

# Childhood Immunization: Coverage statistics for 2- and 7-year-old children

Quarterly Report: March 2018

Report release date: April 2018

## **Purpose:**

This report provides summary of childhood immunization coverage in Saskatchewan. Coverage statistics of children vaccinated by their second and seventh birthdays against pertussis, measles and meningococcal serogroup C disease for the recommended number of doses, according to the provincial Routine Childhood Immunization Schedules, are presented for the province and former health regions clustered by peer groups.

## **Reporting Period:**

Apr 2017 - Mar 2018

## **Data Source:**

Panorama  
(as of April 1, 2018)

## **Prepared by:**

Population Health  
Branch, Saskatchewan  
Ministry of Health

## **Contact:**

Val Mann, PhD  
Chief Population Health  
Epidemiologist  
Population Health  
Branch, Saskatchewan  
Ministry of Health  
[epidemiology@health.gov.sk.ca](mailto:epidemiology@health.gov.sk.ca)

## **Executive Summary**

The proportion of children immunized is an important indicator for population health and health system performance. When immunization coverage falls below a critical level, outbreaks may occur. Recommended coverage rates to prevent outbreaks of pertussis and measles are 92-94% and 83-94%, respectively.

In Saskatchewan, immunization coverage rates of three key antigens by the second and seventh birthdays, respectively, are:

- Pertussis: 79.5% and 75.9%
- Measles: 79% and 90.2%
- Meningococcal serogroup C disease: 90% and 93.3%

The percentage of two-year-old and seven-year-old children who were immunized with all three antigens was 77.4% and 75.5% respectively.

Immunization coverage for pertussis, measles and meningococcal serogroup C disease increased for two-year-old children from March 2017 (the differences being 2.6, 2.5 and 1.3, respectively).

Immunization coverage for pertussis decreased, but coverage for measles and meningococcal serogroup C disease increased for seven-year-old children from December 2016 (the differences being -0.2, 0.1 and 0.6, respectively).

## **Background**

Immunization is a cost-effective preventive measure which has saved more lives than any other health measure.

In Saskatchewan, immunization programs are primarily delivered by regional public health services.

First Nations and Inuit Health Branch (FNIHB) - Saskatchewan and the Northern Inter-Tribal Health Authority (NITHA) are responsible for providing immunizations to First Nations (FN) children living on reserve.

Panorama includes information on the jurisdictional organization (JORG) responsible for delivering immunizations to a child registered in Panorama (e.g., a former health region, a NITHA community). The JORG often corresponds directly to a child's home community but not always. This report is based on the child's JORG, not where the vaccine was delivered. For example, if a girl with a JORG of the former Regina Qu'Appelle Health Region (RQHR) is immunized in Saskatoon, she will be counted and reported under the former RQHR, not under the former Saskatoon Health Region.

## **Limitations**

Vaccines delivered outside regional public health services (e.g., in an emergency department, a physician's office) may not be recorded in Panorama.

Most FNIHB and NITHA communities, with the exception of those in the Athabasca Health Authority (AHA), are not currently using Panorama. Therefore, immunization data for most FN 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 jurisdiction as of April 1, 2018. In other words, children with Saskatchewan health coverage and registered in Panorama under a FNIHB or NITHA jurisdiction are excluded (including those from FNIHB and NITHA communities in AHA). This means this report does not include coverage statistics for the entire provincial or regional population.

# IMMUNIZATION COVERAGE OF 2-YEAR-OLD CHILDREN

## Pertussis:

- According to the SK Immunization Manual, routine childhood immunization against pertussis is scheduled at ages 2, 4, 6 and 18 months, 4-6 years, and Grade 8. Therefore, children should have received four doses of pertussis antigen by their second birthday. The pertussis antigen is usually administered as DTaP-IPV-Hib (diphtheria, tetanus, acellular pertussis, inactivated polio, *Haemophilus influenzae* type b) vaccine. That is, children who received the pertussis antigen would normally also have received the other antigens of the multiple-antigen vaccine.

