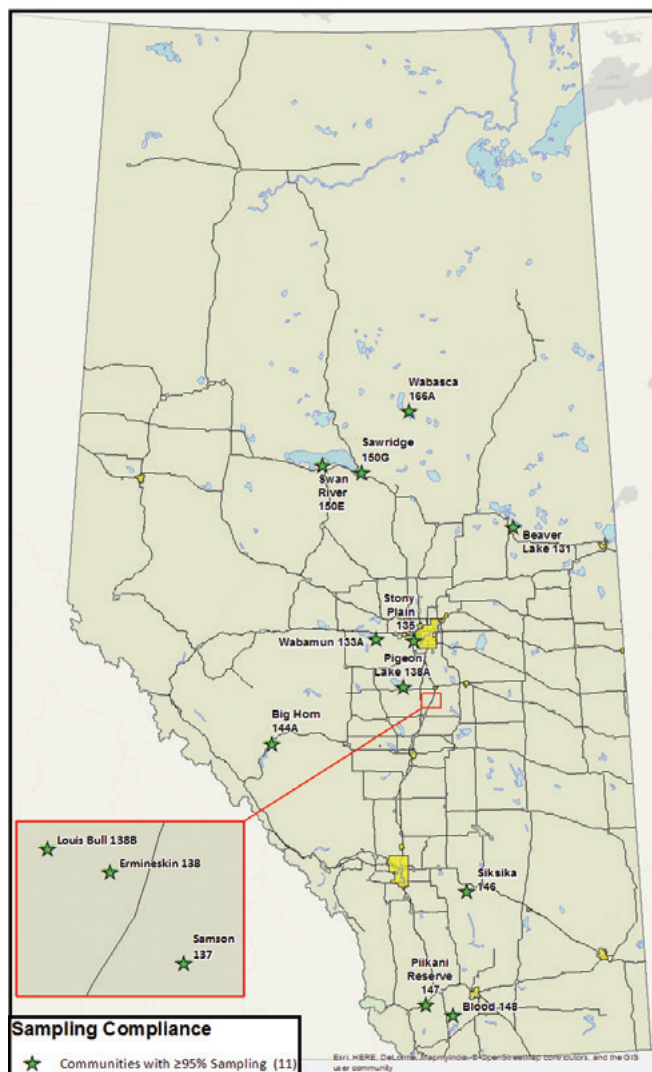
Source: Health Canada, FNIHB – Alberta Region, Drinking Water Quality Database via ELPHIS

Figure 2.2 shows the First Nations reserves that achieved 95% or more of routine sampling/testing for public water supplies as laid out in these microbiological sampling/testing schedules.

“Approximately half of communities' water sampling/testing rates were above 90%.”

²⁴ An eligible week is defined as a week in which the water supply is in active operation) and not on a DWA.

Figure 2.2: First Nations communities in Alberta achieving $\geq 95\%$ of routine water sampling/testing goals for public water supplies, 2012–13



Source: Health Canada, FNIHB – Alberta Region, Drinking Water Quality Database via ELPHIS

The individual water sampling/testing rates are averaged to reach the regional average. Table 2.2 shows the public water supply microbiological sampling/testing rates over the last three years. Even though these sampling/testing rates cannot be compared directly to the sampling/testing rate of 39% in 2003 because the calculation methods are different²⁵, they do show the tremendous success of the drinking water sampling program. Regional efforts, such as ongoing training and EHOs working directly with community-based water monitors, continue to support all First Nations to achieve a 100% sampling/testing rate.

²⁵ The described computation used to calculate sampling rates was modified for 2012–13. The updated method is now standardized nationally. The current calculation differs from previous Alberta Region First Nations Health Status Reports and cannot be compared directly.

Table 2.2: Levels of microbiological sampling/testing for public water supplies, First Nations communities in Alberta, 2010–12

Fiscal year	Percentage of required routine sampling/testing achieved
2010–11	87%
2011–12	88%
2012–13	89%

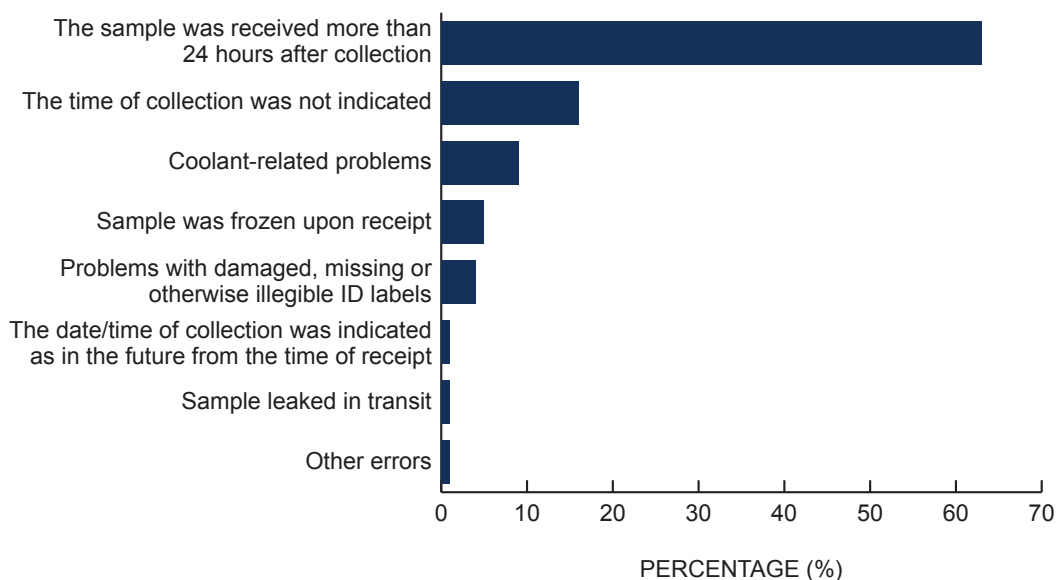
Source: Health Canada, FNIHB - Alberta Region, Drinking Water Quality Database via ELPHIS.

MICROBIOLOGICAL SAMPLES “NOT TESTED”

The Alberta Provincial Laboratory for Public Health (ProvLab) follows protocols for receipt and handling of samples in order to meet accreditation standards. Samples must meet certain criteria to be suitable for testing or else they are rejected.

In 2012–13, of the routine water samples, 693 (4% of the total) submitted to ProvLab were not tested. Of these, 63% were not tested because they had been received more than 24 hours after collection. This highlights the ongoing logistical challenges posed by the existing courier system that transports the samples to the ProvLab. Efforts are under way to find solutions to the specific courier issues that are tailored to community needs.

