

Nov 2017

# Northern Saskatchewan Health Indicators

## Health Status: Communicable Diseases



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Refer to *A Guide to the Reports: Understanding the Presentation of Data* for an explanation of the variety of ways data is presented.

Suggested reference: Irvine J, Ndubuka N, Quinn B. Northern Saskatchewan Health Indicators, Health Status: Communicable Diseases. Athabasca Health Authority, Keewatin Yatthé Health Region, Mamawetan Churchill River Health Region, Population Health Unit and Prince Albert Grand Council, Meadow Lake Tribal Council, Peter Ballantyne Cree Nation, Lac La Ronge Indian Band, Northern Inter-Tribal Health Authority, 2017.

Copies of this document and related reports can be downloaded from the Population Health Unit website [www.populationhealthunit.ca](http://www.populationhealthunit.ca) or [www.nitha.com](http://www.nitha.com)

## Key Messages

### Chlamydia and Gonorrhea

- Between 2007 and 2016, northern Saskatchewan's crude rate of Chlamydia ranged between 2,438 and 2,968 cases per 100,000 population. This was approximately 8 to 12 times the Canadian rate. Between 2007 and 2016, AHA and KYHR had higher age-standardized rates than the north while MCRHR had a lower rate.
- Between 2007 and 2016, northern Saskatchewan's crude rate of gonorrhea was between 489 and 1,387 cases per 100,000 population. This was approximately 14 to 36 times greater than the Canadian rate. Similar to chlamydia rates, AHA and KYHR had gonorrhea rates that were higher than the north, while MCRHR had a lower rate.
- Age-specific rates across northern Saskatchewan for both chlamydia and gonorrhea tend to be higher in the 15-29 year age groups, particularly in females. The higher rates in females in these age groups may be due to increased screening related to their interaction with the health care system during routine check-ups for prenatal care, contraceptive counselling, Pap smear screening or other related services.

### HIV

- The number of newly diagnosed cases of HIV has shown some fluctuations between 2007 and 2016 in the northern Saskatchewan population. On average there were 8 newly diagnosed cases of HIV per year between 2007 and 2011, which doubled to an average of 16 cases between 2012 and 2016.
- The crude rate of newly diagnosed HIV in the northern Saskatchewan population remains elevated compared to the province. The provincial HIV rate increased until a peak occurred in 2009 before decreasing in subsequent years. The peak arrived in northern Saskatchewan several years later in 2012. The increase in 5-year average rates between 2007-2011 and 2012-2016 was seen in both KYHR and MCRHR, with close to an overall doubling of cases in the northern population.
- Between 2007 and 2016 there were 1.7 times more cases of newly diagnosed HIV in males compared to females in the northern population. The highest rates were seen in the 30-49 year old age group.
- Many individuals newly diagnosed with HIV reported one or more potential risk factors for HIV acquisition. For the purpose of reporting, individuals can be assigned a specific risk factor based on a national hierarchy<sup>1</sup>. Using this hierarchy, the two most common risk factors for HIV acquisition identified in the northern Saskatchewan population between 2007 and 2016 were heterosexual contact and injection drug use.

## Hepatitis C

- The crude rate of newly diagnosed hepatitis C in northern Saskatchewan shows yearly fluctuations, but since 2012 remains elevated compared to the province. In 2016, the crude rate in northern Saskatchewan was 110 cases per 100,000 population, 1.8 to 3.7 times the rate of Saskatchewan and Canada, respectively.
- The increase in 5-year average rates between 2007-2011 and 2012-2016 was seen across the northern regions, with an increase of 65% in absolute numbers overall in northern Saskatchewan.
- Between 2007 and 2016 there were 30% more cases of newly diagnosed hepatitis C in males compared to females in the northern Saskatchewan. The highest rates in males were in the 25-29, 30-34 and 45-49 year old age groups, whereas the highest rates in females were in 25-29, 30-34 and 35-39 year old age groups.

## Tuberculosis

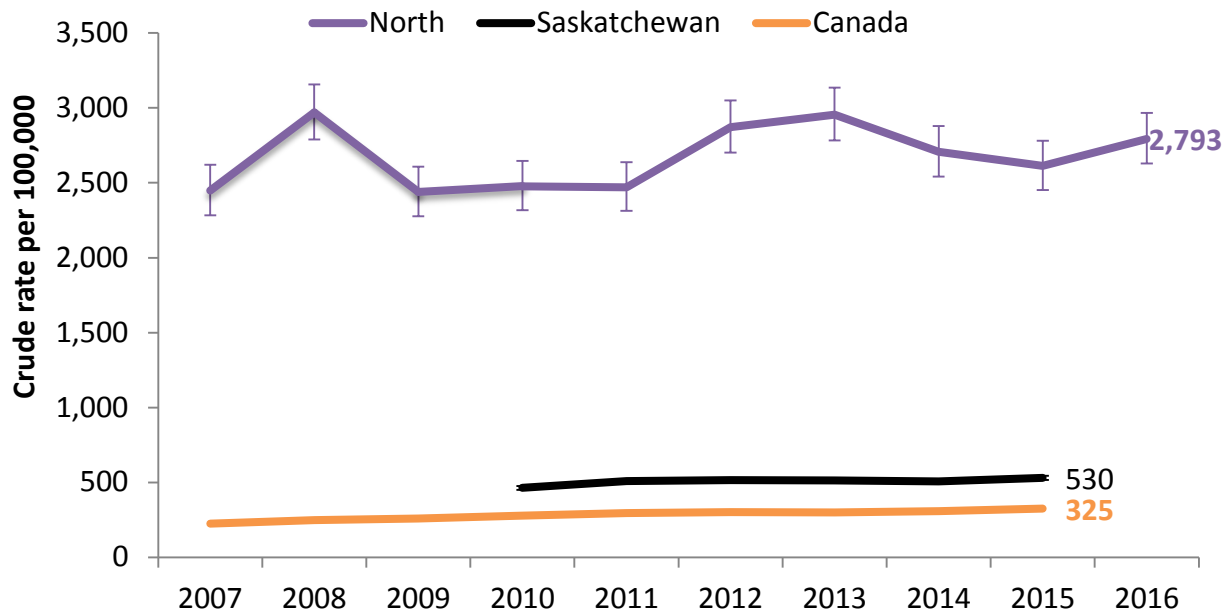
- Between 2004 and 2016 there has been a trend for declining crude rates of new and relapsed TB in the northern Saskatchewan population. Compared to the province, rates in northern Saskatchewan remain significantly higher, ranging between 11 and 22 times greater.
- The decrease in 5-year average rates in the northern Saskatchewan population between 2007-2011 and 2012-2016, is mainly due to decreases in the AHA and KYHR rates over the same time period.
- Between 2007 and 2016 males had slightly higher rates of TB than females overall although this varied between age groups. Males had higher rates in the 0-4, 12-19, and 20-64 age groups, whereas females had higher rates in the 5-11 and 65 & over age groups.

## Other Communicable diseases

- There are many other diseases that are also reportable to the Medical Health Officer in each region, including Vaccine Preventable Diseases (e.g. Pertussis), Respiratory diseases (Pneumococcal – invasive), and Enteric diseases (e.g. Salmonellosis). Many of these diseases have large fluctuations from year to year in the total number of cases seen in the northern Saskatchewan population. Between 2007 and 2016 diseases that had higher rates in northern Saskatchewan included pertussis, pneumococcal-invasive, streptococcal A-invasive, salmonellosis, shigellosis. On the other hand, the rate of campylobacteriosis was higher in the province than in northern Saskatchewan.

