

# Vaccine Preventable Disease Monitoring Report Tetanus, 2014

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## **Purpose:**

The Saskatchewan Ministry of Health's Population Health Branch provides routine surveillance of notifiable diseases at the provincial and regional health authorities (RHAs), First Nations and Inuit Health Branch Saskatchewan (FNIHB-SK) Region and Northern Inter-Tribal Health Authority (NITHA) levels.

This report presents the most recent data for reportable communicable diseases as collected by the Integrated Public Health Information System (iPHIS) and immunization coverage information as collected by the Saskatchewan Immunization Management System (SIMS) and Panorama. Limitations associated with these systems have been described elsewhere.

Under *The Public Health Act, 1994* and the accompanying Disease Control Regulations, local medical health officers (MHOs) must report Category I Communicable Diseases, as well as any communicable disease outbreaks to the provincial Chief and Deputy Chief Medical Health Officers. Tetanus is a Category I disease.

## **Report Features:**

Background  
Epidemiological Summary  
Surveillance Case Definition  
Case Counts by Year  
Case Characteristics  
Vaccine Coverage by RHA

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## **Background**

Tetanus (also known as "lock jaw") is a bacterial disease that affects the nerves that control the muscles. The bacteria release a toxin which 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 20%.

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).

Tetanus is caused by the bacterium, *Clostridium tetani*.

The bacteria are found in the environment (in soil, dust, saliva and feces). 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.

Tetanus is rare in Canada. Between 1990 and 2010, the number of cases reported annually ranged from one to 10, with an average of four per year. Only eight deaths due to tetanus have been reported in Canada since 1990. Globally 11,393 tetanus cases were reported in 2014. The World Health Organization (WHO) estimated that in 2011, 72,600 deaths in children less than five years of age were due to tetanus.

## **Immunization**

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 2, 4, 6 and 18 months of age, one booster at 4 to 6 years of age and a second booster in Grade 8. A booster dose of tetanus toxoid-containing vaccine is recommended for adults every 10 years.

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.

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.

## **Surveillance**

Under *The Public Health Act, 1994*, Saskatchewan health care providers are required to report cases of tetanus to the local medical health officer (MHO) who then reports the case to the provincial Chief and Deputy Chief Medical Health Officers using the case definition in the Saskatchewan Communicable Disease Control Manual.

Notifiable diseases may be undetected, therefore underreported, due to a number of factors including lack of contact with the health care system or 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.

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.

Currently molecular epidemiology genotyping is not available for tetanus.

# EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARIES

## Tetanus in Saskatchewan: 2014

- 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**

	2015*	2014	2013	2012	2011	Total
Saskatchewan	0	0	0	0	0	0
Canada	N/A	6	2	4	2	14

\*preliminary counts to date, January 2016

N/A = Not Available

## Tetanus in Saskatchewan: 2011 to 2014

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

**Table 2: Tetanus case characteristics, 2011-2014**

Characteristics of tetanus cases – Saskatchewan 2011 - 2014		Cases	Percent of Cases
Total		0	0
Sex	Male	0	0
	Female	0	0
Age	Less than 1 yr	0	0
	1 - 4 yrs	0	0
	5 - 19 yrs	0	0
	20 - 49	0	0
	50 yrs and over	0	0
Hospitalized	Yes	0	0
	No	0	0
	Unknown	0	0
Immunization for tetanus vaccine	5 doses	0	0
	0 dose	0	0
	Too young	0	0
	Unknown	0	0
	International	0	0
Source	Canada	0	0
	Saskatchewan	0	0
	Domestic Travel	0	0
Provincial	Epidemiologically-linked to travel case	0	0
Provincial	Epidemiologically-linked to case with unknown source	0	0
Provincial	No identified source	0	0
Genotype	Unknown	0	0