Figure 2.3: Reasons for not testing microbiological routine samples, First Nations communities in Alberta, 2012–13



N = 693 samples.

Other errors= empty coolers delivered, empty sample bottles, and general errors.

Source: Health Canada, FNIHB – Alberta Region, Drinking Water Quality Database via ELPHIS.

WATER MICROBIOLOGICAL SAMPLING/TESTING FOR PRIVATE WATER SUPPLIES

A private water supply (a well or cistern) serves a single residence, building, lot or workplace. Approximately two-thirds of the homes in First Nations communities in Alberta are served by private water supplies. 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 supplies regularly is critical for monitoring bacteria or other physical and chemical contaminants. Bacteriological water testing monitors levels of total coliforms and *E. coli*, which, if present, indicate contaminated water.

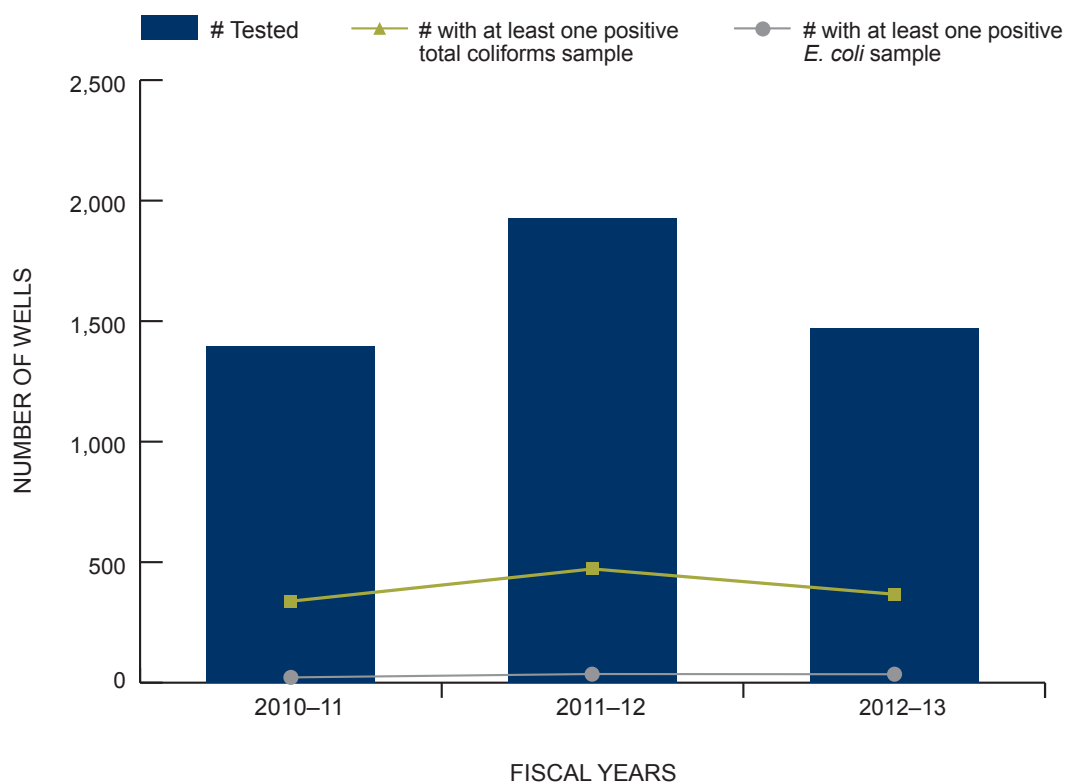
Table 2.3, **Figure 2.4**, and **Figure 2.5** show the number and percentage of private well and cistern samples that had at least one positive result for total coliforms and *E. coli*. Of those houses that had at least one test, 25% serviced by wells and 24% serviced by cisterns were positive for total coliforms; 2% of the houses on wells and 3% of the homes on cisterns also tested positive for *E. coli*.

Table 2.3: Summary of sampling/testing in private water supplies in First Nations communities in Alberta, 2012–13

Water system type	Number of houses with private water supply tested	Number and percentage of houses with at least one positive total coliform test		Number and percentage of houses with at least one positive test for total coliform and at least one positive <i>E. coli</i> test	
		Number	Percentage	Number	Percentage
Well	1471	367	25%	35	2%
Cistern	1697	411	24%	43	3%

Source: Health Canada, FNIHB – Alberta Region, Drinking Water Quality Database via ELPHIS.

Figure 2.4: Microbiological sampling/testing of wells in private water supplies in First Nations communities in Alberta, 2010–13



Source: Health Canada, FNIHB - Alberta Region, Drinking Water Quality Database via ELPHIS.