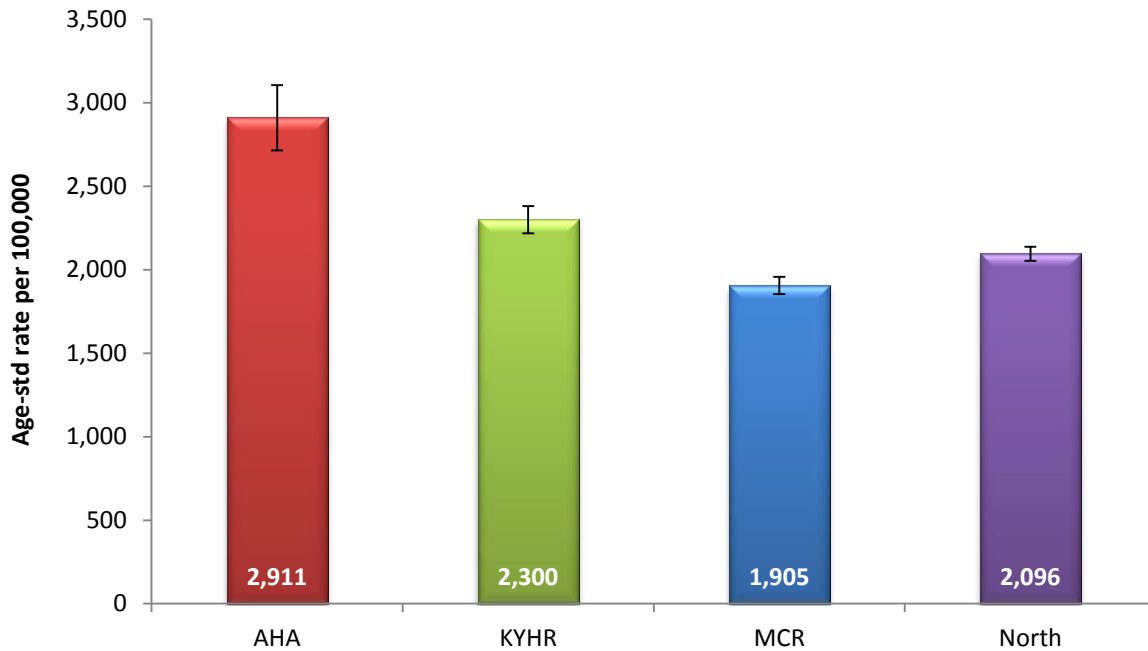
## Chlamydia

**Figure 1: Crude chlamydia rate, northern Saskatchewan on and off-reserve, Saskatchewan and Canada, 2007-2016**



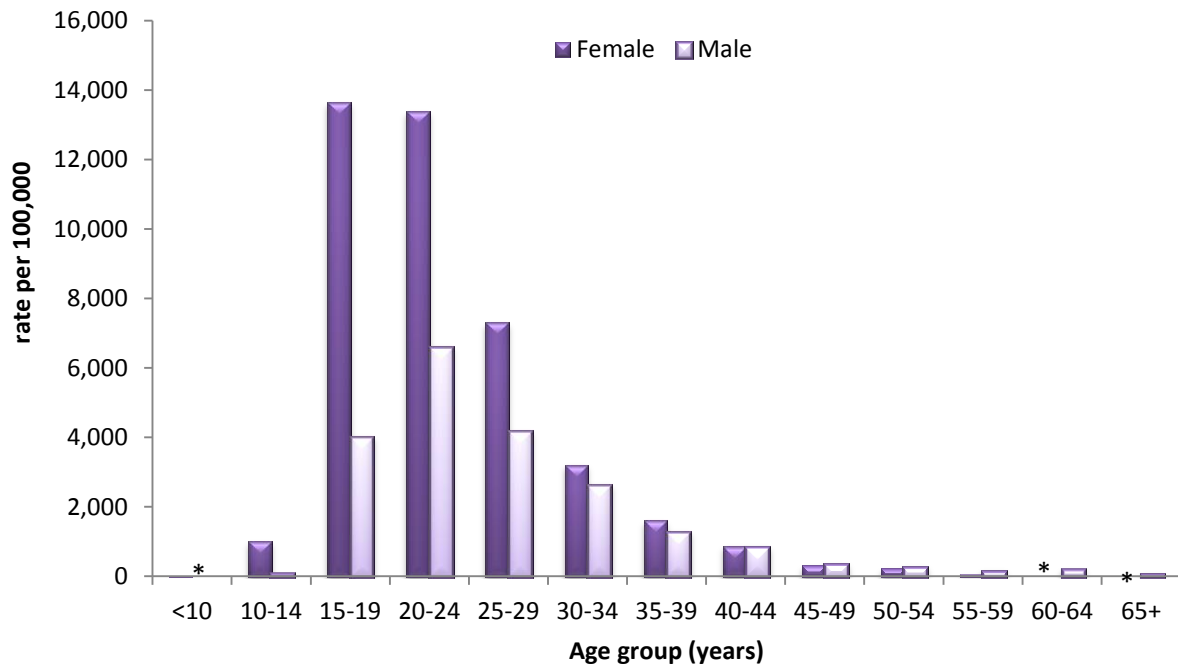
Source: PHU-NITHA (iPHIS pulled 2017) , Government of Canada (Notifiable Disease Charts) , Saskatchewan annual incidence summary report 2010-2014 & 2011-2015, Prepared by PHU-NITHA July 2017

**Figure 2: Age-standardized chlamydia rate, 10-year average, by northern Saskatchewan health authority, on and off-reserve, 2007-2016**



Source: NITHA-PHU (iPHIS pulled 2017) , Prepared by PHU-NITHA July 2017

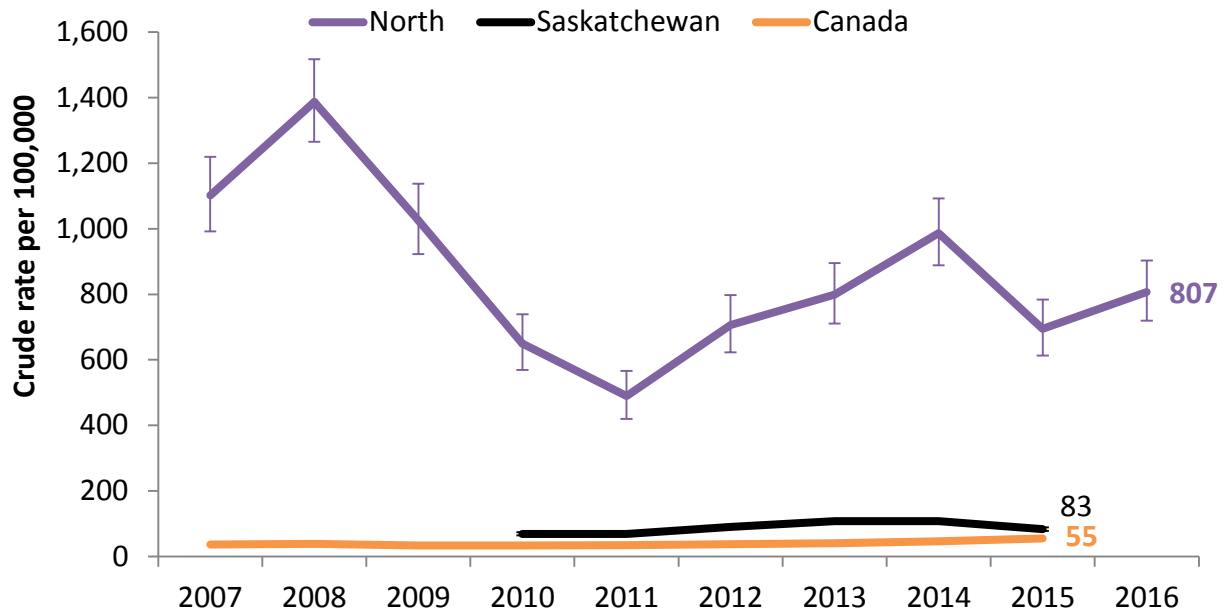
**Figure 3: Age-specific chlamydia rates by sex, 10-year average, northern Saskatchewan on and off-reserve, 2007-2016**