- To learn more about pertussis please visit: <http://www.saskatchewan.ca/residents/health/diseases-and-conditions/pertussis-whooping-cough>

## Measles:

- According to the SK Immunization Manual, routine childhood immunization against measles is scheduled at ages 12 and 18 months. Therefore, children should have received two doses of measles antigen by their second birthday.

- The measles antigen is usually administered as MMRV (measles, mumps, rubella, varicella) vaccine. This means that children who received the measles antigen would normally have received the other antigens of the multiple-antigen vaccine as well.

- To learn more about measles please visit: <http://www.saskatchewan.ca/residents/health/diseases-and-conditions/measles>

## Meningococcal serogroup C disease:

- According to the SK Immunization Manual, routine childhood immunization against meningococcal serogroup C disease is scheduled at age 12 months and Grade 6. Therefore, children should have received one dose of meningococcal serogroup C vaccine by their second birthday.

- To learn more about meningococcal serogroup C vaccine please visit: <http://www.saskatchewan.ca/government/news-and-media/2004/september/27/meningococcal-immunization-to-start-october-1st>

## Data Source:

Panorama (as of April 1, 2018)

**Table 1:** Number and percentage of children vaccinated for the recommended number of doses against pertussis, measles and meningococcal serogroup C disease by their **second birthday** in Saskatchewan, by former health region as of March 31, 2018.

Former Health Region, by Peer Group	Number of Eligible Children in Panorama (a)	Number of Eligible Children Immunized (%) (b)		
		Pertussis (4 doses)	Measles (2 doses)	Meningococcal serogroup C (1 dose)
<b>Saskatchewan</b>	<b>14,264</b>	<b>11,340 (79.5)</b>	<b>11,268 (79)</b>	<b>12,834 (90)</b>
<b>Peer Group A</b>				
Regina Qu'Appelle	3,868	2,958 (76.5)	2,929 (75.7)	3,392 (87.7)
Saskatoon	4,824	3,911 (81.1)	3,891 (80.7)	4,356 (90.3)
<b>Peer Group D</b>				
Cypress	504	424 (84.1)	425 (84.3)	469 (93.1)
Five Hills	598	496 (82.9)	496 (82.9)	558 (93.3)
Heartland	516	445 (86.2)	444 (86)	477 (92.4)
Kelsey Trail	374	337 (90.1)	335 (89.6)	359 (96)
Sun Country	700	645 (92.1)	645 (92.1)	670 (95.7)
Sunrise	603	506 (83.9)	501 (83.1)	554 (91.9)
<b>Peer Group F</b>				
Athabasca Health Authority	41	27 (65.9)	28 (68.3)	39 (95.1)
Keewatin Yatthé	154	104 (67.5)	105 (68.2)	134 (87)
Mamawetan Churchill River	148	114 (77)	121 (81.8)	143 (96.6)
<b>Peer Group H</b>				
Prairie North	1,104	819 (74.2)	799 (72.4)	963 (87.2)
Prince Albert Parkland	830	554 (66.7)	549 (66.1)	720 (86.7)

- (a) The denominator is the number of children registered in Panorama who turned two years of age between April 1, 2017 and March 31, 2018; have Saskatchewan provincial health coverage; and are flagged as under a former health region jurisdiction for public health services, as of April 1, 2018.
- (b) The numerator is the number of children from the denominator who received the recommended number of doses of the respective antigen by their second birthday.

- In Saskatchewan, there were 14,264 children aged two years registered in Panorama with provincial health coverage and whose public health jurisdiction was flagged with a former health region (HR), as of April 1, 2018. They represent approximately 90.3% of the children two years of age in the 2016 Saskatchewan Covered Population (total number of two-year-old children with provincial health coverage as of June 30, 2016 was 15,788).