**Table 3: Tetanus vaccine coverage for Saskatchewan by year**

Primary Series: Infants and toddlers up to 2 years of age				
Age	Doses	2014	2013	2012
3 months	1	84.2%	83.4%	83.1%
5 months	1	91.9%	91.4%	91.8%
	2	73.8%	73.9%	72.4%
8 months	1	93.8%	93.6%	94.0%
	2	88.2%	87.8%	87.7%
	3	76.4%	75.8%	74.8%
12 months	3	84.7%	84.5%	84.7%
20 months	3	88.8%	89.2%	88.8%
	4	60.2%	59.2%	59.7%
24 months	3	89.8%	90.5%	89.4%
	4	75.7%	76.4%	75.5%
Boosters: Children 4 to 17 years of age				
Age	Doses	2014	2013	2012
4 years	3	91.8%	92.3%	91.8%
	4	84.9%	84.9%	84.0%
7 years	4	90.6%	91.1%	91.0%
	5	78.0%	78.5%	77.7%
13 years	4	92.9%	93.4%	93.8%
	5	80.8%	81.2%	83.0%
15 years	4	95.2%	95.7%	95.6%
	5	89.9%	90.4%	90.3%
	6	72.9%	73.8%	73.9%
17 years	5	90.3%	91.1%	82.5%*
	6	75.2%	76.2%	68.8%*

\*Immunization records may be incomplete for children born prior to 1996; therefore, the coverage for 17-year-olds may not reflect the actual provincial rate.

# VACCINE COVERAGE SUMMARIES

**Table 4: Tetanus Vaccine Coverage by Health Region: 2014 (selected age & dose)**

Health Region, by Peer Group	Vaccine coverage (% immunized), by age and dose												
	3 months 1 dose	5 months 2 doses	8 months 3 doses	12 months 3 doses	20 months 3 doses 4 doses		24 months 3 doses 4 doses		4 years 4 doses	7 years 5 doses	13 years 5 doses	15 years 6 doses	17 years 6 doses
<b>Saskatchewan</b>	84.2	73.8	76.4	84.7	88.8	60.2	89.8	75.7	84.9	78.0	80.8	72.9	75.2
<b>Peer Group A</b>													
Regina Qu'Appelle	86.3	74.8	77.9	85.3	88.7	62.9	89.2	75.0	83.3	77.3	77.7	71.0	72.6
Saskatoon	84.8	76.5	77.2	85.1	89.9	63.0	90.2	78.4	84.6	77.4	79.7	72.9	75.2
<b>Peer Group D</b>													
Cypress	88.6	75.9	79.5	88.4	89.6	66.1	92.4	80.6	89.1	82.8	87.4	80.8	85.3
Five Hills	87.4	79.1	81.6	89.0	91.0	62.2	91.4	79.9	86.3	82.9	85.1	82.4	81.7
Heartland	86.4	75.2	83.3	88.7	92.6	63.4	94.1	82.4	89.5	83.1	89.4	84.9	88.0
Kelsey Trail	85.0	70.0	74.6	84.3	87.5	50.1	91.8	73.0	88.0	80.2	86.0	76.0	79.2
Sun Country	90.7	88.3	90.1	92.3	91.8	69.0	94.2	83.8	94.1	85.8	91.4	86.2	86.3
Sunrise	82.4	72.7	78.2	86.8	88.9	61.5	88.9	73.8	87.1	82.5	86.6	77.8	77.8
<b>Peer Group F</b>													
Athabasca Health	82.8	59.4	84.2	97.8	97.7	77.3	95.7	91.3	90.9	81.5	76.9	68.5	83.1
Keewatin Yatthé	70.2	51.4	51.1	74.1	90.4	39.3	92.1	64.8	91.9	88.9	92.6	60.4	66.4
Mamawetan Churchill River	71.8	55.5	59.6	80.0	90.2	43.8	93.3	70.9	88.2	82.9	83.6	53.1	54.7
<b>Peer Group H</b>													
Prince Albert Parkland	73.2	59.3	63.2	75.1	81.3	45.0	84.6	64.8	80.2	70.9	74.0	66.3	67.5
Prairie North	79.3	66.6	69.3	78.8	85.5	52.3	85.2	66.8	78.6	68.7	76.3	62.1	66.7

Three years of coverage data in 13 age-dose categories are provided by RHA. A yellow highlighted cell means the RHA's coverage rate is below the provincial coverage rate.