Source: NITHA-PHU (iPHIS pulled 2017) , Prepared by PHU-NITHA July 2017

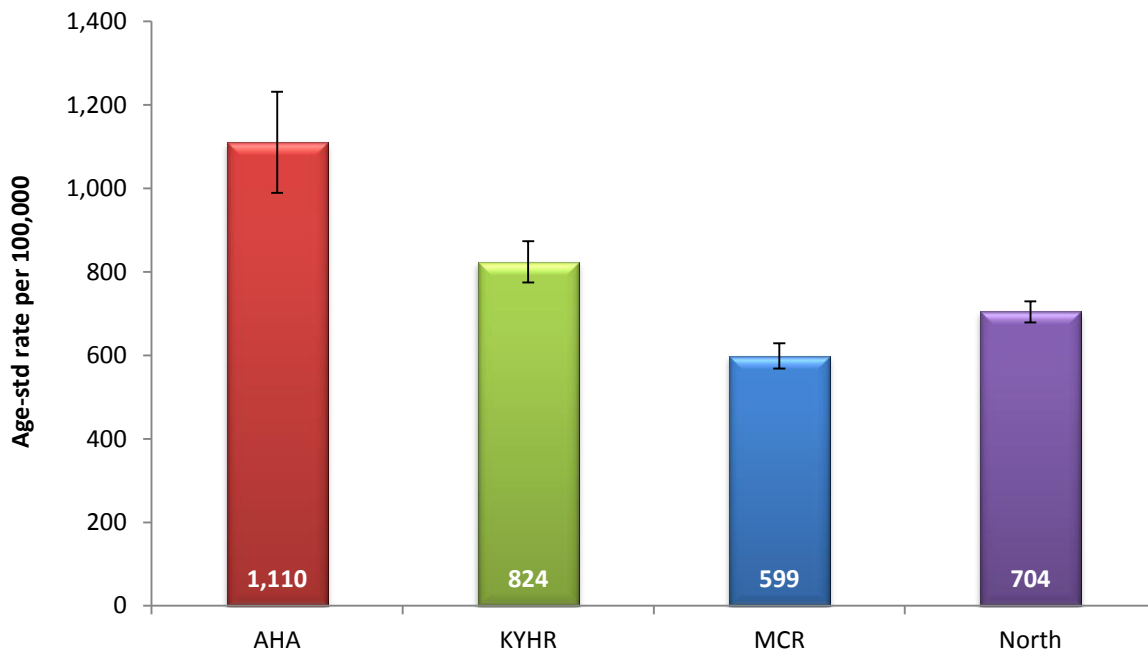
## Gonorrhea

**Figure 4: Crude gonorrhea rate, northern Saskatchewan on and off-reserve, Saskatchewan and Canada, 2007-2016**



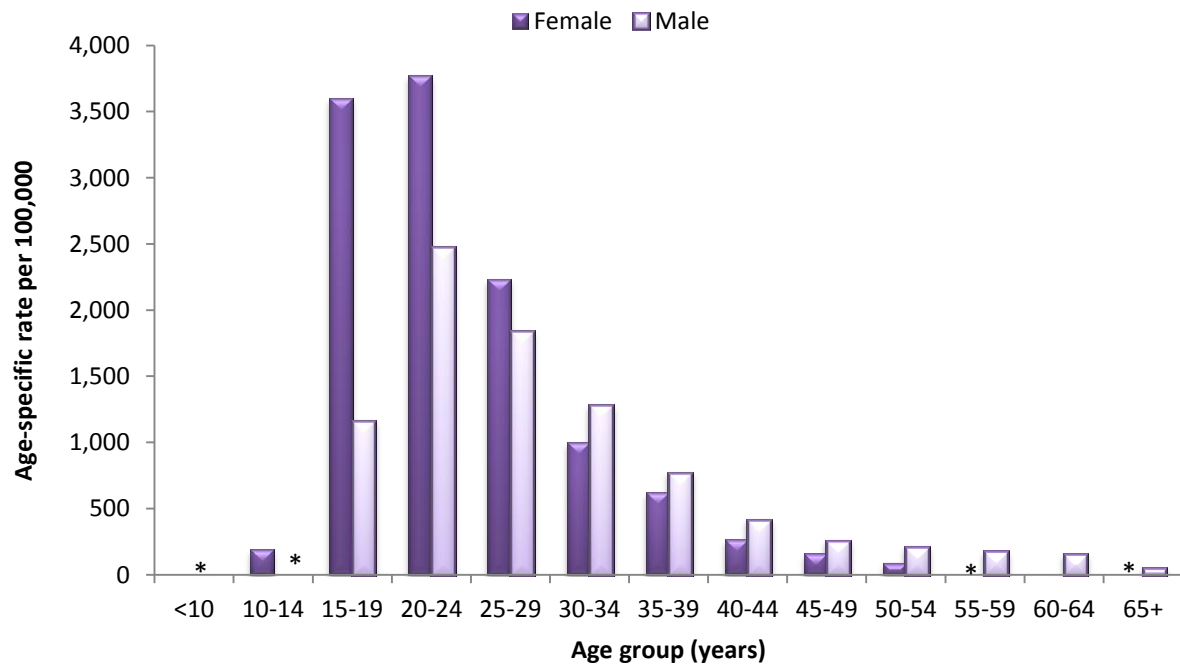
Source: PHU-NITHA (iPHIS pulled 2017) , Government of Canada (Notifiable Disease Charts) , Saskatchewan annual incidence summary report 2010-2014 & 2011-2015, Prepared by PHU-NITHA July 2017

**Figure 5: Age-standardized gonorrhea rate, 10-year average, by northern Saskatchewan health authority, on and off-reserve, 2007-2016**



