

# Vaccine Preventable Disease Monitoring Report Tetanus, 2017 and 2018

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**PREPARED BY POPULATION HEALTH BRANCH, SASKATCHEWAN MINISTRY OF HEALTH**

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<p><b>Purpose:</b></p> <p>The Saskatchewan Ministry of Health's Population Health Branch provides routine surveillance of notifiable diseases at the provincial, Athabasca Health Authority (AHA), former regional health authority (RHA), First Nations and Inuit Health Branch - Saskatchewan (FNIHB-SK) and Northern Inter-Tribal Health Authority (NITHA) levels.</p> <p>This report presents the most recent data for reportable communicable diseases as collected by Panorama and the Integrated Public Health Information System (iPHIS), and immunization coverage information as collected by Panorama. Limitations associated with these systems have been described elsewhere.</p> <p>Under <i>The Public Health Act, 1994</i> and the accompanying Disease Control Regulations, local medical health officers (MHOs) must report Categories I and II Communicable Diseases, as well as any communicable disease outbreaks to the Chief and Deputy Chief Medical Health Officers. Tetanus is a Category I disease.</p> <p><b>Report Features:</b></p> <p>Background Epidemiological Summary Surveillance Case Definition Case Counts by Year Case Characteristics Vaccine Coverage by AHA and former RHA</p> <p><b>Data Source:</b></p> <p>Panorama (as of October 1, 2019)</p>	<div> <div> <h2>Background</h2> <p>Tetanus (also known as “lock jaw”) is a bacterial disease. The bacteria release a toxin that affects the nerves and causes muscle spasms. It may be localized (involving only the nerves of the affected muscle) or generalized (affecting the nervous system more broadly). The most common initial sign is spasms of the jaw muscles. Other symptoms include headache, seizures, fever and sweating, high blood pressure, and fast heart rate. Mortality rates range from about 10% to more than 80%, depending on the age, quality of available care and the incubation period.</p> <p>The time from exposure to symptoms (incubation period) is about three to 21 days. The incubation period can be shorter when there is heavy contamination of a wound (such as in burns, crush injuries or injuries with dead tissue).</p> <p>Tetanus is caused by the bacterium, <i>Clostridium tetani</i>. The bacteria are found in the environment (in soil, dust and manure). The bacteria enter the body through breaks in the skin, usually through cuts or puncture wounds caused by contaminated objects or when injuries become contaminated with the bacteria. It is not spread from person to person.</p> <p>Tetanus is rare in Canada. Between 2008 and 2017, the number of cases reported annually ranged from two to six, with an average of four per year. Only eight deaths due to tetanus have been reported in Canada between 2000 and 2017 with the last one reported in 2015. Globally 15,103 tetanus cases were reported in 2018. The World Health Organization (WHO) estimated that in 2011, 72,600 deaths in children less than five years of age were due to tetanus.</p> </div> <div> <h2>Immunization</h2> <p>Tetanus toxoid is only available in combination vaccines. The Saskatchewan Routine Childhood Immunization Schedule recommends a four-dose primary series of tetanus toxoid-containing vaccine at two, four, six and 18 months of age, and boosters at four to six years of age and Grade 8. A booster dose of tetanus toxoid-containing vaccine is recommended for adults every 10 years.</p> <p>Tetanus is extremely rare in fully immunized people whose last dose was within the last 10 years. If tetanus does occur in fully vaccinated people, the disease is usually mild. Many Canadians, especially those who are older or born outside of Canada, do not have protective levels of tetanus antibodies and are at risk of acquiring the disease.</p> <p>The efficacy of tetanus toxoid-containing vaccine following the primary series is estimated to be more than 99%, but there is declining immunity over time. Therefore, booster doses are recommended every 10 years.</p> </div> <div> <h2>Surveillance</h2> <p>Under <i>The Public Health Act, 1994</i>, Saskatchewan health care providers are required to report cases of notifiable communicable diseases to the local medical health officer (MHO) who then reports the case to the provincial Chief and Deputy Chief Medical Health Officers using the Saskatchewan case definition.</p> <p>Notifiable diseases may be undetected, therefore under-reported, due to a number of factors including lack of contact with the health care system or the inability of laboratory tests to identify the organism. Some communicable diseases occur rarely and therefore, rates are based on small numbers of cases which can fluctuate dramatically over time. In these situations, year to year comparisons should be interpreted with caution.</p> <p>Surveillance case definitions ensure uniform reporting to allow comparability of surveillance data. The definitions are not intended to be used for clinical or laboratory diagnosis, or management of cases.</p> </div> </div>
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# EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARY

## Tetanus in Saskatchewan: 2018

- No (0) cases of lab-confirmed tetanus were reported.
- No cases were hospitalized.
- There were no deaths from tetanus.

**Table 1: Tetanus case counts by year**

	2018	2017	2016	2015	2014	Total
Saskatchewan	0	1	0	0	0	1
Canada	N/A	4	5	4	6	19

N/A = not available

## Tetanus in Saskatchewan: 2014 to 2018

- One adult case of lab-confirmed tetanus requiring intensive care was reported. Exposure was thought to be related to contaminated soil. Immunization status at time of exposure was unknown.
- There were no deaths from tetanus.
- Only two cases of tetanus were previously reported in Saskatchewan, one in 1990 and one in 2004.

**Table 2: Tetanus case characteristics, Saskatchewan 2014-2018**

	Cases	Percent of Cases
Total	1	100
Sex		
Male	1	100
Female	0	0
Age		
Less than 1 year	0	0
1 - 4 years	0	0
5 - 19 years	0	0
20 - 49 years	1	100
50 years and over	0	0
Hospitalized		
Yes	1	100
No	0	0
Unknown	0	0
Immunization status for tetanus vaccine		
5 doses	0	0
4 doses	0	0
0 dose	0	0
Too young	0	0
Unknown	1	100
Source		
International	0	0
Canada	0	0
Saskatchewan	1	100
Genotype		
Unknown	1	100

## Tetanus Coverage in Saskatchewan: 2014 to 2018

- From 2014 to 2018, provincial coverage rates steadily improved or remained stable up to and including five years of age.
- For children older than five years, the rates when based strictly on the number of doses received, declined between 2014 and 2016.
- However, during 2017 and 2018 when rates were based on up-to-date status (i.e., adjusting for delayed or interrupted series), coverage improved or remained stable for children seven years age or older.

**Table 3: Tetanus vaccine coverage rates for Saskatchewan by age, dose and year, 2014-2018**

Age	Doses	2018	2017	2016 <sup>a</sup>	2015 <sup>a</sup>	2014 <sup>b</sup>
3 months	1	87.1%	86.2%	85.0%	85.0%	84.2%
5 months	2	78.5%	78%	77.0%	76.0%	73.8%
8 months	3	80.6%	79.6%	78.8%	77.4%	76.4%
12 months	3	87.3%	86.6%	85.6%	84.9%	84.7%
20 months	3	90.8%	89.9%	89.1%	88.5%	88.8%
	4	68.1%	63.7%	60.9%	60.5%	60.2%
24 months	3	91.6%	90.5%	90.0%	89.3%	89.8%
	4	80.8%	77.6%	76.8%	74.6%	75.7%
5 years	4	87.4%	86%	87.7%	85.2%	87.9%
	5	N/C	N/C	76.4%	75.0%	78.0%
7 years	up-to-date	82.1%	82.7%	N/C	N/C	N/C
	5	N/C	N/C	77.5%	78.3%	80.8%
13 years	up-to-date	79.3%	79.2%	N/C	N/C	N/C
	6	N/C	N/C	68.2%	67.7%	72.9%
15 years	up-to-date	82%	81.8%	N/C	N/C	N/C
	6	N/C	N/C	71.4%	72.0%	75.2%
17 years	up-to-date	84.1%	83.5%	N/C	N/C	N/C