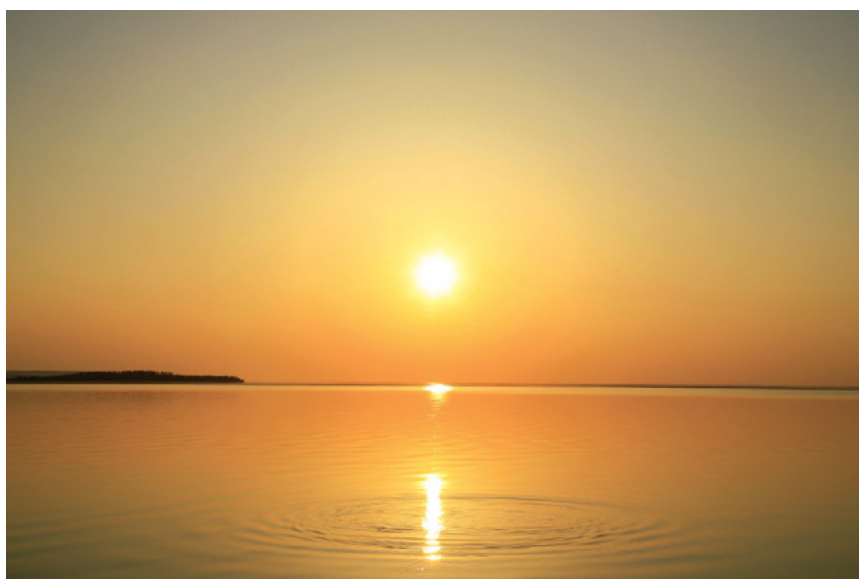
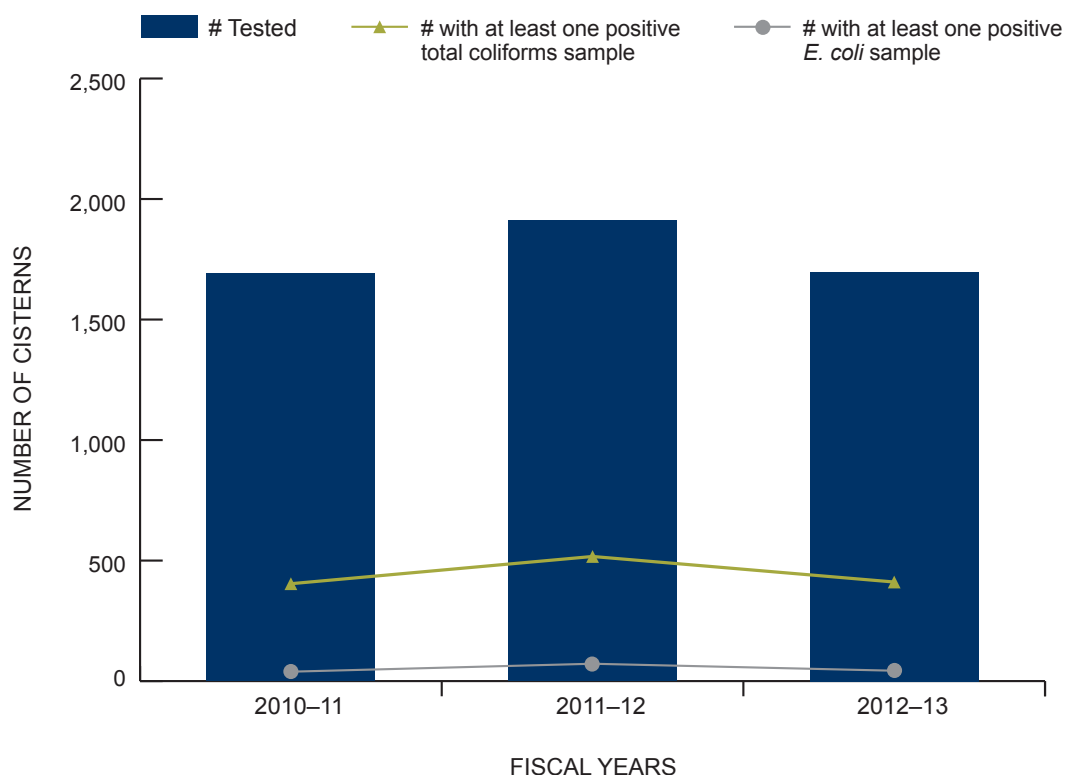


Figure 2.5: Microbiological sampling/testing of cisterns in private water supplies in First Nations communities in Alberta, 2010–13



Source: Health Canada, FNIHB - Alberta Region, Drinking Water Quality Database via ELPHIS.

WATER CHEMICAL SAMPLING/TESTING FOR PUBLIC WATER SUPPLIES

Chemical sampling/testing of public water supplies is scheduled to take twice per year in First Nations communities, ideally once in the summer and once in the winter. Parameters for chemical water sample tests are listed in the *Guidelines for Canadian Drinking Water Quality*. Scientific research has established safe maximum acceptable concentrations of these chemicals and, in most cases, these are set to a level of consumption for a lifetime (70 years).

In 2012–13, a total of 78 public water supplies were scheduled to be sampled: of these 71 (91%) were sampled twice and 7 (9%) sampled once. Steps are being taken to achieve the recommended sampling frequency.

DRINKING WATER ADVISORIES (PUBLIC AND SEMI-PUBLIC WATER SUPPLIES)

DWAs are issued by EHOs to notify the public about what to do when drinking water supplies are not completely safe. A DWA can be in one of three forms:

- boil-water advisory (BWA)
- do-not-consume/drink advisory (DNC)
- do-not-use advisory (DNU)

In 2012–13, a total of 63 DWAs (58 BWAs, 2 DNCs and 3 DNUs) were issued in 26 First Nations communities in Alberta. Thirty-five were new advisories and 28 were carried forward from previous years. Twenty-eight DWAs were related to public water supplies and 35 for semi-public water supplies.

“63 drinking water advisories occurred in 26 First Nations communities in 2012–13.”

Table 2.4 shows that the number of advisories decreased from 86 in 2011–12 to 63 in 2012–13. This decrease is mainly due to fewer DWAs in effect for public water supplies with a surface water source in 2012–13 as compared to the previous year.

Table 2.4: Drinking water advisories in First Nations communities in Alberta, 2004–12

Fiscal year	Number of DWAs	Number of communities
2004–05	54	21
2005–06	54	23
2006–07	51	23
2007–08	52	22
2008–09	50	27
2009–10	41	24
2010–11	72	31
2011–12	86	34
2012–13	63	26

Abbreviation: DWA = drinking water advisory.

Source: Health Canada, FNIHB - Alberta Region, Drinking Water Advisory Database via CNPHI.

The map in Figure 2.6 shows the First Nations communities in Alberta that had at least one DWA in 2012–13, by drinking water type. Advisories are associated with a specific water system and may not affect the entire community. Note that if a community is not shown on the map, it was not subject to any DWAs in 2012–13.

Figure 2.6: First Nations communities in Alberta with drinking water advisories, by drinking water supply type, 2012–13



Source: Health Canada, FNIHB - Alberta Region, Drinking Water Advisory Database via CNPHI