Tetanus vaccine is recommended at 2, 4, 6, and 18 months, with booster doses between ages 4 to 6 years and in grade eight. Data for 3, 5, 8, 12, 20, and 24 months, along with 4, 7, 13, 15, and 17 years, are shown.

At a provincial level, coverage at 8 months and 17 years improved by 2% and 6%, respectively, from 2012 to 2014.

Rates for all other ages remained steady or showed modest increases or decreases.

In 2014, for both three doses at 8 months and four doses at 20 months, eight RHAs exceeded the provincial average and five were below.

There was substantial growth in coverage (four doses) from the 20 to 24 month age groups, an increase of 26%.

Across all years and all 13 age-dose categories, two RHAs, Heartland and Sun Country, were above the provincial rate in all age categories and one, Prince Albert Parkland was below in all age-dose categories.

Coverage rates for health regions in Peer Groups F and H should be interpreted with caution.

\*Immunization records may be incomplete for children born prior to 1996; therefore, the immunization coverage for 17-year-old adolescents may not reflect actual provincial or RHA rates.

**Table 5: Tetanus Vaccine Coverage by Health Region: 2013 (selected age & dose)**

Health Region, by Peer Group	Vaccine coverage (% immunized), by age and dose												
	3 months 1 dose	5 months 2 doses	8 months 3 doses	12 months 3 doses	20 months 3 doses 4 doses		24 months 3 doses 4 doses		4 years 4 doses	7 years 5 doses	13 years 5 doses	15 years 6 doses	17 years 6 doses
<b>Saskatchewan</b>	83.4	73.9	75.8	84.5	89.2	59.2	90.5	76.4	84.9	78.5	81.2	73.8	76.2
<b>Peer Group A</b>													
Regina Qu'Appelle	84.6	76.2	78.3	85.4	89.3	64.2	89.9	76.9	84.5	78.2	78.3	71.1	73.7
Saskatoon	84.1	76.3	77.4	84.9	89.4	59.9	91.2	79.5	84.2	78.7	80.3	75.6	77.8
<b>Peer Group D</b>													
Cypress	81.6	70.5	74.1	86.5	91.9	57.6	91.8	76.5	88.9	82.7	87.0	80.1	82.8
Five Hills	86.7	78.2	81.9	88.8	91.2	58.5	92.1	78.3	89.3	81.3	86.3	78.1	81.4
Heartland	84.7	76.1	81.1	91.3	93.6	66.5	93.2	81.4	90.3	86.3	89.8	83.9	87.3
Kelsey Trail	83.6	74.0	77.9	87.7	90.6	56.1	90.8	72.8	85.6	78.5	81.9	76.9	78.8
Sun Country	89.7	84.0	86.7	91.7	94.8	76.5	94.4	85.7	90.8	91.3	92.1	85.5	89.2
Sunrise	82.8	74.0	78.8	84.7	88.1	52.8	90.2	71.7	87.7	80.8	84.2	76.4	78.7
<b>Peer Group F</b>													
Athabasca Health	84.0	74.2	80.6	97.8	100.0	75.0	100.0	92.5	96.7	71.4	89.8	64.9	81.3
Keewatin Yatthé	72.5	59.8	59.6	81.0	85.7	48.1	92.4	77.1	89.3	80.1	89.3	62.6	66.2
Mamawetan Churchill River	78.2	53.7	53.9	79.5	91.8	43.4	93.2	70.9	79.5	69.6	78.0	56.7	53.3
<b>Peer Group H</b>													
Prince Albert Parkland	77.5	58.6	58.0	72.5	83.5	44.5	85.9	64.2	79.5	72.4	77.3	67.8	66.3
Prairie North	79.1	66.8	68.6	78.6	84.4	46.6	86.3	65.6	79.6	68.1	77.3	64.2	67.7