- The percentages of eligible children in Panorama who received the recommended number of doses of pertussis, measles and meningococcal serogroup C vaccines by their second birthday were 79.5%, 79% and 90%, respectively. Overall 77.4% of children received all three vaccine agents by age two years.

- In Peer Group A, the immunization coverage rates were higher in the former Saskatoon HR than in the former Regina Qu'Appelle HR for all three antigens. Vaccine coverage in the former Saskatoon HR was above the provincial average as well. The coverage rates in the former Regina Qu'Appelle HR were below the provincial coverage rates for all three antigens. The former Saskatoon HR experienced higher coverage rate for pertussis and measles but lower coverage for meningococcal serogroup C compared to March, 2017. The former Regina Qu'Appelle HR experienced higher coverage rates

for all three antigens compared to March, 2017.

- All the former HRs in Peer Group D had coverage rates higher than the provincial average for all three antigens. Since March 2017, the former Cypress HR experienced a drop in immunization coverage for pertussis and measles, while all the other former HRs in this peer group saw an improvement during the same time period.
- With the exception of meningococcal serogroup C in Athabasca Health Authority and measles and meningococcal serogroup C in the former Mamawetan Churchill River HR, Peer Group F had coverage rates lower than the provincial average for all three antigens. The former Mamawetan Churchill River HR reports higher coverage rates than either Athabasca Health Authority or the former Keewatin Yatthé HR. Coverage rates for pertussis and measles in Athabasca Health Authority dropped since March 2017; all other former HRs in this peer group saw improvement in coverage rates for all three antigens compared to March 2017.
- In Peer Group H, the immunization coverage in the former Prairie North HR was higher than that in the former Prince Albert Parkland HR but lower than the provincial average for all three antigens.

# IMMUNIZATION COVERAGE OF 7-YEAR-OLD CHILDREN

## **Pertussis:**

- According to the SK Immunization Manual, routine childhood immunization against pertussis is scheduled at ages 2, 4, 6 and 18 months, 4-6 years, and Grade 8. Therefore, children should have received five doses by their seventh birthday.
- The pertussis antigen is usually administered as DTaP-IPV-Hib (diphtheria, tetanus, acellular pertussis, inactivated polio, *Haemophilus influenzae* type b) vaccine. That is, children who received the pertussis antigen would normally also have received the other antigens of the multiple-antigen vaccine.
- To learn more about pertussis please visit: <http://www.saskatchewan.ca/residents/health/diseases-and-conditions/pertussis-whooping-cough>

## **Measles:**

- According to the SK Immunization Manual, routine childhood immunization against measles is scheduled at ages 12 and 18 months. Therefore, children should have received two doses of measles antigen by their seventh birthday.
- The measles antigen is usually administered as MMRV (measles, mumps, rubella, varicella) vaccine. This means that children who received the measles antigen would normally have received the other antigens of the multiple-antigen vaccine as well.
- To learn more about measles please visit: <http://www.saskatchewan.ca/residents/health/diseases-and-conditions/measles>

## **Meningococcal serogroup C disease:**

- According to the SK Immunization Manual, routine childhood immunization against meningococcal serogroup C disease is scheduled at age 12 months and Grade 6. Therefore, children should have received one dose of meningococcal serogroup C vaccine by their seventh birthday.
- To learn more about meningococcal serogroup C vaccine please visit: <http://www.saskatchewan.ca/government/news-and-media/2004/september/27/meningococcal-immunization-to-start-october-1st>

## **Data Source:**

Panorama (as of April 1, 2018)

**Table 2:** Number and percentage of children vaccinated for the recommended number of doses against pertussis, measles and meningococcal serogroup C disease by their **seventh birthday** in Saskatchewan by former health region as of March 31, 2018.