REASONS FOR THE 2012–13 DRINKING WATER ADVISORIES

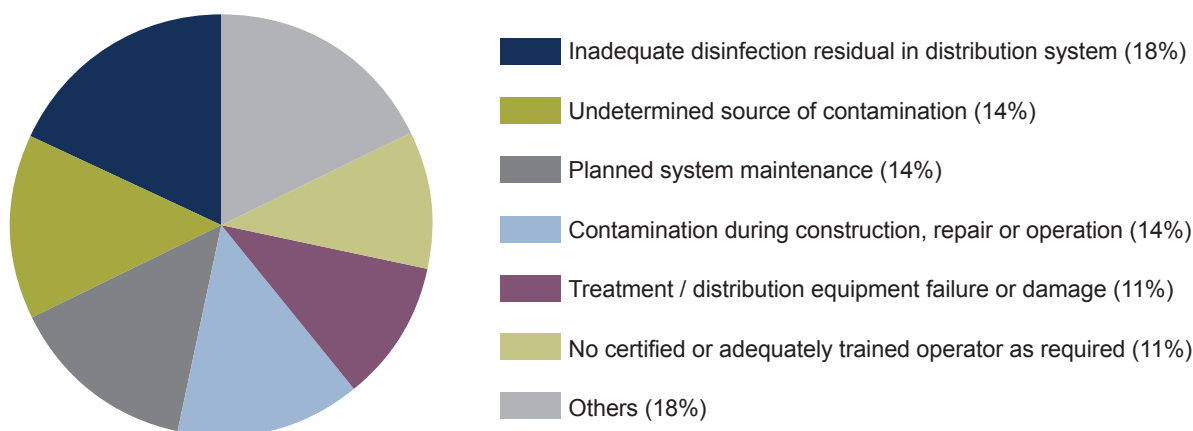
A DWA can be issued for operational issues and/or water quality issues. Operational issues refer to the failure of equipment and/or processes normally involved in the safe production of drinking water. Water quality issues refer to findings in the treated water and are quite often the result of operational issues. For example, if a chlorine pump fails (an operational issue), the water would be ineffectively disinfected and bacteria may be present (water quality issue).

The factors that lead to DWAs for public or semi-public water supplies differ. For example, DWAs issued for total coliforms were found primarily in semi-public versus public water supplies (89% vs. 36%, respectively).

PUBLIC WATER SUPPLY DRINKING WATER ADVISORIES

The single greatest operational contributor to DWAs in public water supplies was inadequate disinfection residuals in the line. Other reasons are outlined in Figure 2.7.

Figure 2.7: Drinking water advisories in public water supplies in First Nations communities in Alberta, by operational reason, 2012–13



n = 28 advisories.

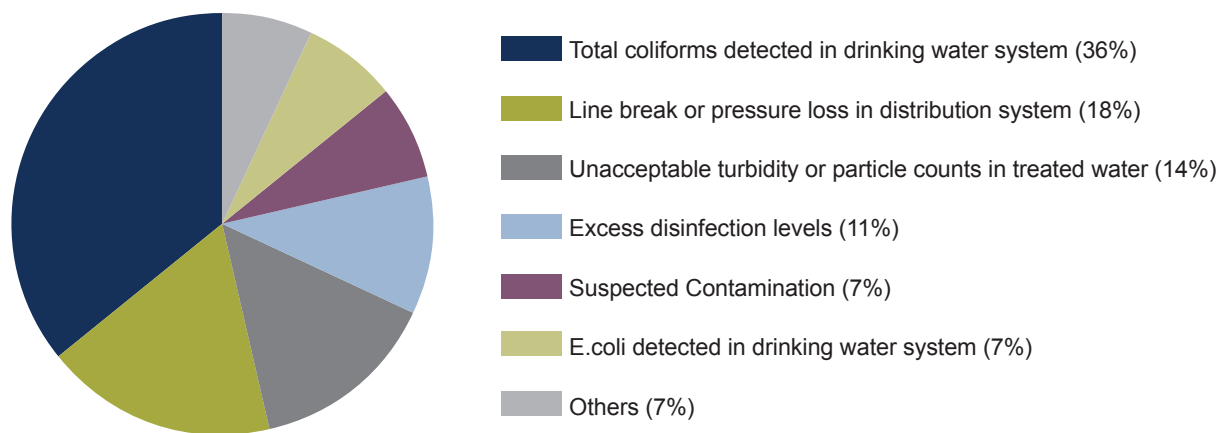
Others = treatment unable to cope with significant deterioration in source water quality, power outage resulting in system pressure loss or reduced storage of treated water, no or inadequate disinfection at the treatment plant, and damaged or inadequately maintained cistern or holding tank.

Source: Health Canada, FNIHB – Alberta Region, Drinking Water Advisory Database via CNPHI.

Of the water quality indications for DWAs in public water supplies, 36% were due to total coliforms in the drinking water supply (**Figure 2.8**). However, line breaks or pressure loss found in the distribution system (18%) also contributed to many DWAs.

Operational issues related to the storage, treatment and distribution of drinking water are, in most cases, the root causes for compromised water quality. Total coliforms in the drinking water system in public supply types often result from inadequate disinfection residual in the distribution system. Similarly, line breaks or loss of pressure in the distribution system occur as a result of treatment/distribution failure or planned system maintenance.

Figure 2.8: Drinking water advisories in public water supplies in First Nations communities in Alberta, by water quality reason, 2012–13



n = 28 advisories.

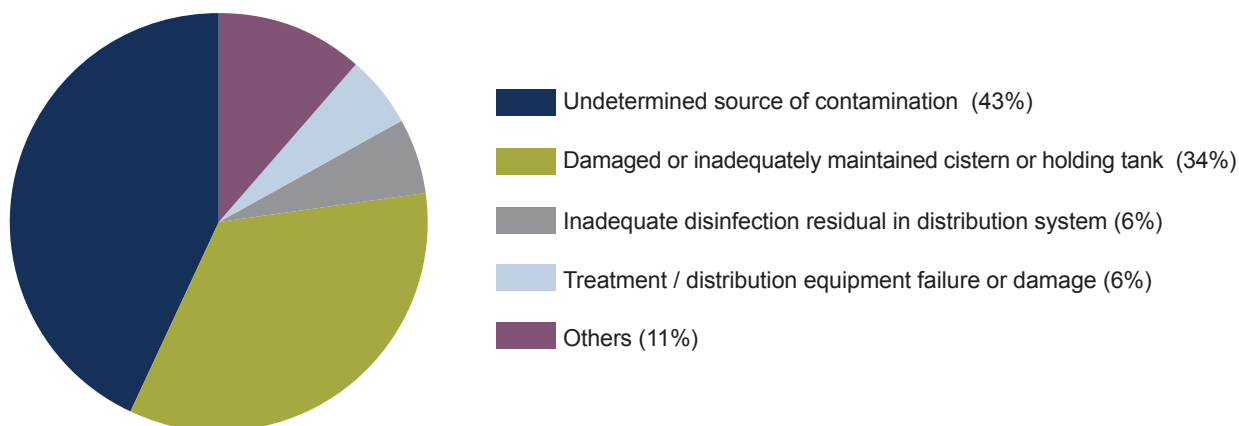
Others = insufficient quantity and exceedance of MAC or drinking water standard where MAC = maximum acceptable concentration. This is a health-related parameter set out in the *Guidelines for Canadian Drinking Water Quality*.

