

# Vaccine Preventable Disease Monitoring Report Varicella, 2017 and 2018

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

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**Purpose:**

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

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.

**Report Features:**

Background  
Epidemiological Summary  
Vaccine Coverage by AHA and former RHA

**Data Source:**

Panorama (as of May 1, 2019)

**BACKGROUND**

Varicella (chickenpox) is a viral illness caused by the varicella-zoster virus. The classic symptom is a rash with itchy, fluid-filled blisters in successive crops that turn into scabs.

Varicella is generally considered a mild infection. However, five to ten percent of otherwise healthy children may develop complications that may be fatal. Complications may include secondary bacterial infections, soft tissue infections, otitis media, bacteraemia, osteomyelitis, septic arthritis, endocarditis, necrotizing fasciitis, toxic shock-like syndrome, thrombocytopenia, cerebellar ataxia, encephalitis and hepatitis. The risk of invasive group A streptococcal infection increases by 40- to 60-fold in previously healthy children.

Transmission of varicella occurs through airborne virus as well as through direct or indirect contact of oral or nasal mucous membranes with respiratory secretions or vesicular fluid. The attack rate among susceptible household contacts is estimated at 65-87%.

Transmission occurs from one to two days before onset of rash and continues until all lesions are crusted, which is approximately five days.

Varicella is a more severe disease in adults, with a case fatality rate of about 30 deaths per 100 000 cases. This is five to 30 times higher than in children. Moreover, in both adults and children, the majority who die of varicella have no identifiable risk factor for severe disease. Since 2000, there have been 11 pediatric deaths reported by IMPACT (Canada's Immunization Monitoring Program ACTive).

Neonates who develop varicella at five to 10 days are at increased risk for severe generalized varicella. Severe neonatal varicella occurs in 17-30% of infants born to women who developed varicella five days before delivery to within two days following delivery.

The virus lies dormant in the nerves and in about 10-20% of cases it reactivates at a later time causing shingles.

**IMMUNIZATION**

The current Saskatchewan Routine Immunization Schedule recommends varicella-containing vaccines to children at 12 and 18 months of age and to Grade 6 students.

The varicella vaccine was added to the Schedule in January 2005. At that time, 12 month-old children (i.e., born since January 1, 2004) and susceptible Grade 6 students born since 1994 were eligible to receive one dose. Susceptible Grade 6 students were those without a history of disease.

In April 2011, a two-dose series at 12 and 18 months of age replaced the single dose at 12 months of age (i.e., children born since October 1, 2009). Susceptible Grade 6 students continued to be eligible for a single dose.

In 2014, there was a national recommendation that stated that varicella immunity should consist of either lab-confirmed serological immunity; or the receipt of two varicella doses after the first birthday. Therefore, Grade 6 students will continue to be offered a varicella dose until the 2020-2021 school year, when the first birth cohort to receive the two-dose series will have reached Grade 6.

**SURVEILLANCE**

*The Public Health Act, 1994* requires Saskatchewan health care providers to report cases and outbreaks of varicella to the local medical health officer (MHO) for public health follow up. The Roy Romanow Provincial Laboratory (RRPL) is also required to report positive laboratory results to the local MHO. However, case reporting to the Chief and Deputy Chief Medical

Health Officers via the integrated Public Health Information System (iPHIS) is not required. RRPL creates counts of positive laboratory specimens and calculates the proportion of positive specimens among specimens tested.

# EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARY

## Varicella in Saskatchewan: 2018

- Varicella cases are not reported in Saskatchewan; therefore, case counts and characteristics are not available.

## Varicella Coverage in Saskatchewan: 2014 to 2018

- From 2014 to 2018, provincial immunization coverage rates improved for all age-dose categories.
- As varicella was added to the publicly funded immunization program in 2005, older children (13-17 years) have lower rates of immunization for earlier years which improve in more recent years.
- The lower vaccination rates in the older age group (17-year-olds) reflect that this group was not offered varicella vaccine as many were considered immune due to a history of varicella disease.