Former Health Region, by Peer Group	Number of Eligible Children in Panorama (c)	Number of Eligible Children Immunized (%) (d)		
		Pertussis (5 doses)	Measles (2 doses)	Meningococcal serogroup C (1 dose)
<b>Saskatchewan</b>	<b>15,062</b>	<b>11,427 (75.9)</b>	<b>13,589 (90.2)</b>	<b>14,046 (93.3)</b>
<b>Peer Group A</b>				
Regina Qu'Appelle	3,886	2,953 (76)	3,522 (90.6)	3,640 (93.7)
Saskatoon	4,994	3,631 (72.7)	4,441 (88.9)	4,617 (92.5)
<b>Peer Group D</b>				
Cypress	511	435 (85.1)	478 (93.5)	486 (95.1)
Five Hills	713	563 (79)	651 (91.3)	677 (95)
Heartland	535	464 (86.7)	510 (95.3)	515 (96.3)
Kelsey Trail	496	419 (84.5)	471 (95)	478 (96.4)
Sun Country	726	656 (90.4)	697 (96)	702 (96.7)
Sunrise	669	504 (75.3)	595 (88.9)	618 (92.4)
<b>Peer Group F</b>				
Athabasca Health Authority	49	43 (87.8)	44 (89.8)	44 (89.8)
Keewatin Yatthé	193	132 (68.4)	172 (89.1)	178 (92.2)
Mamawetan Churchill River	263	167 (63.5)	231 (87.8)	245 (93.2)
<b>Peer Group H</b>				
Prairie North	1,083	767 (70.8)	938 (86.6)	971 (89.7)
Prince Albert Parkland	944	693 (73.4)	839 (88.9)	875 (92.7)

- (c) The denominator includes children registered in Panorama who turned seven years of age between April 1, 2017 and March 31, 2018, have Saskatchewan provincial health coverage, and are flagged as under a former health region jurisdiction for public health services, as of April 1, 2018.
- (d) The numerator includes children from the denominator who received the recommended number of doses of the respective antigen by their seventh birthday.

- A total of 15,062 children aged seven years were registered in Panorama with provincial health coverage and whose public health jurisdiction was flagged as under a former health region (HR) jurisdiction, as of April 1, 2018. They represent approximately 94.3% of the children of age seven years in the 2016 Saskatchewan Covered Population (total number of seven-year-old children with provincial health coverage as of June 30, 2016 was 15,978).

- Of these, 75.9% received five doses of pertussis, 90.2% received two doses of measles and 93.3% received one dose of meningococcal serogroup C vaccine by their seventh birthday. Overall 75.5% received all three vaccine agents by age seven years.
- The immunization coverage of pertussis was less but coverage of measles and meningococcal serogroup C for seven-year-old children was higher than those reported for the two-year-old children.

- In Peer Group A, immunization coverage was higher in the former Regina Qu'Appelle HR than in the former Saskatoon HR for all three antigens. The coverage rates in the former Saskatoon HR were below the provincial coverage rates for all three antigens. Immunization coverage rates in the former Regina Qu'Appelle HR improved for all three antigens compared to March, 2017. On the other hand, the former Saskatoon HR experienced

lower coverage rates for all three antigens compared to March, 2017.

- With the exception of coverage for all three antigens in the former Sunrise HR, all former HRs in Peer Group D were above the provincial coverage rates for all three antigens. The former Sunrise HR saw declines in coverage rates for all three antigens and coverage for meningococcal serogroup C in the former Cypress HR also declined compared to March, 2017. All other former HRs in this peer group experienced improvement in coverage rates for all three antigens compared to March, 2017.
- In Peer Group F, Athabasca Health Authority reports coverage rate above the provincial average for pertussis. All other former HRs in this peer group experienced lower than provincial coverage rates for all three antigens.
- In Peer Group H, the immunization coverage in the former Prince Albert Parkland HR was higher than that in the former Prairie North HR for all three antigens.