<sup>a</sup> Vaccine Preventable Disease Monitoring Report: Tetanus, 2015 and 2016  
(Data source: Panorama January 12, 2017)

<sup>b</sup> Vaccine Preventable Disease Monitoring Report: Tetanus, 2014  
(Data source: SIMS January 16, 2015)

N/C = Not calculated. An up-to-date coverage rate provides a better estimate of the percentage of children protected from disease than an age-dose coverage rate when there has been a delay or interruption in the primary series.

# EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARY

**Table 4: Tetanus vaccine coverage by Athabasca Health Authority and former health region, 2018**

Jurisdiction (with former health region by Peer Group)	Immunization coverage (% immunized), by age and dose												
	3 months	5 months	8 months	12 months	20 months		24 months		5 years	7 years	13 years	15 years	17 years
	1 dose	2 doses	3 doses	3 doses	3 doses	4 doses	3 doses	4 doses	4 doses	up-to-date	up-to-date	up-to-date	up-to-date
Saskatchewan	87.1	78.5	80.6	87.3	90.8	68.1	91.6	80.8	87.4	82.1	79.3	82	84.1
Saskatchewan Health Authority	87.1	78.5	80.6	87.3	90.7	68.1	91.6	80.8	87.4	82.1	79.3	82	84.1
Peer Group A													
Regina Qu'Appelle	91.5	80.1	82.5	87.8	90.7	70.6	91.6	79.2	86.2	83.1	77.3	82.2	84.9
Saskatoon	83.6	77.9	79.7	87.3	91	64	91.6	81.5	85.2	77.3	76.3	80.9	85.1
Peer Group D													
Cypress	83.8	77.1	84.2	91.3	92.6	75	93.8	85	92.3	91.8	84.8	87.9	87.8
Five Hills	89.2	80.7	82.7	89.9	92.5	76	92.9	83.1	91.4	84.8	84.2	84.5	85.1
Heartland	89.9	84.1	82.5	90.9	92.8	76.8	92.2	87.3	92.8	90.2	86.1	88.7	91
Kelsey Trail	93.9	81.2	87	92.5	96.6	84	95.4	90	95.1	87.1	84	86.7	86.8
Sun Country	94.5	91.8	93.4	95.9	94.5	86.8	95.4	92.4	95	93.5	87.5	86.7	91.1
Sunrise	87	80.7	81.7	85.9	90	69.1	92.2	83.3	89.6	84.9	83.7	84.2	88.7
Peer Group F													
Athabasca Health Authority	85.3	71.4	82.1	100	93.3	70	100	68.6	100	86.7	81.7	85.1	83.3
Keewatin Yatthé	79.2	64.2	71.2	79.2	90	46.3	90.3	65.6	84.3	80.4	68.5	61.6	50
Mamawetan Churchill River	80.4	65	72.8	89.6	96.5	73.4	97	82.5	96.7	80	85	67.6	64.4
Peer Group H													
Prairie North	86.5	73.6	76.3	82.3	85.8	61.9	87.1	74.9	87.5	81	75.3	72.9	73.9
Prince Albert Parkland	82	68.4	66.5	78.1	86.3	54	88.1	70.5	85.2	79.5	83.8	85.1	80.4