Source: NITHA-PHU (iPHIS pulled 2017) , Prepared by PHU-NITHA July 2017

**Figure 6: Age-specific gonorrhea rates by sex, 10-year average, northern Saskatchewan on and off-reserve, 2007-2016**

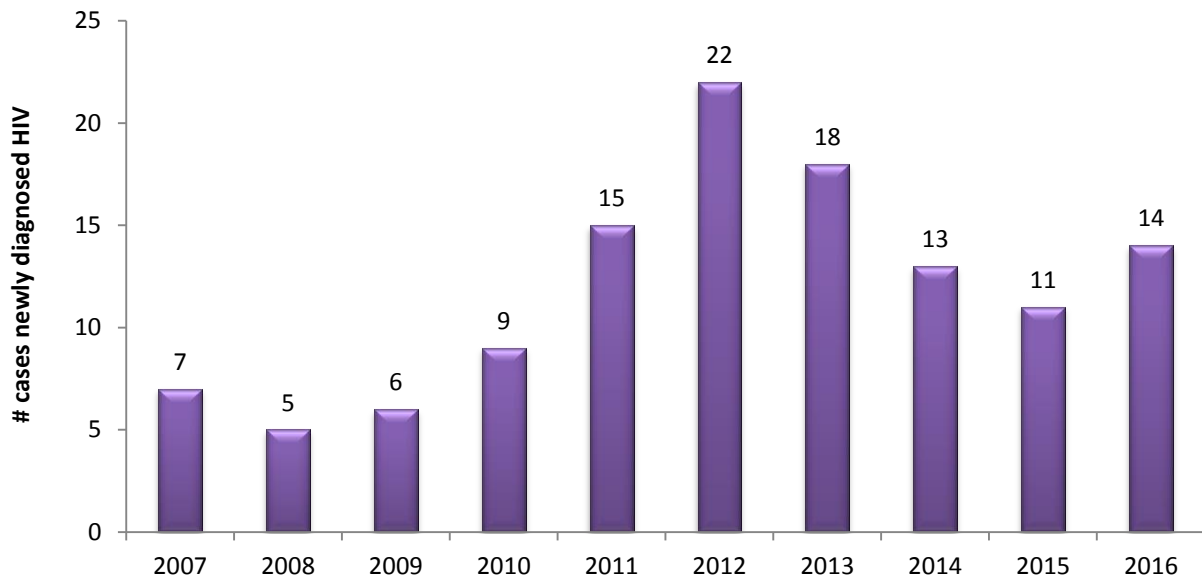


Source: PHU-NITHA (iPHIS pulled 2017) , Prepared by PHU-NITHA July 2017



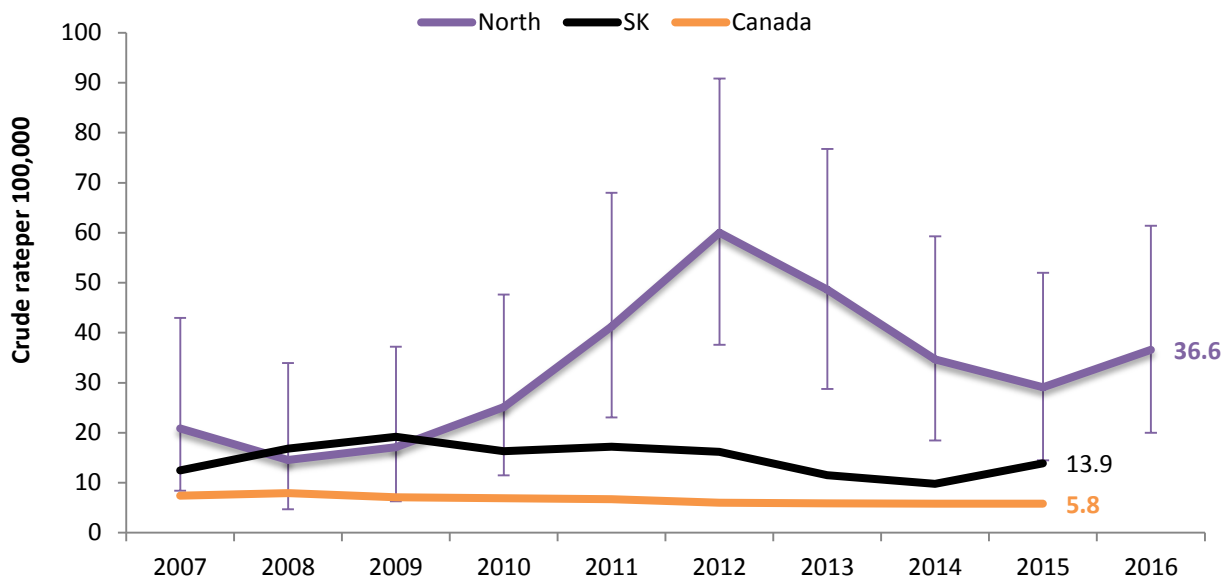
## Human Immunodeficiency Virus (HIV)

**Figure 7: Number of newly diagnosed HIV cases, on and off-reserve, northern Saskatchewan 2007-2016**



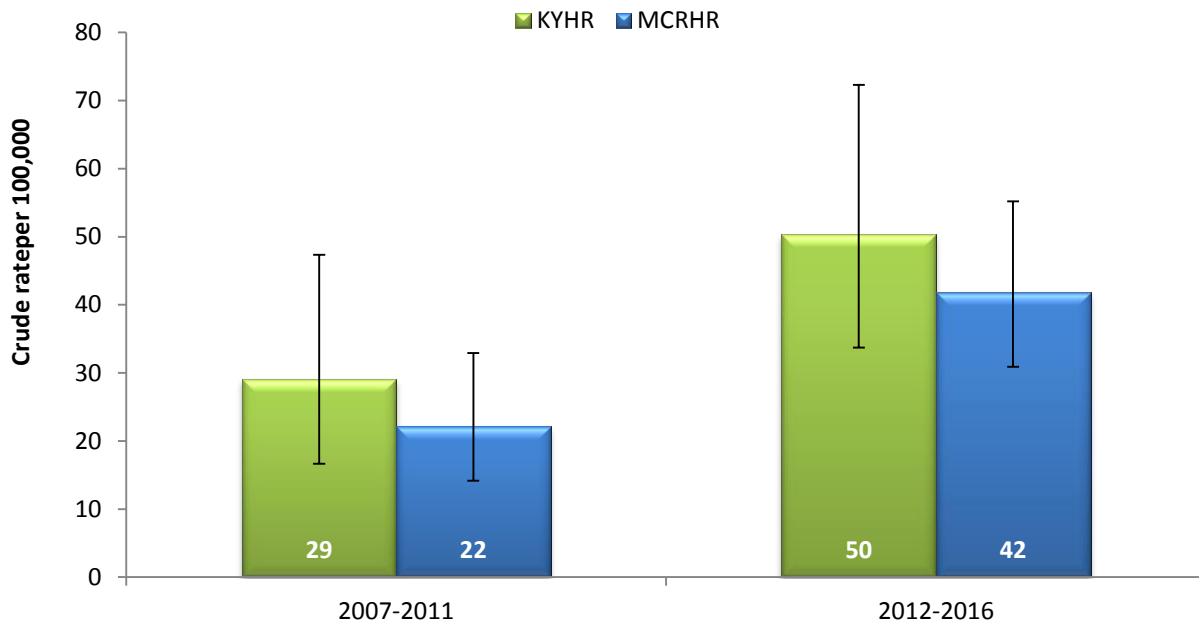
Source: PHU-NITHA (iPHIS pulled 2017) , SK HIV prevention and control program report for 2015. Prepared by PHU-NITHA July 2017

**Figure 8: Crude rate newly diagnosed HIV, northern Saskatchewan on and off-reserve, Saskatchewan and Canada, 2007-2016**