**Table 6: Tetanus Vaccine Coverage by Health Region: 2012 (selected age & dose)**

Health Region, by Peer Group	Vaccine coverage (% immunized), by age and dose												
	3 months 1 dose	5 months 2 doses	8 months 3 doses	12 months 3 doses	20 months 3 doses 4 doses		24 months 3 doses 4 doses		4 years 4 doses	7 years 5 doses	13 years 5 doses	15 years 6 doses	17 years*
<b>Saskatchewan</b>	83.1	72.4	74.8	84.7	88.8	59.7	89.4	75.5	84.0	77.7	83.0	73.9	68.8
<b>Peer Group A</b>													
Regina Qu'Appelle	84.4	74.8	76.8	84.7	88.7	66.5	89.5	77.3	82.7	76.6	79.7	72.2	40.1
Saskatoon	83.6	73.4	75.8	86.1	89.5	59.3	89.7	76.0	84.1	76.8	81.4	74.9	76.2
<b>Peer Group D</b>													
Cypress	83.9	71.0	75.3	86.6	90.8	56.6	92.3	78.1	88.1	83.5	88.9	84.4	86.0
Five Hills	83.3	75.4	77.6	89.4	91.7	58.6	92.9	76.5	86.5	83.8	89.4	82.2	80.9
Heartland	84.4	76.4	81.9	90.4	92.7	65.7	91.9	80.8	91.4	85.5	91.5	88.4	86.8
Kelsey Trail	86.3	74.6	77.5	86.8	91.5	57.9	91.0	74.6	85.0	78.4	86.3	77.4	80.0
Sun Country	91.3	87.2	87.8	91.6	95.0	72.1	95.5	87.9	91.2	90.5	92.4	85.2	85.3
Sunrise	80.1	70.0	75.3	84.7	89.1	56.9	91.0	76.7	87.7	80.3	89.1	76.3	76.9
<b>Peer Group F</b>													
Athabasca Health	90.3	65.6	63.9	97.4	94.5	74.5	94.4	83.3	86.4	85.5	92.3	69.0	76.3
Keewatin Yatthé	72.7	47.9	46.7	75.0	91.4	48.5	90.9	75.3	82.9	74.4	88.6	48.5	54.2
Mamawetan Churchill River	68.6	48.4	55.3	73.1	83.3	46.9	87.5	68.0	80.4	70.8	69.3	44.3	53.3
<b>Peer Group H</b>													
Prince Albert Parkland	77.2	57.4	60.1	75.3	82.2	45.3	83.0	64.7	81.2	75.5	80.1	64.5	66.1
Prairie North	79.3	68.1	69.0	77.8	82.6	49.9	83.1	65.5	77.0	67.0	80.2	64.8	69.4

# 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)

<b>Confirmed Case</b>	Clinical evidence of illness* with or without other apparent medical cause with or without isolation of <i>Clostridium tetani</i> and with or without history of injury
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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: Saskatchewan Integrated Public Health Information System (iPHIS), a provincially mandated integrated client-centered case management information system that supports public health surveillance. Confirmed cases must meet the provincial surveillance case definition.

Peer groups were created by Statistics Canada. A peer group consists of health regions with similar socio-economic characteristics so that important differences may be detected by comparing within a peer group. The thirteen health regions in Saskatchewan fall into four (identified by letters A, D, F and H) of the ten peer groups (A to J) across Canada.

Vaccine Coverage Data Source: Saskatchewan Immunization Management System (SIMS) is a client-based registry recording vaccines delivered by regional public health services. It does not include vaccines delivered out of province or by First Nations communities that declined to use SIMS. Immunization data from Keewatin Yatthé and Mamawetan Churchill River health regions and historical data from Athabasca Health Authority are incomplete.

As a result, this report does not provide immunization coverage for the entire provincial or regional populations.

The four-dose primary series of tetanus toxoid-containing vaccine is administered as Diphtheria, Tetanus, acellular Pertussis, inactivated Polio & Haemophilus influenza type B (DTaP-IPV-Hib). The first booster at 4 to 6 years of age is DTaP-IPV vaccine and the second and final booster at Grade 8 is Tetanus, Diphtheria & acellular Pertussis (Tdap) vaccine. Immunization coverage is based on those who turned 3, 5, 8, 12, 20 and 24 months, and 4, 7, 13, 15 and 17 years by December 31 in 2012, 2013 and 2014. For example, the immunization coverage for 7 year olds in 2014 is based on clients who were born in 2007 and their immunization records up to December 31, 2014.