**Table 1: Varicella 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> |
|-----------|-------|-------|-------|-------------------|-------------------|-------------------|
| 13 months | 1     | 64%   | 60.5% | 58.3%             | 59%               | 58.3%             |
| 18 months | 1     | 86.1% | 84.9% | 83.9%             | 81.9%             | 83.4%             |
| 19 months | 1     | 87.2% | 86%   | 85.1%             | 83.5%             | 84.9%             |
|           | 2     | 54.8% | 48.8% | 46.2%             | 46.1%             | 45.1%             |
| 24 months | 1     | 90.1% | 88.2% | 88.1%             | 86.8%             | 87.5%             |
|           | 2     | 80.2% | 75.7% | 75.8%             | 72.7%             | 74.9%             |
| 5 years   | 1     | 92.3% | 89.7% | 91.9%             | 89.1%             | 90.7%             |
|           | 2     | 86.4% | 83%   | 86%               | 81.8%             | 24.6%             |
| 7 years   | 2     | 88.4% | 86.5% | N/A               | N/A               | N/A               |
| 13 years  | 1     | 93.2% | 91.3% | 79.2%             | 48.7%             | 38.5%             |
| 15 years  | 1     | 83.9% | 52.4% | 41.1%             | 33.5%             | 27.6%             |
| 17 years  | 1     | 41.8% | 34.2% | 28.1%             | 22.4%             | 20.2%             |

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

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

N/A = not applicable since children eligible for two dose series are not old enough in 2014, 2015 and 2016.

# EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARY

**Table 2: Varicella vaccine coverage by Athabasca Health Authority and former health region, 2018**

| Jurisdiction<br>(with former health region<br>by Peer Group) | Immunization coverage (% immunized), by age and dose |             |             |             |             |             |             |             |             |             |             |             |          |          |
|--|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------|----------|
|  | 13 months  |             | 18 months   |             | 19 months   |             | 24 months   |             | 5 years     |             | 7 years     | 13 years    | 15 years | 17 years |
|  | 1 dose   | 1 dose      | 1 dose      | 2 doses     | 1 dose      | 2 doses     | 1 dose      | 2 doses     | 2 doses     | 1 dose      | 1 dose      | 1 dose      | 1 dose   |          |
| <b>Saskatchewan</b>  | <b>64</b>  | <b>86.1</b> | <b>87.2</b> | <b>54.8</b> | <b>90.1</b> | <b>80.2</b> | <b>92.3</b> | <b>86.4</b> | <b>88.3</b> | <b>93.2</b> | <b>83.9</b> | <b>41.6</b> |          |          |
| <b>Saskatchewan Health Authority</b>                         | <b>64</b>  | <b>86.1</b> | <b>87.2</b> | <b>54.8</b> | <b>90.1</b> | <b>80.2</b> | <b>92.3</b> | <b>86.4</b> | <b>88.3</b> | <b>93.2</b> | <b>83.9</b> | <b>41.6</b> |          |          |
| <b>Peer Group A</b>  |  |             |             |             |             |             |             |             |             |             |             |             |          |          |
| Regina Qu'Appelle  | 67.8   | 86.6        | 87.7        | 60.5        | 88.8        | 78.1        | 92.1        | 85.3        | 89          | 92.7        | 83.3        | 37.1        |          |          |
| Saskatoon  | 58.4   | 86.3        | 87.3        | 48.1        | 90.7        | 81          | 90.5        | 83.9        | 85.9        | 93.1        | 85.6        | 43.9        |          |          |
| <b>Peer Group D</b>  |  |             |             |             |             |             |             |             |             |             |             |             |          |          |
| Cypress  | 70.7   | 89.2        | 90.8        | 62.7        | 91.3        | 83.9        | 94.7        | 91.7        | 91.5        | 94          | 83.6        | 49.7        |          |          |
| Five Hills   | 72.5   | 86.5        | 88.7        | 65.3        | 91.7        | 83.3        | 94.2        | 88.7        | 89          | 92.7        | 85.3        | 42          |          |          |
| Heartland  | 68.3   | 88.9        | 91.1        | 66.2        | 92.6        | 88.7        | 92.9        | 91.4        | 91.7        | 94.6        | 86.7        | 53.1        |          |          |
| Kelsey Trail   | 79.6   | 94.7        | 96.1        | 69.9        | 95.6        | 91.6        | 96.4        | 94.8        | 92.3        | 91.6        | 81.6        | 38.2        |          |          |
| Sun Country  | 84.4   | 93.7        | 93.9        | 76.2        | 94.8        | 91.9        | 95.6        | 93.4        | 93.2        | 94.8        | 83.8        | 38.1        |          |          |
| Sunrise  | 67.4   | 83.6        | 84          | 54.1        | 90.1        | 80.6        | 92.4        | 88.3        | 90.5        | 93.4        | 84.5        | 39.8        |          |          |
| <b>Peer Group F</b>  |  |             |             |             |             |             |             |             |             |             |             |             |          |          |
| Athabasca Health Authority                                   | 71.4   | 88.5        | 89.7        | 41.4        | 94.4        | 80.6        | 100         | 94.3        | 100         | 98.3        | 91.7        | 84.8        |          |          |
| Keewatin Yatthé  | 49   | 77.7        | 79.2        | 28.3        | 87.8        | 64.7        | 93.8        | 87.6        | 87.6        | 88.8        | 79.9        | 43.6        |          |          |
| Mamawetan Churchill River                                    | 63.6   | 90.6        | 91.4        | 49.1        | 97          | 83.5        | 98.7        | 96.1        | 93.3        | 95.1        | 69.8        | 37.3        |          |          |
| <b>Peer Group H</b>  |  |             |             |             |             |             |             |             |             |             |             |             |          |          |
| Prairie North  | 60.5   | 80.5        | 81          | 47          | 86.6        | 74          | 92.6        | 86.6        | 86.3        | 92.5        | 78          | 44.1        |          |          |
| Prince Albert Parkland                                       | 50.5   | 79.1        | 79.9        | 40.6        | 86.7        | 69.8        | 94          | 85.9        | 88.3        | 95.1        | 86.3        | 40.2        |          |          |