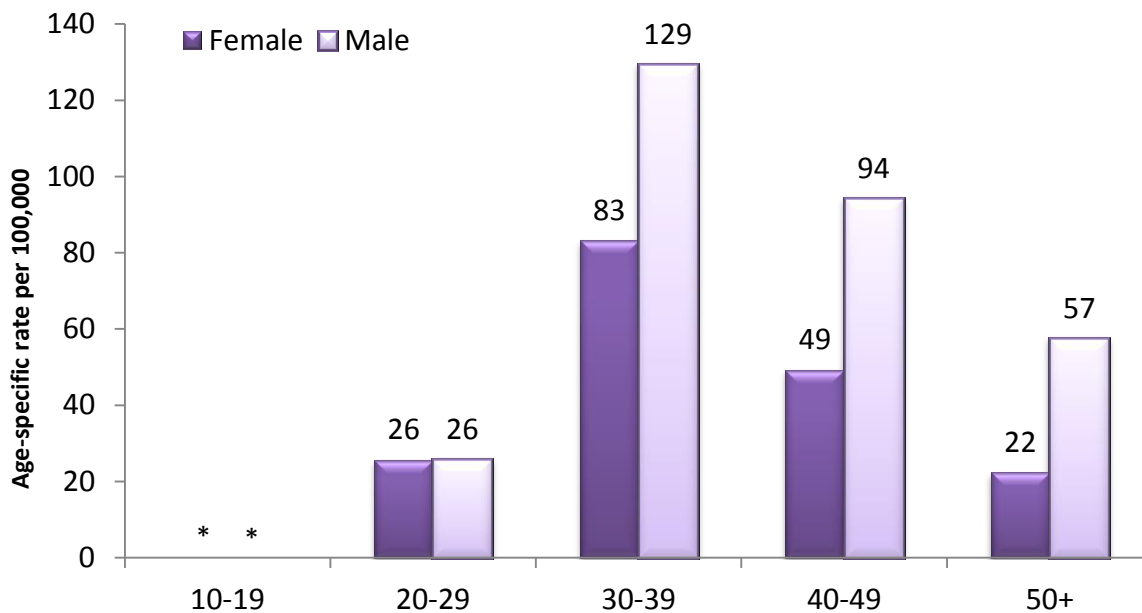
Source: PHU-NITHA (iPHIS pulled 2017) , SK HIV prevention and control program report for 2015. Prepared by PHU-NITHA July 2017

**Figure 9: Crude rate newly diagnosed HIV, 5-year average, on and off-reserve, by northern Saskatchewan health authority, 2007-2016**



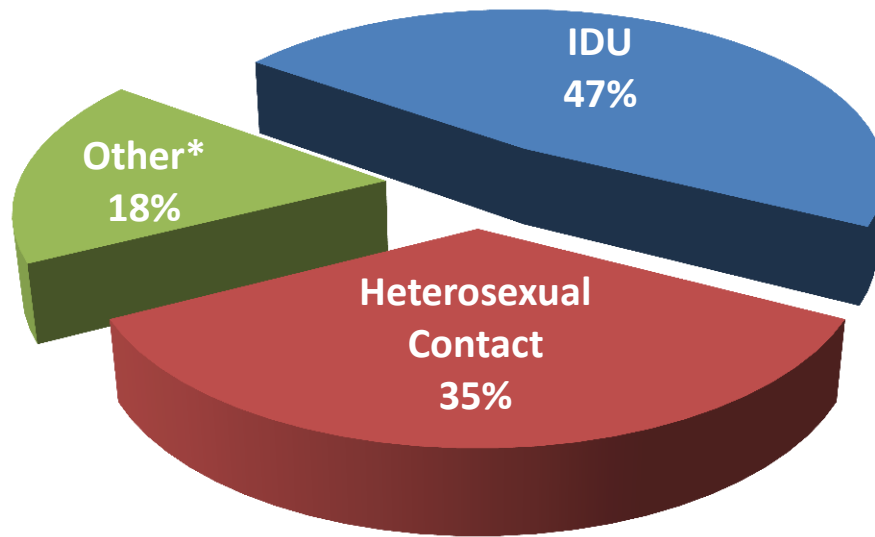
Source: PHU-NITHA (iPHIS pulled 2017) , Prepared by PHU-NITHA July 2017

**Figure 10: Age-specific rates of newly diagnosed HIV by sex, 10-year average, northern Saskatchewan on and off-reserve, 2007-2016**



Source: PHU-NITHA (iPHIS pulled 2017) , Prepared by PHU-NITHA July 2017

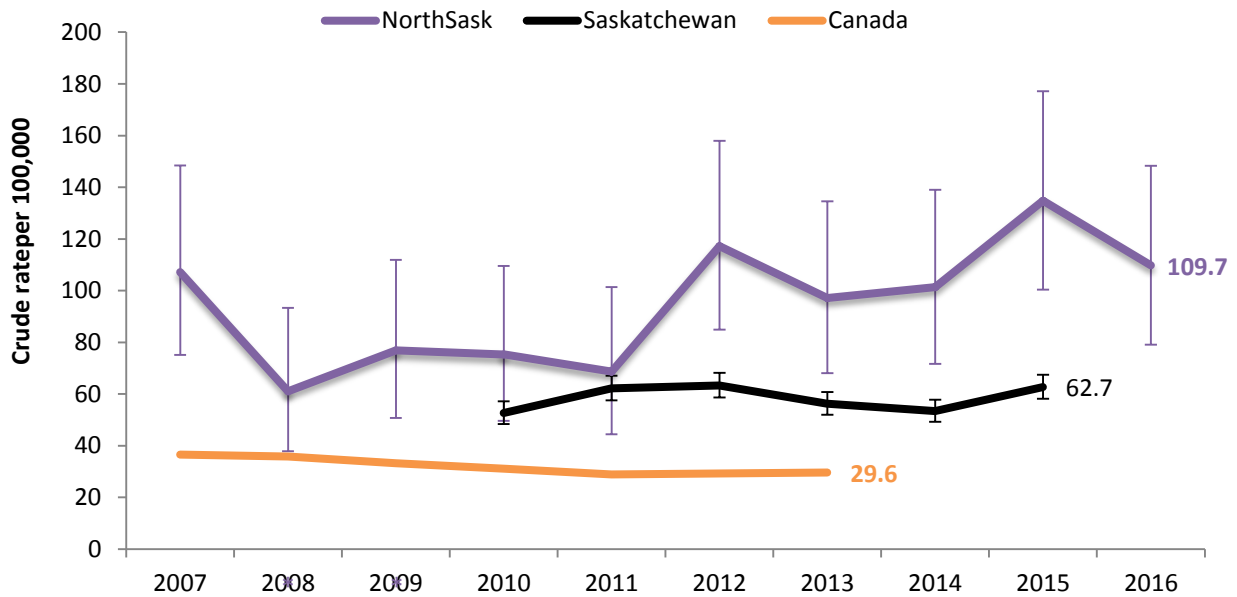
**Figure 11: Self-reported risk factors of newly diagnosed HIV cases, northern Saskatchewan on and off-reserve, 2007-2016**



Source: PHU-NITHA (iPHIS pulled 2017) , Prepared by NITHA-PHU July 2017 \* Other refers to all other risk factors listed