Source: Health Canada, FNIHB – Alberta Region, Drinking Water Advisory Database via CNPHI.

SEMI-PUBLIC WATER SUPPLIES DRINKING WATER ADVISORIES

In 2012–13, a total of 35 DWAs were related to semi-public water supply types. **Figure 2.9** illustrates the frequency of the operational reasons for these DWAs. A damaged or inadequately maintained cistern or holding tank accounted for 34% of operational reasons. The predominant water quality issue was detection of coliform bacteria in the drinking water system (89%) (**Figure 2.10**), often a result of damage to a cistern and undetermined source of contamination (77%).

Figure 2.9: Drinking water advisories in semi-public water supplies in First Nations communities in Alberta, by operational reason, 2012–13

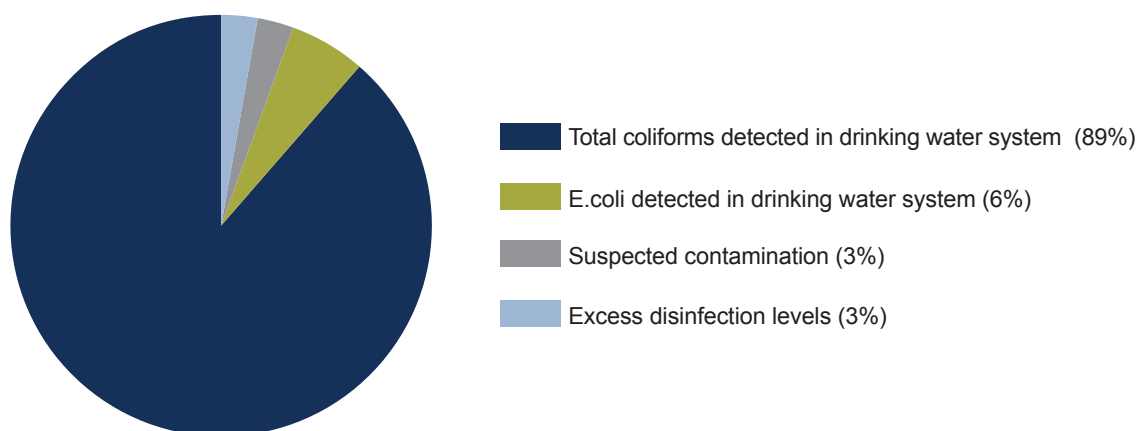


n = 35 advisories.

Others = damaged well components, does not meet monitoring requirements, no or inadequate disinfection at the treatment plant, and treatment/distribution system failure.

Source: Health Canada, FNIHB – Alberta Region, Drinking Water Advisory Database via CNPHI.

Figure 2.10: Drinking water advisories in semi-public water supplies in First Nations communities in Alberta, by water quality reason, 2012–13



n = 35 advisories.

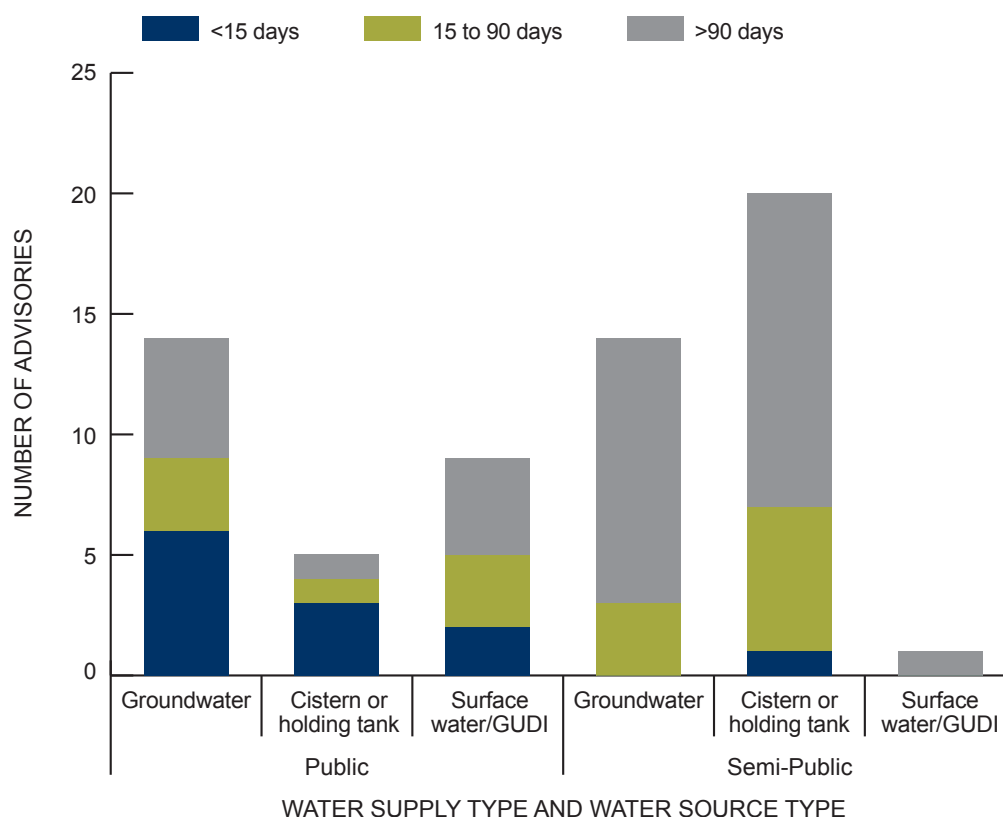
Abbreviation: *E. coli* = *Escherichia coli*.

Source: Health Canada, FNIHB – Alberta Region, Drinking Water Advisory Database via CNPHI.

DURATION OF DRINKING WATER ADVISORIES AND WATER SOURCES

Figure 2.11 shows the number of DWAs for various water source types as well as the duration of advisories.

Figure 2.11: Drinking water advisories in First Nations communities in Alberta, by type and source of water supply and duration of advisory, 2012–13



n = 63 advisories.

Abbreviation: GUDI = groundwater under the direct influence of surface water.

Source: Health Canada, FNIHB – Alberta Region, Drinking Water Advisory Database via CNPHI.