# TECHNICAL NOTES

## Panorama:

- Panorama is a comprehensive, integrated public health information system. Of the five modules in the system, two have been implemented: vaccine inventory and immunization. When fully functional, it will help public health professionals work together to effectively manage vaccine inventories, immunizations, investigations, outbreaks and family health.
- The system is managed by the Saskatchewan Ministry of Health and eHealth Saskatchewan.
- Panorama's immunization module captures information on vaccine events, including vaccine type, date administered and service provider.
- Vaccination records are usually entered in the system at the point of service.
- Panorama's immunization module replaced the former Saskatchewan Immunization Management System (SIMS), on January 27, 2015. SIMS had been used province-wide since 2001.
- To learn more, please visit: [www.ehealthsask.ca/services/panorama/Pages/default.aspx](http://www.ehealthsask.ca/services/panorama/Pages/default.aspx)

## Related links:

1. Routine Childhood Immunization Schedules, Saskatchewan Ministry of Health: <http://www.saskatchewan.ca/residents/health/accessing-health-care-services/immunization-services#when-to-get-immunized>
2. Covered Population Report, Saskatchewan Ministry Health: <http://www.ehealthsask.ca/HealthRegistries/Pages/Covered-Population.aspx>

## Data and Methods:

- Immunization data for the children who turned two and seven years between April 1, 2017 and March 31, 2018 were extracted from the Panorama database (as of April 1, 2018). Only children with Saskatchewan health coverage and flagged under a former health region jurisdiction, as of the date of data extraction were included.
- Children with Saskatchewan health coverage and flagged under FNIHB or NITHA jurisdiction were excluded.
- For coverage of two-year-old children, immunization histories of the children born between April 2015 and March 2016 were followed up to two years since birth.
- For coverage of seven-year-old children, immunization histories of the children born between April 2010 and March 2011 were followed up to seven years since birth.
- The immunization coverage report on children who turned two and seven years between April 2016 and March 2017 with a former health region jurisdiction was used for comparison in this report.
- The number and percentage of children vaccinated by selected antigen for the recommended number of doses (according to the Saskatchewan Ministry of Health Routine Immunization Schedules) were reported. The percentage of the children covered by a given antigen is calculated by taking the ratio of the children vaccinated to the total number of children registered in Panorama and is multiplied by 100.
- Immunization coverage depends on the age of the children. For example, it is recommended that children receive two doses of measles by their second birthday, as well as by their seventh birthday. Therefore, the percentage of children immunized against measles will be higher when counted at age seven years because of the longer time window that allows for those who are behind in their immunization schedule to catch up and the greater opportunity for contact between public health and children attending school.
- Population counts from the Saskatchewan Ministry of Health Covered Population Reports can be used to determine the percentage of children aged two and seven years included in this report. The covered population reports include all children with provincial health coverage as of June 30 of the particular year (e.g., 2016, 2015).

## Peer Group:

A peer group consists of former health regions with similar socio-economic characteristics. Statistics Canada grouped the former health regions into peer groups so that important differences may be detected by comparing them within a peer group. The twelve former health regions and one health authority in Saskatchewan fall into four of the ten peer groups (identified by letters A through J) across Canada (Table 3).

**Table 3:** Principal characteristics of peer groups in Saskatchewan (based on 2011 boundaries of the 12 former health regions and one health authority and 2006 Census data).

Peer Group	Former Health Region	Principal characteristics
A	Regina Qu'Appelle, Saskatoon	<ul style="list-style-type: none"> <li>• Urban-rural mix</li> <li>• Average percentage of aboriginal population</li> <li>• Average percentage of immigrant population</li> </ul>
D	Cypress, Five Hills, Heartland, Kelsey Trail, Sun Country, Sunrise	<ul style="list-style-type: none"> <li>• Mainly rural regions</li> <li>• Average percentage of aboriginal population</li> <li>• High employment rate</li> </ul>
F	Athabasca Health Authority, Keewatin Yatthé, Mamawetan Churchill River	<ul style="list-style-type: none"> <li>• Northern and remote regions</li> <li>• Very high proportion of aboriginal population</li> <li>• Very low employment rate</li> <li>• Low proportion of immigrants</li> </ul>
H	Prairie North, Prince Albert Parkland	<ul style="list-style-type: none"> <li>• Rural northern regions</li> <li>• High proportion of aboriginal population</li> <li>• Low proportion of immigrants</li> </ul>