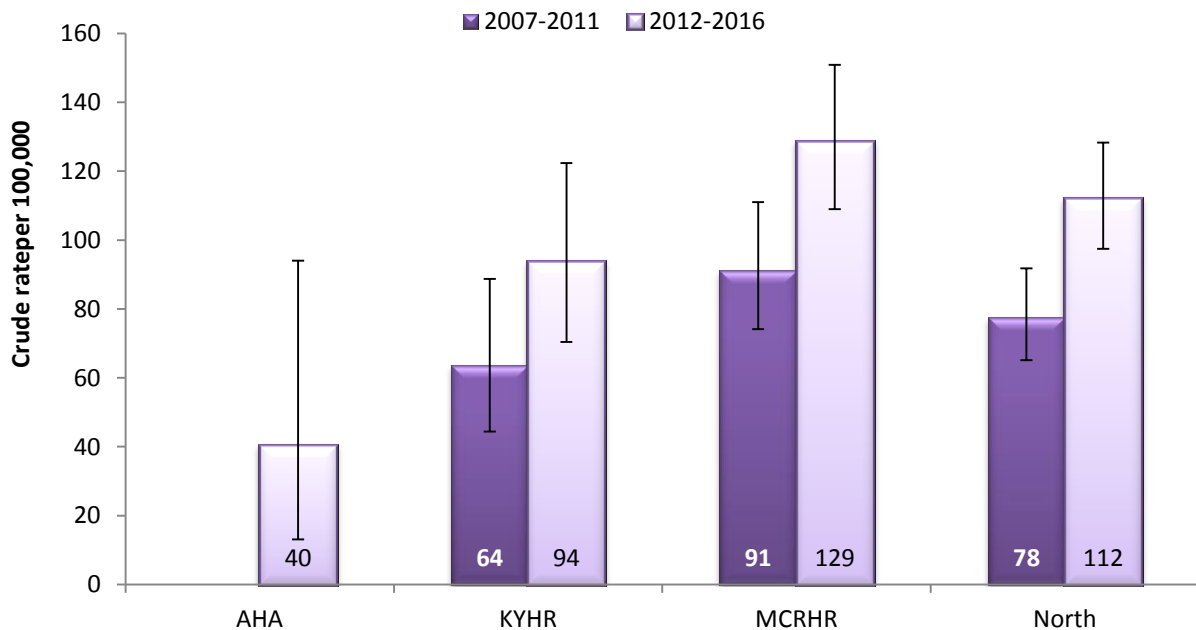
## Hepatitis C

**Figure 12: Crude rate newly diagnosed hepatitis C, northern Saskatchewan on and off-reserve, Saskatchewan and Canada, 2007-2016**



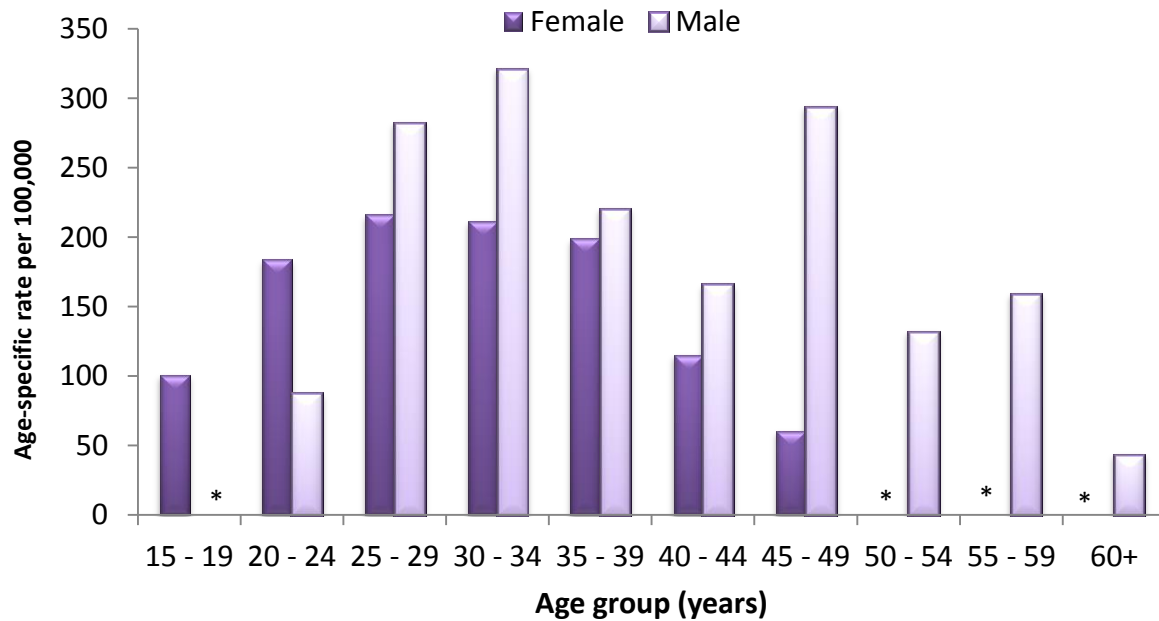
Source: NITHA-PHU (iPHIS pulled 2017) , Report on Hepatitis B and C in Canada 2013, Saskatchewan annual incidence summary reports 2010-2014 and 2011-2015, Prepared by PHU-NITHA Apr 2017

**Figure 13: Crude rate newly diagnosed hepatitis C, 5-year average, on and off-reserve, by northern Saskatchewan health authority, 2007-2016**



Source: NITHA-PHU (iPHIS pulled 2017) , Prepared by PHU-NITHA July 2017

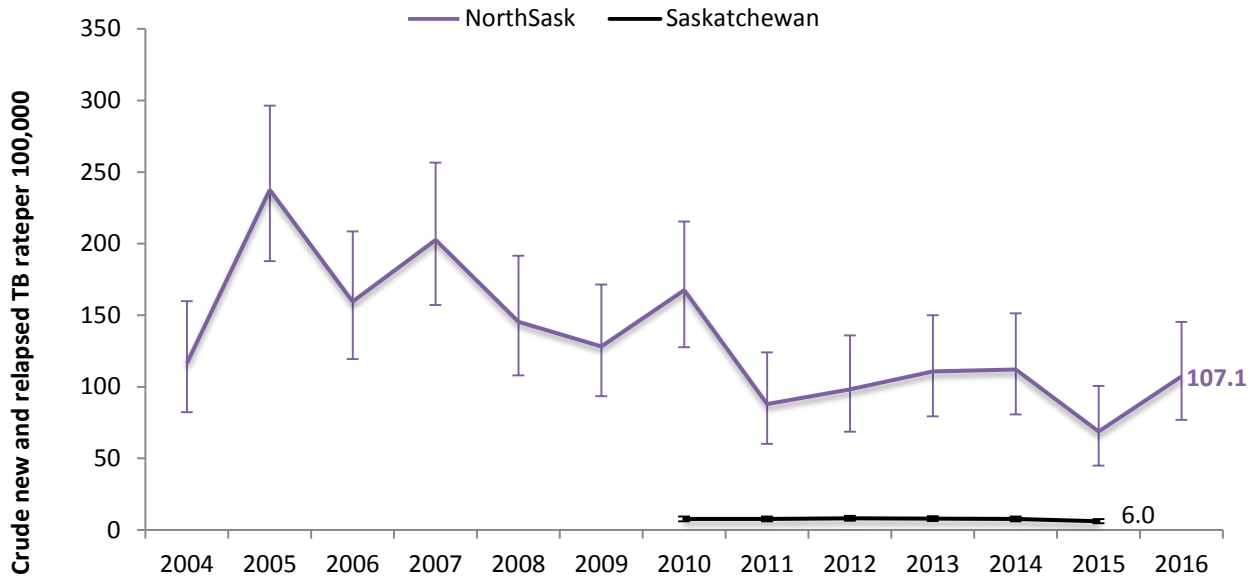
**Figure 14: Age-specific rates of newly diagnosed hepatitis C by sex, 10-year average, northern Saskatchewan on and off-reserve, 2007-2016**