The underlying reasons for issuing DWAs for different water sources vary:

- The 10 DWAs issued for surface water²⁶ and groundwater under the direct influence of surface water (GUDI) occurred mainly because of failure or damage to the treatment/distribution equipment and an undetermined source of contamination.
- Twenty-five advisories were issued for cisterns. Note that a cistern can have water from a surface or ground water treatment plant. DWAs in 2012–13 associated with cisterns all had surface water as the source. Operational issues with cisterns predominantly related to damage or inadequate maintenance to the cistern. While standards exist for the installation, operation and maintenance of cisterns, challenges remain with their use, mainly because they are prone to cracking and/or leaking due to weather/environmental conditions (freeze/thaw cycles, settling) as well as surface contamination. The installation of a cistern is seen in the photograph below.

²⁶ Water that is open to the atmosphere, such as that in rivers, lakes, streams, creeks or reservoirs.

The duration²⁷ of the public water supply advisories ranged from one to 1690 days (eleven lasted less than 15 days, seven lasted 15 to less than 90 days and ten lasted for 90 days or more), with the median duration 29 days. Advisories lasted longer for semi-public supplies compared to public supplies (median 365 days versus 29 days, respectively). This may be attributed to the larger number of carried-forward DWAs for semi-public water supplies. Factors affecting the number and duration of DWAs in semi-public water supplies may include:

- Less attention paid to smaller supplies during construction;
- Issues with public water supplies may take higher priority over those with semi-public water supplies because they generally serve a larger population;
- Semi-public water supplies often serve a business or organization that may not have sufficient funding to address the issue;
- Semi-public water supplies may not be regularly maintained;
- Access to contractors may be difficult depending on the location. For example, remote communities may find it more difficult to access contractors than First Nations communities situated closer to major cities/towns.
- Semi-public water supplies are most commonly supplied by cisterns or wells. Cisterns, in particular, are prone to contamination if not properly installed and/or maintained. Surface runoff and soil can enter cisterns and wells through improperly sealed joins, cracks, and/or missing/broken lids and vents. As the access opening is most often above ground, animals can potentially access the cistern. Wells may be contaminated due to a contaminated aquifer, cracked well casings, missing cover, etc. A well head without a cap and a damaged cistern cover are seen in the photographs below.



A cistern installation



Wells without caps (as shown) risk contamination of the supply as the water is accessible to animals, soil and runoff.



Cisterns must be properly maintained to prevent contamination. Runoff and soil can enter through a damaged cover (shown) and contaminate the water supply.

The data in this section demonstrate that operational issues clearly affect the drinking water quality in First Nations communities in Alberta, highlighting the need for preventative maintenance and measures to correct issues related to equipment failure, an underlying cause for many DWAs.

²⁷ The number of days for which an advisory is issued.

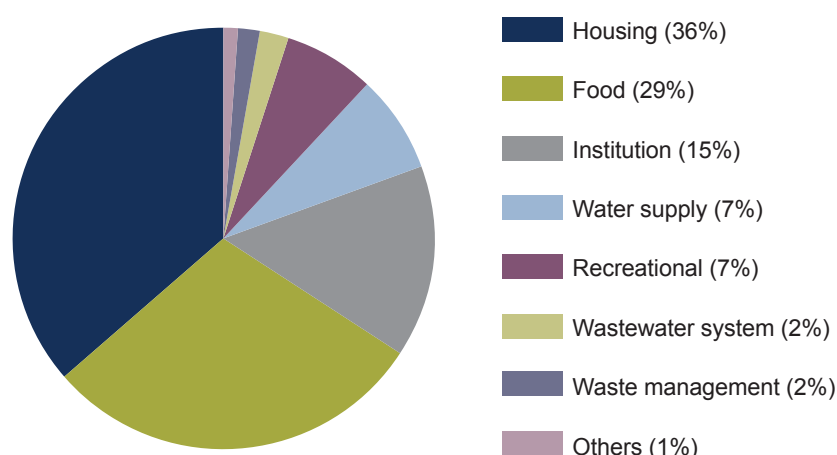
ENVIRONMENTAL PUBLIC HEALTH INSPECTIONS

Environmental health officers (EHOs) carry out public health inspections in First Nations communities. EHOs work in coordination with health centre and other community staff from band departments, such as Public Works and Housing.

Inspections of facilities are routinely conducted in accordance with the *Alberta Public Health Act* standards and regulations and as outlined in community-specific environmental public health work plans. The Act and its supporting regulations are used as guides for minimum requirements to protect the health and safety of the public.

A total of 1,883 facility inspections were carried out in 2012–13, compared to 2,092 in the previous fiscal year. Figure 2.12 illustrates the types of facilities inspected by EHOs in the communities in 2012–13, with housing (36%) and food facilities (29%) constituting the majority (65%) of the inspections.

Figure 2.12: Distribution of facility inspections conducted in First Nations communities in Alberta, by type, 2012–13



n = 1,883 inspections.

Others = animal and aquatic facilities, personal services, worksites, and special events.

Source: Health Canada, First Nations and Inuit Health Branch – Alberta Region via Hedgehog Inspection Database.

“1,883 inspections, mainly of housing and food facilities, were carried out in 2012–13.”

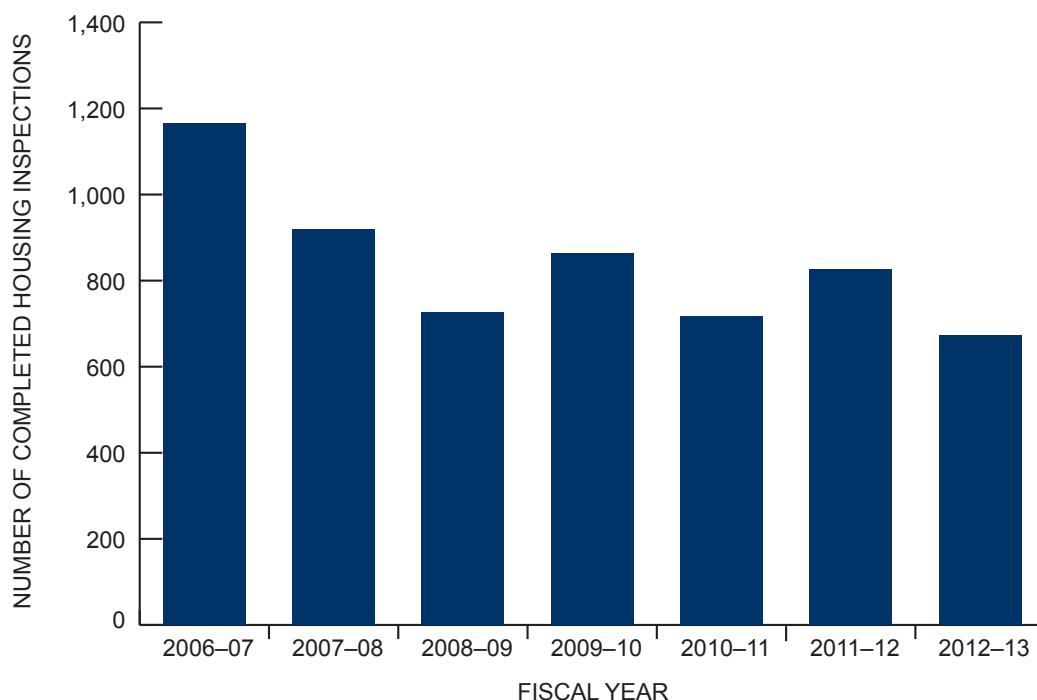
HOUSING INSPECTIONS

The Ottawa Charter for Health Promotion²⁸ lists shelter or housing as a prerequisite for improving health.