**Table 5: Tetanus vaccine coverage by Athabasca Health Authority and former health region, 2017**

Jurisdiction (with former health region by Peer Group)	Immunization coverage (% immunized), by age and dose												
	3 months	5 months	8 months	12 months	20 months		24 months		5 years	7 years	13 years	15 years	17 years
	1 dose	2 doses	3 doses	3 doses	3 doses	4 doses	3 doses	4 doses	4 doses	up-to-date	up-to-date	up-to-date	up-to-date
Saskatchewan	86.2	78	79.6	86.6	89.9	63.7	90.5	77.6	86	82.7	79.2	81.8	83.5
Saskatchewan Health Authority	86.2	78	79.6	86.6	89.9	63.7	90.5	77.6	86	82.7	79.1	81.8	83.5
Peer Group A													
Regina Qu'Appelle	87.5	79.4	80.2	87.1	90	62	89.8	75.4	85.7	83.6	76.7	82.1	83.4
Saskatoon	85	77.3	79.5	86.6	89.2	61.3	90.4	78.4	83.6	79.5	76.2	83	84.4
Peer Group D													
Cypress	88.1	79.1	80.2	88.6	92.4	72.4	91.6	82.6	91.4	89.8	86.2	85.1	88
Five Hills	88.9	83.1	82.8	86.6	91.7	70.9	93.2	80.3	87.9	85.2	83.8	83.5	84.6
Heartland	84.5	79.2	87.6	89.6	93.3	73	93.2	85.3	93	92.1	85.8	86.2	91
Kelsey Trail	90.5	84.7	89.9	93.1	94.8	75.5	96.3	84.9	91.1	88.8	85.5	84.4	86.7
Sun Country	94.5	90.7	90.4	93.8	95.2	84.6	95.1	89.7	93.4	92.5	85.4	88.9	90.3
Sunrise	84.8	79.6	83.3	88.6	90.8	70	90.5	79.5	87.4	81.7	84.8	84.4	84.3
Peer Group F													
Athabasca Health Authority	92	86.4	76.7	91.4	97.6	43.9	97.2	72.2	93.1	85.4	90	81.8	88.2
Keewatin Yatthé	76.7	56.7	52.5	74	87	43.2	85.1	62.7	85.5	77.6	80.5	50.7	54.3
Mamawetan Churchill River	83.5	70.4	68.2	83.7	93.1	63.2	92.5	72.4	94.4	83.8	78.8	65.6	65.2
Peer Group H													
Prairie North	84.7	73.7	73.7	82.1	87.4	59.7	88.1	72	83.7	79.7	77.9	74.1	74.7
Prince Albert Parkland	82.3	68	69.4	79	85.2	51.3	87	68.4	84.5	78.6	80.1	77.5	83.3

- Two years of coverage data in 13 age-dose/up-to-date categories are provided by Athabasca Health Authority (AHA) and former RHA. Yellow highlighted numbers indicate rates below the provincial coverage rate.
- Tetanus vaccine is recommended at two, four, six and 18 months, with a booster dose between four and six years of age and Grade 8. If the primary series is delayed or interrupted, the schedule can be adjusted to bring the child up-to-date for protection. Data for three, five, eight, 12, 20, and 24 months; and five, seven, 13, 15 and 17 years are shown with seven, 13, 15 and 17 years reported as up-to-date.
- Up-to-date at seven years:
  - children who received the four-dose primary series at two, four, six and 18 months and a booster dose between four and six years of age AND
  - children who received four doses before the age of four years and one booster dose after the age of four years with at least a 24-week interval between the third and fourth doses, and the fourth and fifth doses AND
  - children who received four doses of vaccine with the fourth dose administered after the age of four years and at least 24 weeks after the third dose AND
  - children who received three doses of vaccine with the third dose at seven years and at least 24 weeks after the second dose.
- Up-to-date at 13 years:
  - a) to b) for seven years AND
  - children who received five doses with the third dose administered before four years of age, the fourth dose at least 24 weeks after the third dose, and the fifth dose at or after 11 years of age and at least 24 weeks after the fourth dose AND
- children who received four doses with the fourth dose administered at or after 11 years of age and a 24-week interval between the second and third doses, and third and fourth doses AND
- children who received three doses with the third dose administered at or after 11 years of age and a 24-week interval between the second and third doses and a one-month-interval between first and second doses.
- Up-to-date at 15 and 17 years:
  - children who received the four-dose primary series at two, four, six and 18 months and two booster doses at four to six years and Grade 8 (usually between 12 and 14 years of age) AND
  - b) to d) for 13 years.
- In 2018, four-dose coverage rate improved from 68.1% at the age of 20 months to 80.8% at 24 months.
- In 2018, eight former RHAs exceeded the provincial average for four doses at the age of 24 months.
- At 12 months, 20 months (four doses), five years, 13 years and 15 years of age in 2018, eight former RHAs and AHA exceeded the provincial average and four former RHAs were below.
- In 2018, one former RHA was below the provincial rate in all 13 age-dose/up-to-date categories and one was below in all but one category.
- In 2018, four former RHAs were at or above the provincial average in all 13 age-dose/up-to-date categories and one former RHA was at or above the provincial average in all but two categories.
- Coverage rates for health regions in Peer Groups F and H should be interpreted with caution (see Data Notes).