**Table 3: Varicella vaccine coverage by Athabasca Health Authority and former health region, 2017**

| Jurisdiction<br>(with former health region<br>by Peer Group) | Immunization coverage (% immunized), by age and dose |             |           |             |             |             |             |           |             |             |             |             |          |          |
|--|--|-------------|-----------|-------------|-------------|-------------|-------------|-----------|-------------|-------------|-------------|-------------|----------|----------|
|  | 13 months  |             | 18 months |             | 19 months   |             | 24 months   |           | 5 years     |             | 7 years     | 13 years    | 15 years | 17 years |
|  | 1 dose   | 1 dose      | 1 dose    | 2 doses     | 1 dose      | 2 doses     | 1 dose      | 2 doses   | 2 doses     | 1 dose      | 1 dose      | 1 dose      | 1 dose   |          |
| <b>Saskatchewan</b>  | <b>60.5</b>  | <b>84.9</b> | <b>86</b> | <b>48.8</b> | <b>88.2</b> | <b>75.7</b> | <b>89.7</b> | <b>83</b> | <b>86.5</b> | <b>91.3</b> | <b>52.4</b> | <b>34.2</b> |          |          |
| <b>Saskatchewan Health Authority</b>                         | <b>60.5</b>  | <b>84.9</b> | <b>86</b> | <b>48.8</b> | <b>88.2</b> | <b>75.7</b> | <b>89.6</b> | <b>83</b> | <b>86.5</b> | <b>91.2</b> | <b>52.3</b> | <b>34.1</b> |          |          |
| <b>Peer Group A</b>  |  |             |           |             |             |             |             |           |             |             |             |             |          |          |
| Regina Qu'Appelle  | 56.2   | 83.2        | 84.2      | 47.9        | 86.2        | 72.5        | 88.9        | 81.6      | 86.4        | 90.3        | 47.7        | 31          |          |          |
| Saskatoon  | 60.3   | 84.8        | 85.7      | 45.2        | 88.1        | 76.7        | 88.1        | 80.3      | 84.3        | 91.7        | 56.7        | 37.9        |          |          |
| <b>Peer Group D</b>  |  |             |           |             |             |             |             |           |             |             |             |             |          |          |
| Cypress  | 63.3   | 88.1        | 89.8      | 58.5        | 90.4        | 81          | 93.3        | 88.1      | 88.7        | 93.3        | 51.9        | 37.5        |          |          |
| Five Hills   | 66.5   | 87.7        | 88.1      | 56.9        | 91.1        | 79.1        | 89.9        | 84.4      | 88          | 89.2        | 50.9        | 30.6        |          |          |
| Heartland  | 68.1   | 91.5        | 91        | 59.7        | 92.2        | 83.4        | 93          | 88.3      | 92.9        | 91.4        | 56.5        | 40          |          |          |
| Kelsey Trail   | 74.4   | 92.3        | 93        | 60          | 95.9        | 87.3        | 92.8        | 88.5      | 89.8        | 94.2        | 44          | 27.2        |          |          |
| Sun Country  | 78.7   | 92.1        | 93        | 69.9        | 94          | 87.9        | 93.8        | 91.3      | 93.5        | 93.6        | 48.3        | 35.2        |          |          |
| Sunrise  | 69.1   | 86.2        | 87.5      | 59.3        | 88.2        | 77.9        | 89.6        | 83.7      | 86.8        | 91          | 48.9        | 30.3        |          |          |
| <b>Peer Group F</b>  |  |             |           |             |             |             |             |           |             |             |             |             |          |          |
| Athabasca Health Authority                                   | 52.8   | 88.4        | 92.7      | 36.6        | 97.3        | 73          | 96.7        | 93.3      | 87.5        | 96.1        | 93.3        | 69.8        |          |          |
| Keewatin Yatthé  | 50   | 83.3        | 87.6      | 31          | 85.7        | 61.5        | 94.8        | 88.4      | 85.4        | 84          | 60.9        | 26.8        |          |          |
| Mamawetan Churchill River                                    | 54.8   | 88.7        | 90.3      | 43.9        | 94.3        | 72.1        | 97.6        | 95.3      | 83.1        | 90.8        | 47.5        | 29.2        |          |          |
| <b>Peer Group H</b>  |  |             |           |             |             |             |             |           |             |             |             |             |          |          |
| Prairie North  | 57.2   | 81          | 82.7      | 43.1        | 84.3        | 69.3        | 88.9        | 82.6      | 85.4        | 90.2        | 52.9        | 34.1        |          |          |
| Prince Albert Parkland                                       | 51.1   | 79.4        | 82.2      | 37.8        | 87.8        | 68          | 91.9        | 85.2      | 87          | 91.7        | 55.5        | 32.4        |          |          |