In First Nations communities, housing inspections are carried out only upon request²⁹. Currently no enforcement mechanisms are in place for ensuring compliance with Minimum Housing and Health Standards³⁰ in First Nations communities. Consequently, once a housing inspection is completed, it is the purview of the First Nations communities and the resident(s) to address identified issues.

In 2012–13, a total of 673 housing inspections were completed in First Nations communities in Alberta. Figure 2.13 shows trends over time for the total number of housing inspections.

Figure 2.13: Housing inspections* in First Nations Communities in Alberta, 2006–13



* These inspections include those completed as a result of major events, such as flooding, and investigations into a housing complex containing asbestos (2006).

Source: Health Canada, First Nations and Inuit Health Branch – Alberta Region via Hedgehog Inspection Database.

28 World Health Organization, Health and Welfare Canada, Canadian Public Health Association. (1986). *Ottawa Charter for Health Promotion*. Ottawa. Retrieved from www.who.int/healthpromotion/conferences/previous/ottawa/en/

29 Housing inspections are completed based on requests/complaints, which results in the number varying from year to year. PSDS inspections are also completed only upon notification and request from a First Nations community.

30 Alberta Health. (2013). *Minimum Housing and Health Standards*. Retrieved from www.health.alberta.ca/documents/Standards-Housing-Minimum.pdf

Over half (58%) of housing deficiencies are related to exterior (31%) and interior (27%) structural issues (Table 2.5). When exterior deficiencies are not addressed, they may lead to interior structural issues in a house.

Table 2.5: Deficiencies observed in housing inspections in First Nations communities in Alberta, 2012–13

Observation category	Number of observations*	Percentage of all observations†
Exterior	981	31
Structure (interior)	837	27
Mould	271	9
Wastewater system	201	6
Ventilation system	150	5
Water system	149	5
Pest control	122	4
Heating system	106	3
Electrical system	90	3
Occupancy, design, indoor air quality	82	3
Required appliances/fixtures	76	2
Operational	55	2
Structure/equipment and sewage disposal	18	1

n = 3,138 deficiencies.

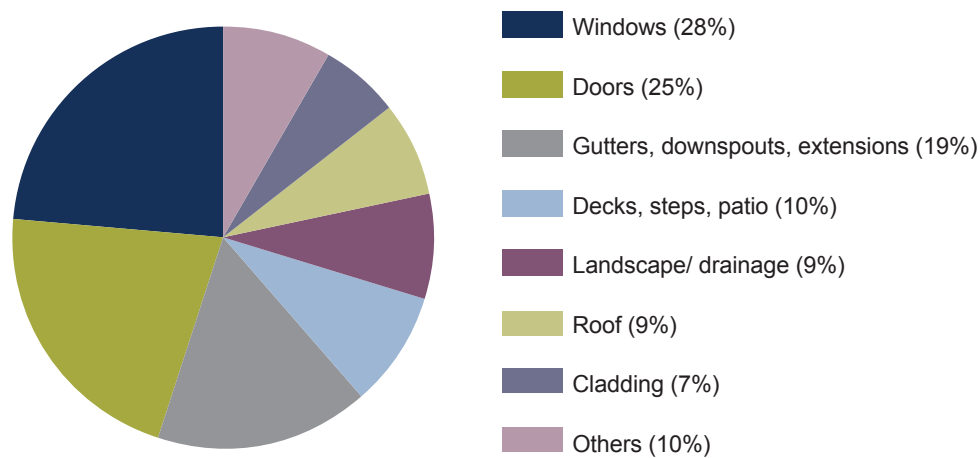
* An observation may be reported more than once in a home (e.g., structural damage at two different places in the same home) so the number of observations exceeds the number of inspections.

† May not add to 100% due to rounding.

Source: Health Canada, First Nations and Inuit Health Branch – Alberta Region via Hedgehog Inspection Database.

Deficient windows (28%), doors (25%), gutters/downspouts/extensions (19%) and decks/steps/patios (10%) made up 82% of all observations related to the exterior of a house (**Figure 2.14**). Of public health concern is moisture coming into a building through improperly functioning and damaged windows, doors, gutters, downspouts and extensions. Moisture inside the house may cause building materials to deteriorate and mould to grow. These deficiencies pose health and safety concerns and require targeted prevention measures.

Figure 2.14: Exterior deficiencies observed during housing inspections in First Nations communities in Alberta, 2012–13



n = 981 deficiencies.

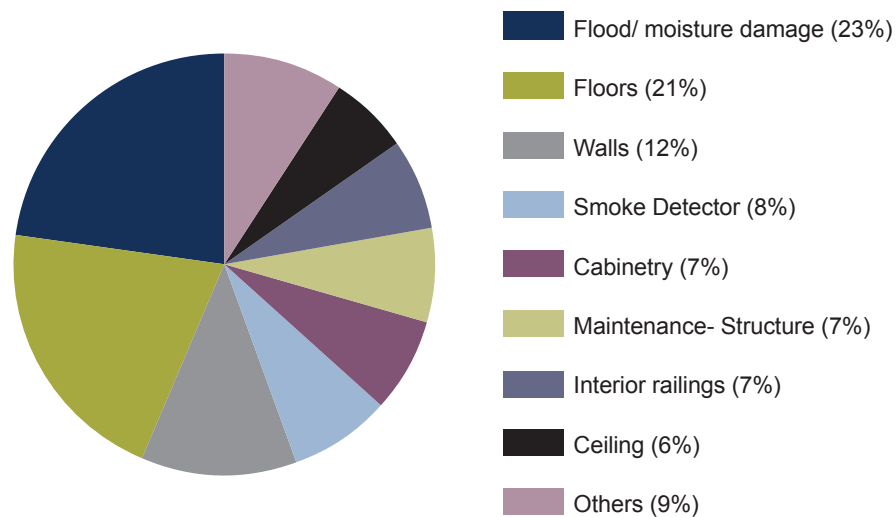
Others = soffits, fascia, water (service, outside cisterns), chimney, sewage (treatment and disposal), attic vents, porch (enclosed), solid waste disposal, and outbuildings.