Source: PHU-NITHA (iPHIS pulled 2017) , Prepared by PHU-NITHA July 2017

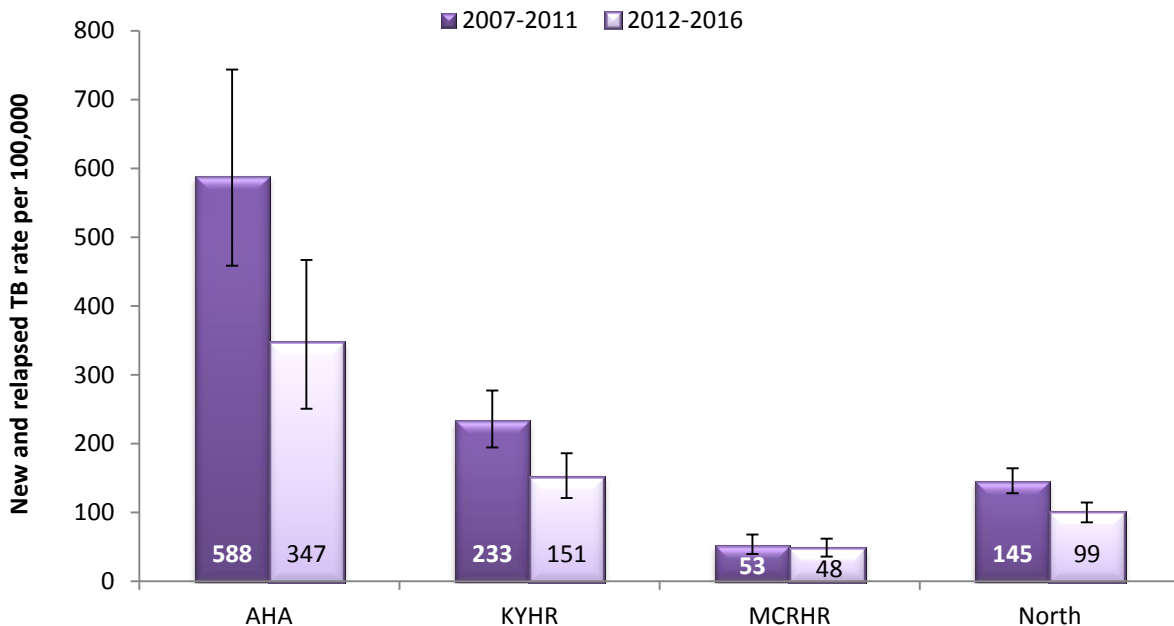
## Tuberculosis (TB)

**Figure 15: Crude rate new and relapsed TB, northern Saskatchewan on and off-reserve, and Saskatchewan 2004-2016**



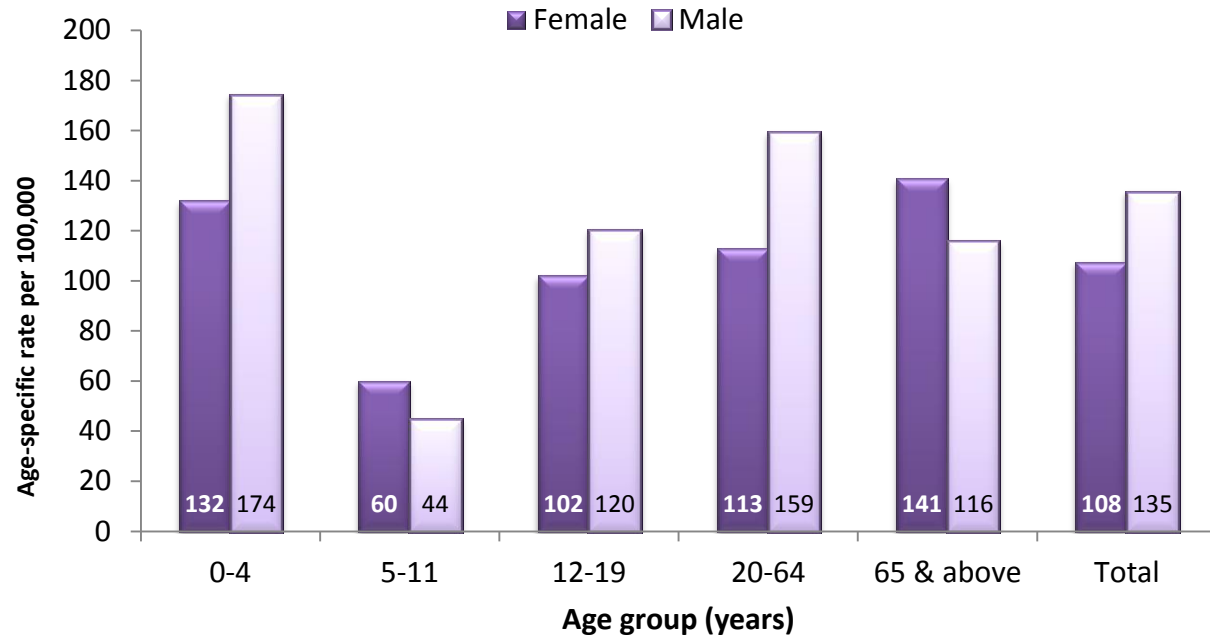
Source: Saskatchewan TB Control (Quarterly reports 2017), Saskatchewan annual incidence summary reports 2010-2014 & 2011-2015, Prepared by PHU-NITHA July 2017

**Figure 16: Crude rate new and relapsed TB, 5-year average, on and off-reserve, by northern Saskatchewan health authority, 2007-2016**



Source: Saskatchewan TB Control (Quarterly reports 2017), Prepared by PHU-NITHA July 2017

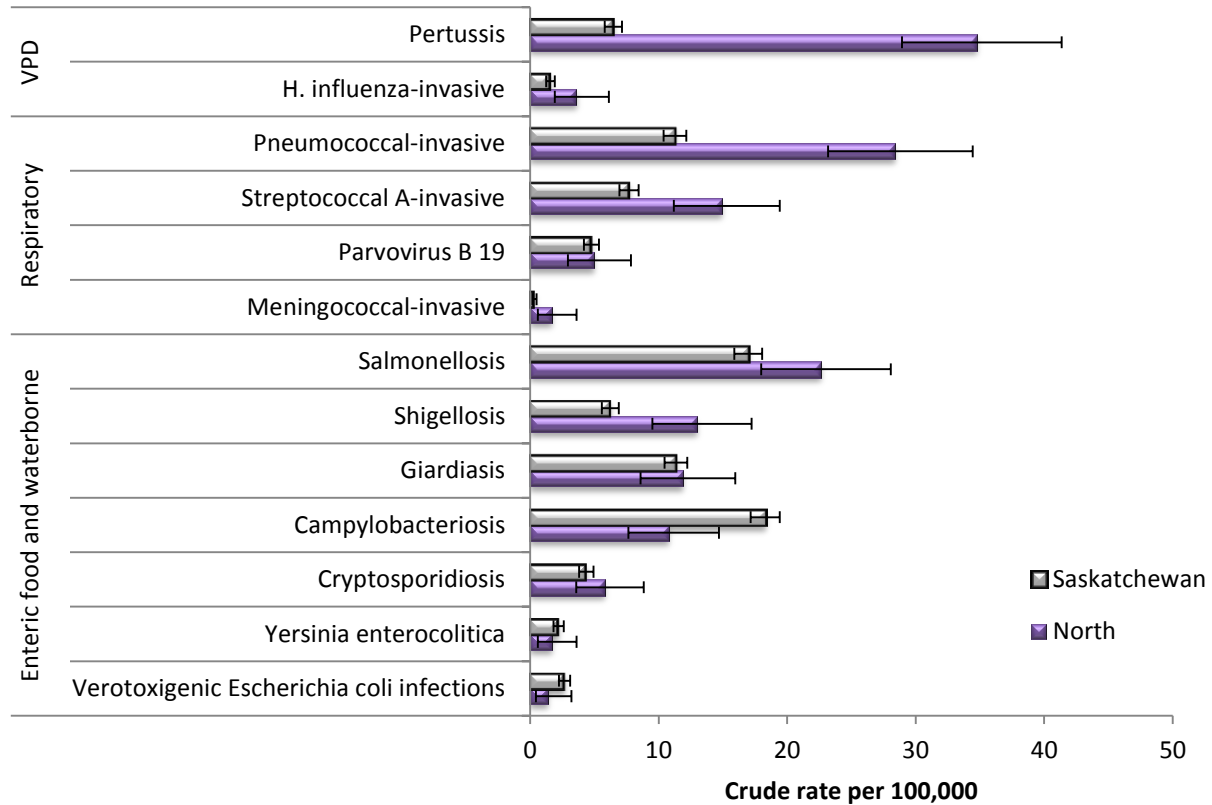
**Figure 17: Age-specific rates of new and relapsed TB by sex, 10-year average, northern Saskatchewan on and off-reserve, 2007-2016**