- Two years of coverage data in 12 age-dose categories are provided by former RHA and Athabasca Health Authority (AHA). Yellow highlighted numbers indicate rates below the provincial coverage rate.
- Varicella vaccine was added to the publicly-funded immunization program in 2005 as a single-dose vaccine. It was offered to 12-month old children born since January 1, 2004 and susceptible Grade 6 students born since 1994 (i.e., without history of disease).
- Children who were 13 years of age in 2017 and 2018 belong to the birth cohorts who were eligible for only one dose of varicella vaccine at 12 months of age. Therefore, a one-dose coverage rate is reported for 13-year old children.
- Children who were 15 and 17 years old in 2017 and 2018 were born prior to January 1, 2004 and belong to the student cohorts who were offered one dose at Grade 6, if considered susceptible. Therefore, one-dose coverage rates are reported for 15 and 17 year-old children.
- In April 2011, a two-dose series offered at 12 and 18 months replaced the single-dose at 12 months of age for children born since October 1, 2009. In 2017, the first eligible infant cohort for the two-dose series is eight years old. Therefore, two-dose coverage rates are reported for 19 month, 24 month, five year and seven year-old children.
- At the provincial level, immunization coverage improved from 2017 to 2018 for all age-dose categories.
- In 2018, the one-dose coverage rate was higher among the 19-month age-group compared to the 13-month age-group: 87.2% vs. 64%. It was even higher for the five-year-old age-group at 92.3%.
- In 2018, the former Heartland RHA reported coverage rates at or above the provincial average for all twelve age-dose categories and AHA, the former Cypress and Five Hills RHAs reported coverage rates at or above the provincial average for all but one age-dose category.
- In 2018, the former Keewatin Yatthé, Prairie North and Prince Albert Parkland RHAs were below the provincial average in all but three age-dose categories.

## SURVEILLANCE CASE DEFINITION

Varicella cases are not reported in Saskatchewan; therefore, a surveillance case definition is not available.

## DATA NOTES

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. Peer groups used in this report are based on Statistics Canada's 2011 peer groupings and should not be compared to the 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 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).

Most FNIHB-SK and NITHA communities, with the exception of those in AHA, are not currently using Panorama. Therefore, immunization data for most 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 May 1, 2019. In other words, children with Saskatchewan health coverage and registered in Panorama under FNIHB-SK or NITHA jurisdiction are excluded (including those from FNIHB-SK and NITHA communities in AHA). This means this report does not include coverage statistics for the entire provincial or regional population.

Varicella-containing vaccine is administered as measles, mumps, rubella and varicella (MMRV) or univalent-varicella vaccine. Immunization coverage is based on those who turned 13, 18, 19 and 24 months and five, seven, 13, 15 and 17 years by December 31 in 2017 and 2018. For example, the immunization coverage for 24-month-old children in 2018 is based on clients who were born in 2016 and the immunization doses they received by their second birthdays.