Source: Health Canada, First Nations and Inuit Health Branch – Alberta Region via Hedgehog Inspection Database

Just over half (56%) of the interior housing deficiencies observed were due to flood/moisture damage (23%), as well as problems with floors (21%) and walls (12%) (Figure 2.15). These deficiencies may all be related to exterior deficiencies and/or to one another and may result in the further rapid deterioration of building materials and place the health of occupants at risk.

“Housing remains a significant public health issue that requires multi-stakeholder intervention and commitment.”

Figure 2.15: Interior deficiencies observed during housing inspections in First Nations communities in Alberta, 2012–13



n = 837 deficiencies.

Others = crawlspace, cooking facilities, stairs, window size (egress), barrier free design (accessibility), emergency egress, and attic.

Source: Health Canada, First Nations and Inuit Health Branch – Alberta Region via Hedgehog Inspection Database

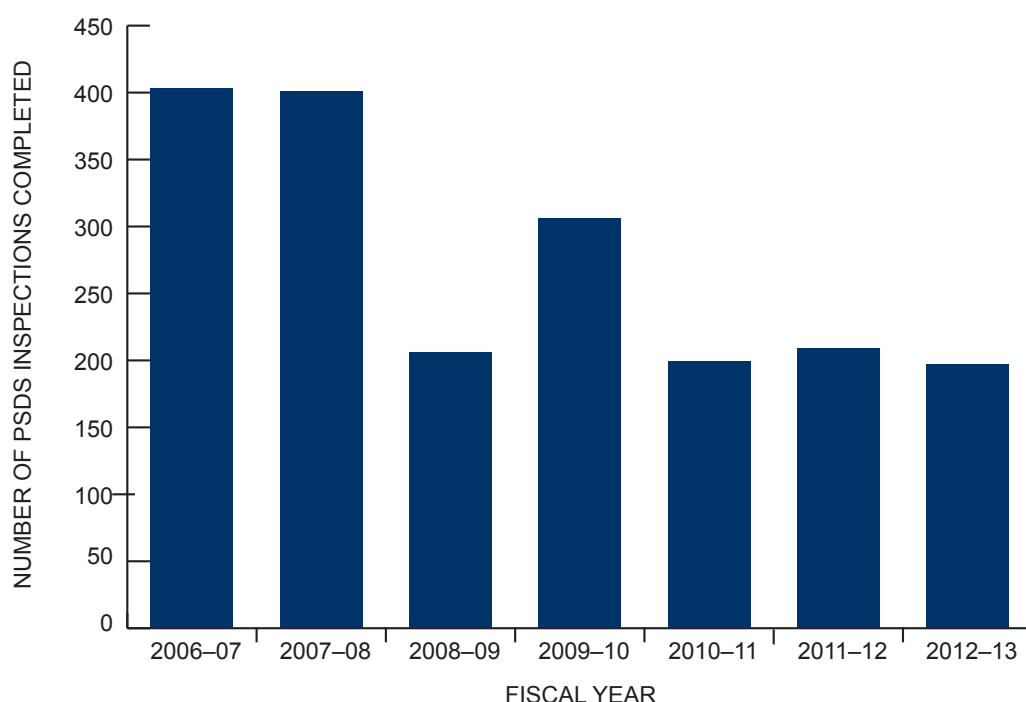
There continues to be a significant lack of implementation of the corrective actions recommended in the EHOs' public health inspection reports. Housing remains a significant public health issue that requires multi-stakeholder intervention and commitment to work towards a sustainable healthy on-reserve housing program.

PRIVATE SEWAGE DISPOSAL SYSTEMS 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, from pre-site to final installation inspection, for each location.

In 2012–13, 197 PSDS inspections were completed in First Nations communities in Alberta. Figure 2.16 shows trends over time for the number of private sewage and disposal system installation inspections completed.

Figure 2.16: Number of private sewage disposal system inspections completed in First Nations communities in Alberta, 2006–12



Abbreviation: PSDS = private sewage disposal system.

Source: Health Canada, First Nations and Inuit Health Branch – Alberta Region via Hedgehog Inspection Database.

APPENDIX

APPENDIX 1: FIRST NATIONS AND INUIT HEALTH BRANCH – ALBERTA REGION RECOMMENDED ROUTINE IMMUNIZATION SCHEDULE

Age	Vaccine
2 months	› Diphtheria, Pertussis, Tetanus, Polio, Hib › Meningococcal › Pneumococcal
4 months	› Diphtheria, Pertussis, Tetanus, Polio, Hib › Meningococcal › Pneumococcal
6 months	› Diphtheria, Pertussis, Tetanus, Polio, Hib › Pneumococcal
12 months	› Measles, Mumps, Rubella, Chicken pox › Meningococcal › Pneumococcal
18 months	› Diphtheria, Pertussis, Tetanus, Polio, Hib
4–6 years	› Diphtheria, Pertussis, Tetanus, Polio › Measles, Mumps, Rubella, Chicken pox
Grade 5	› Hepatitis B › Human Papillomavirus (girls only*)
Grade 9	› Diphtheria, Pertussis, Tetanus › Tetanus and diphtheria every ten years

* As of fall 2014, the human papillomavirus vaccine is offered to all students, male and female, attending Grade 5 on-reserve in Alberta.

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OTHER REPORTS AND RESOURCES FROM FIRST NATIONS AND INUIT HEALTH BRANCH – ALBERTA

First Nations Health Status Report, Alberta Region 2009–10

http://publications.gc.ca/collections/collection_2011/sc-hc/H26-4-2010-eng.pdf

First Nations Health Status Report, Alberta Region 2010–11

http://publications.gc.ca/collections/collection_2012/sc-hc/H26-4-2011-eng.pdf

First Nations Health Status Report, Alberta Region 2011–12

http://publications.gc.ca/collections/collection_2013/sc-hc/H26-4-2012-eng.pdf

Alberta On-Reserve Health Services and Programs

http://publications.gc.ca/collections/collection_2012/sc-hc/H34-256-2012-eng.pdf