Source: Saskatchewan TB Control (Quarterly reports 2017), Prepared by PHU-NITHA July 2017

## Other communicable diseases

**Figure 18: Crude rates of selected communicable diseases, 10-year average, northern Saskatchewan on and off-reserve, and Saskatchewan 2007-2016**



Source: iPHIS (pulled 2017) , Saskatchewan annual incidence summary report 2011-2015, Prepared by NITHA-PHU July 2017



## Appendix A – Data Notes

### 1. Data Sources

**Saskatchewan Covered Population** – Covered Population is based on eligibility for health insurance benefits in Saskatchewan. All residents of Saskatchewan are included except: (a) members of the Canadian Forces and inmates of federal prisons and (b) people not yet meeting the residency requirement. The covered population estimates are derived from the person health registry system which collects information on multiple addresses, when available, in an attempt to distinguish between correspondence (i.e. mailing address) and residence addresses. In northern Saskatchewan, many communities share postal codes and thus it is difficult to determine exactly which community the person lives in. For example, La Ronge, Air Ronge, and several Lac La Ronge communities share two postal codes. First Nations are assigned residence based on band affiliation. In southern Saskatchewan, some reassignment of residence codes occurs based on additional residence information; however this does not occur in northern Saskatchewan due to the difficulty in distinguishing between residence on reserves and northern towns and villages. As a result, individuals may be assigned to a band but not an actual community. For example, many individuals are assigned to the Peter Ballantyne Cree Nation as opposed to the communities of Pelican Narrows, Sandy Bay, Deschambault Lake, Southend, or Sturgeon Landing. As a result of these limitations, the covered population is thought to be a good estimation of the populations for community areas, health centre service areas, and health authorities but not individual northern communities. For further details on the covered population methodology please refer to the 2016 covered population website (<http://population.health.gov.sk.ca/main.htm>). In this report the covered population was only used as a denominator for Saskatchewan rates.

**Statistics Canada Annual Population Estimates** – Every year, the PHU purchases data from Statistics Canada containing population estimates for First Nations community status areas (e.g. on and off-reserve) and census subdivisions (e.g. community) that fall within the boundaries of AHA, KY and MCR. First Nations community status areas are defined by the PHU using Statistics Canada defined census subdivisions. The estimates are currently based on the 2011 census counts adjusted for census net undercoverage (including adjustment for incompletely enumerated Indian reserves and population reviews). The years between 2001 and 2010 are considered final intercensal estimates, 2011-2012 are considered final postcensal estimate, 2013-2015 are considered updated postcensal estimates, and 2016 is considered a preliminary postcensal estimate. As the Statistics Canada estimates are based more on residence address as opposed to correspondence address (i.e. mailing address), these estimates are thought to be better at estimating individual community and First Nations community status area populations. In this report the data for First Nations community status areas was used for denominators for the northern Saskatchewan rate calculations.

**iPHIS** – iPHIS is the provincial electronic database that the PHU uses to report all cases of reportable diseases occurring off-reserve to the Ministry of Health in accordance with the Public Health Act. Data extracts for off-reserve cases for AHA, KYHR and MCRHR were pulled by the PHU in March and April 2017 while data for on-reserve cases were extracted by NITHA in July 2017. Case numbers of diseases are based on confirmed cases reported during the calendar years 2007-2016 based on episode date

(chlamydia, gonorrhea, and other reportable diseases), reported case date (Hepatitis C) and specimen collection date (HIV).

**Saskatchewan Annual Incidence Summary Report 2010-2014 and 2011-2015** – Disease counts for Saskatchewan numbers were pulled from these reports for chlamydia, gonorrhea, hepatitis C, tuberculosis, and other reportable diseases (e.g. vaccine preventable, respiratory diseases, and enteric diseases). Denominators were obtained from the Saskatchewan Covered population 2015 in order to calculate crude Saskatchewan rates.

**Health Canada notifiable diseases online** – Crude rates for Canada for chlamydia and gonorrhea were pulled from the Notifiable Diseases Online website (<http://maladies.canada.ca/notifiable/charts?c=plt>).

**Saskatchewan HIV Prevention Control Program Report 2015** – Crude rates for Saskatchewan and Canada were pulled from this provincial report.

**Report on Hep B and C in Canada 2013** – Crude rates of hepatitis C for Canada was pulled from this national report (<https://www.canada.ca/en/public-health/services/publications/diseases-conditions/report-hepatitis-b-c-canada-2013.html>)

**Saskatchewan Tuberculosis Control Quarterly Reports** – Periodically the PHU receives a line listing report from Saskatchewan TB Control of all the new and relapsed TB cases that have a residence address within the three northern health authorities.

## 2. Definitions

- **Presentation of data (e.g. numbers of death, crude rates, Age standardized rates)** – for a full description of crude rates, age-adjusted rates, and raw numbers, please refer to “A Guide to the Reports – Understanding the Presentation of Data” report on the Population Health Unit website ([http://www.populationhealthunit.ca/mrws/filedriver/Health\\_Indicator\\_reports/A\\_Guide\\_to\\_the\\_Reports\\_Understanding\\_the\\_Presentation\\_of\\_Data.pdf](http://www.populationhealthunit.ca/mrws/filedriver/Health_Indicator_reports/A_Guide_to_the_Reports_Understanding_the_Presentation_of_Data.pdf)). Age adjusted rates in this report were calculated using the 2011 Canadian population as the standard. Confidence intervals for crude rates were calculated using the Gamma distribution<sup>2</sup> while confidence intervals for age adjusted rates were calculated using the Poisson approximation method<sup>3</sup>.

## Appendix B – Glossary of Acronyms

<b>AHA</b>	Athabasca Health Authority
<b>HIV</b>	Human Immunodeficiency Virus
<b>KYHR</b>	Keewatin Yatthé Health Region
<b>MCRHR</b>	Mamawetan Churchill River Health Region
<b>NITHA</b>	Northern Inter-Tribal Health Authority
<b>NorthSask</b>	Athabasca Health Authority, Keewatin Yatthé Health Region, and Mamawetan Churchill River Health Region combined
<b>PHU</b>	Population Health Unit
<b>SK</b>	Saskatchewan
<b>TB</b>	Tuberculosis

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## References

1. Public Health Agency of Canada. National HIV Infection Exposure Categories [Internet]. 2011. Available from: <https://www.canada.ca/en/public-health/services/hiv-aids/publications/population-specific-hiv-aids-status-reports/people-living-hiv-aids/chapter-2-epidemiological-profile-hiv-aids-canada.html#f6>
2. Fay MP, Feuer EJ. Confidence Intervals for Directly Standardized Rates: a Method Based on the Gamma Distribution. *Stat Med*. 1997;16(December 1995):791–801.
3. Bains N. Standardization of rates [Internet]. 2009. Available from: [http://core.apheo.ca/resources/indicators/Standardization report\\_NamBains\\_FINALMarch16.pdf](http://core.apheo.ca/resources/indicators/Standardization%20report_NamBains_FINALMarch16.pdf)