Source: Peer Group, Statistics Canada: <http://www.statcan.gc.ca/pub/82-221-x/2011002/hrpg-eng.htm>



## APPENDIX

**Table 4:** Coverage rate difference of **2-year-old children** immunized for the recommended number of doses against pertussis (four doses), measles (two doses) and meningococcal serogroup C disease (one dose) between this report (March 2018) and the March 2017 childhood immunization coverage report.

Former Health Region, by Peer Group	Pertussis		Measles		Meningococcal serogroup C	
	March 2017	Difference	March 2017	Difference	March 2017	Difference
<b>Saskatchewan</b>	<b>76.9</b>	<b>2.6</b>	<b>76.5</b>	<b>2.5</b>	<b>88.7</b>	<b>1.3</b>
<b>Peer Group A</b>						
Regina Qu'Appelle	73.8	2.7	73.8	1.9	86.1	1.6
Saskatoon	80.6	0.5	79.8	0.9	90.6	-0.3
<b>Peer Group D</b>						
Cypress	84.5	-0.4	84.9	-0.6	91.9	1.2
Five Hills	78.5	4.4	77.7	5.2	89.9	3.4
Heartland	83.5	2.7	81.6	4.4	91.6	0.8
Kelsey Trail	78	12.1	78.9	10.7	90.6	5.4
Sun Country	89.8	2.3	88.7	3.4	94.5	1.2
Sunrise	75.3	8.6	74.5	8.6	86.7	5.2
<b>Peer Group F</b>						
Athabasca Health Authority	81.1	-15.2	83.8	-15.5	94.6	0.5
Keewatin Yatthé	55.5	12	57.4	10.8	82.6	4.4
Mamawetan Churchill River	66.7	10.3	66.1	15.7	92.4	4.2
<b>Peer Group H</b>						
Prairie North	69.6	4.6	68.8	3.6	86.1	1.1
Prince Albert Parkland	64.6	2.1	65.2	0.9	83.9	2.8

**Table 5:** Coverage rate difference of **7-year-old children** immunized for the recommended number of doses against pertussis (five doses), measles (two doses) and meningococcal serogroup C disease (one dose) between this report March 2018) and the March 2017 childhood immunization coverage report.

Former Health Region, by Peer Group	Pertussis		Measles		Meningococcal serogroup C	
	March 2017	Difference	March 2017	Difference	March 2017	Difference
<b>Saskatchewan</b>	<b>76.1</b>	<b>-0.2</b>	<b>90.1</b>	<b>0.1</b>	<b>92.7</b>	<b>0.6</b>
<b>Peer Group A</b>						
Regina Qu'Appelle	75.9	0.1	90	0.6	92.3	1.4
Saskatoon	74.3	-1.6	89.9	-1	92.9	-0.4
<b>Peer Group D</b>						
Cypress	82.4	2.7	93	0.5	95.3	-0.2
Five Hills	78	1	91.1	0.2	93.3	1.7
Heartland	82.2	4.5	93.5	1.8	94.8	1.5
Kelsey Trail	80.7	3.8	91.3	3.7	93.5	2.9
Sun Country	84.9	5.5	94.2	1.8	95.1	1.6
Sunrise	81.6	-6.3	90.9	-2	93.3	-0.9
<b>Peer Group F</b>						
Athabasca Health Authority	92.3	-4.5	97.8	-8	100	-10.2
Keewatin Yatthé	72.4	-4	88.6	0.5	91.4	0.8
Mamawetan Churchill River	71	-7.5	89.5	-1.7	93.1	0.1
<b>Peer Group H</b>						
Prairie North	71.6	-0.8	87.1	-0.5	90.1	-0.4
Prince Albert Parkland	69.9	3.5	86.4	2.5	90.5	2.2