# SURVEILLANCE CASE DEFINITION: SASKATCHEWAN

## Tetanus

### Notification Timeline:

From Lab/Practitioner to Public Health: Immediate.

From Public Health to Ministry of Health: Within 2 weeks.

Public Health Follow-up Timeline: Initiate within 72 hours

Case Definition (adopted from Public Health Agency of Canada, 2008)

### Confirmed Case

Clinical evidence of illness\* with or without other apparent medical cause with or without isolation of *Clostridium tetani* and with or without history of injury



Photo Courtesy of Centers for Disease Control

\*Clinical illness is characterized by acute onset of hypertonia and/or painful muscular contractions (usually of the muscles of the jaw and neck), and generalized muscle spasms without other apparent medical cause.

## DATA NOTES

Case Data Source: Panorama and the Integrated Public Health Information System (iPHIS) are information systems that support public health surveillance. Confirmed cases must meet the provincial surveillance case definition. Panorama replaced iPHIS on October 1, 2018.

There are 10 peer groups used by Statistic Canada, each identified by a letter (A to J). A peer group consists of former health regions with similar socio-economic characteristics which facilitates comparisons within a peer group. The twelve former health regions and one health authority in Saskatchewan fall into four groups identified by letters A, D, F and H. The peer groups in this report are based on Statistics Canada 2011 peer groupings and should not be compared to current Statistics Canada peer groupings (2014).

Vaccine Coverage Data Source: Panorama is a comprehensive, integrated public health information system. Of the five modules in the system, four have been implemented: vaccine inventory, immunization, investigations and outbreaks management. When fully functional, it will help public health professionals to work together to effectively manage vaccine inventories, immunizations, investigations, outbreaks and family health. To learn more, please visit: [www.ehealthsask.ca/services/panorama/Pages/default.aspx](http://www.ehealthsask.ca/services/panorama/Pages/default.aspx).

Many FNIHB and NITHA communities are not currently using Panorama. Therefore, immunization data for many First Nations children are missing or are incomplete. This report includes only those children with Saskatchewan health coverage and registered in Panorama under a former health region or AHA as of October 1, 2019. In other words, children with Saskatchewan health coverage and registered in Panorama under FNIHB-SK or NITHA jurisdiction are excluded. This means this report does not include coverage statistics for the entire provincial or regional population.

The four-dose primary series of tetanus toxoid-containing vaccine is administered as diphtheria, tetanus, acellular pertussis, inactivated polio & Haemophilus influenzae type B (DTaP-IPV-Hib). The first booster at four to six years of age is administered as diphtheria, tetanus, acellular pertussis and inactivated polio (DTaP-IPV) vaccine and the second booster at Grade 8 is tetanus, diphtheria & acellular pertussis (Tdap) vaccine. Immunization coverage is based on those who turned three, five, eight, 12, 20 and 24 months, and five, seven, 13, 15 and 17 years by December 31 in 2017 and 2018. For example, the immunization coverage for seven-year-old children in 2018 is based on children who were born in 2011 and the immunization doses they received by their seventh birthdays.