

Childhood Immunization:

Coverage statistics for 2- and 7-year-old children

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Purpose:

This report provides a 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, First Nations communities using Panorama, Athabasca Health Authority and the former health regions clustered by peer groups.

Reporting Period:

Jan 2019 – Dec 2019

Data Source:

Panorama
(as of January 1, 2020)

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 rate to prevent outbreaks of measles is about 95%.

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

- Pertussis: 82.9% and 75.3%
- Measles: 83.1% and 90.1%
- Meningococcal serogroup C disease: 91.6% and 92.8%

The percentage of two-year-old and seven-year-old children who were immunized with all three antigens was 81.2% and 74.9%, respectively.

Provincial immunization coverage for pertussis, measles and meningococcal serogroup C disease increased for two-year-old children from December 2018 (the differences being 2.4, 2.6 and 1.4, respectively).

Provincial immunization coverage for pertussis, measles and meningococcal serogroup C disease decreased for seven-year-old children from September 2018 (the differences being -0.7, -0.5 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 public health services.

First Nations and Inuit Health Branch, Saskatchewan Region (FNIHB-SK) and the Northern Inter-Tribal Health Authority (NITHA) are responsible for providing immunizations to First Nations children living in First Nations communities. Data for 29 First Nations communities (FNIHB-SK and NITHA) using Panorama are included in this report.

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.

There are 29 of 82 First Nations communities whose data are included in this report. Based on data from FNIHB-SK, the 29 First Nations communities included in this report represent 41.2% of two-year-old children and 41.7% of seven-year-old children living in First Nations communities as of December 31, 2018. Therefore, the coverage rates for these 29 First Nations communities do not represent the entire First Nations population living in First Nations communities.

This report includes only those children with Saskatchewan health coverage and registered in Panorama under a First Nations community described above, a former health region or Athabasca Health Authority (AHA) as of January 1, 2020. 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 serogroups A, C, W135 and Y at 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 and serogroups A, C, W135 and Y vaccines please visit: <https://www.saskatchewan.ca/residents/health/accessing-health-care-services/immunization-services>

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 AHA, former health region or First Nations communities using Panorama, as of December 31, 2019.

Jurisdiction (with 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)
Saskatchewan	14,482	12,011 (82.9)	12,028 (83.1)	13,267 (91.6)
Saskatchewan Health Authority (c)	13,814	11,562 (83.7)	11,574 (83.8)	12,663 (91.7)
Peer Group A				
Regina Qu'Appelle	3,659	3,060 (83.6)	3,061 (83.7)	3,327 (90.9)
Saskatoon	4,721	3,970 (84.1)	3,965 (84)	4,359 (92.3)
Peer Group D				
Cypress	509	458 (90)	457 (89.8)	475 (93.3)
Five Hills	565	494 (87.4)	487 (86.2)	525 (92.9)
Heartland	524	465 (88.7)	461 (88)	486 (92.7)
Kelsey Trail	368	340 (92.4)	344 (93.5)	357 (97)
Sun Country	625	589 (94.2)	587 (93.9)	597 (95.5)
Sunrise	627	487 (77.7)	486 (77.5)	550 (87.7)
Peer Group F				
Athabasca Health Authority	27	24 (88.9)	22 (81.5)	25 (92.6)
Keewatin Yatthé	149	105 (70.5)	105 (70.5)	134 (89.9)
Mamawetan Churchill River	165	148 (89.7)	150 (90.9)	163 (98.8)
Peer Group H				
Prairie North	1,025	805 (78.5)	811 (79.1)	913 (89.1)
Prince Albert Parkland	877	641 (73.1)	660 (75.3)	777 (88.6)
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority				
First Nations communities using Panorama	641	425 (66.3)	432 (67.4)	579 (90.3)

- The denominator is the number of children registered in Panorama who turned two years of age between January 1, 2019 and December 31, 2019; have Saskatchewan provincial health coverage; and are flagged as under a First Nations community using Panorama whose data are included here, AHA, or a former health region for public health services, as of January 1, 2020.
- 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.
- Saskatchewan Health Authority data do not include the data from AHA and First Nations communities using Panorama.

- In Saskatchewan, there were 14,482 children aged two years registered in Panorama with provincial health coverage and whose public health jurisdiction was flagged with a First Nations community using Panorama whose data are included here, AHA, or a former health region (HR) as of January 1, 2020.
- 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 82.9%, 83.1% and 91.6%, respectively. Overall 81.2% 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 rate for meningococcal serogroup C in the former Regina Qu'Appelle HR was below the provincial coverage rate. Both the former Regina Qu'Appelle and Saskatoon HRs experienced higher coverage rates for all three antigens compared with December 2018.
- With the exception of the former Sunrise HR, all former HRs in Peer Group D had coverage rates higher than the provincial average for all three antigens. The former Sunrise HR experienced a decline in coverage rates for all three antigens and the former Heartland HR reported decline in immunization coverage for measles compared with December 2018. All other former health regions in this peer group reported improved immunization coverage for all three antigens compared with December 2018.
- In Peer Group F, the former Mamawetan Churchill River HR reported coverage rates higher than the province for all three antigens and the former Keewatin Yatthé HR reported coverage rates lower than the province for all three antigens. The former Mamawetan Churchill River HR reports higher coverage rates than both AHA and the former Keewatin Yatthé HR for all three antigens. AHA experienced a decline in coverage rate for meningococcal serogroup C compared with December 2018. Coverage rates improved for all three antigens in the former Keewatin Yatthé and Mamawetan Churchill River HRs in this peer group compared with December 2018.
- In Peer Group H, the immunization coverage rates for all three antigens were higher in the former Prairie North HR than those in the former Prince Albert Parkland HR. Both the former Prairie North and Prince Albert Parkland HRs reported improved immunization coverage for all three antigens compared with December 2018.
- The immunization coverage in the First Nations communities using Panorama reported here was lower than the provincial average for all three antigens. However, these rates do not represent all First Nations children living in First Nations communities.

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 of pertussis 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 serogroups A, C, W135 and Y at 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 and serogroups A, C, W135 and Y vaccines please visit: <https://www.saskatchewan.ca/residents/health/accessing-health-care-services/immunization-services>

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 AHA, former health region or First Nations communities using Panorama, as of December 31, 2019.

Jurisdiction (with former health region by peer group)	Number of Eligible Children in Panorama (d)	Number of Eligible Children Immunized (%) (e)		
		Pertussis (5 doses)	Measles (2 doses)	Meningococcal serogroup C (1 dose)
Saskatchewan	16,047	12,082 (75.3)	14,452 (90.1)	14,895 (92.8)
Saskatchewan Health Authority (f)	15,346	11,566 (75.4)	13,789 (89.9)	14,214 (92.6)
Peer Group A				
Regina Qu'Appelle	4,226	3,148 (74.5)	3,798 (89.9)	3,921 (92.8)
Saskatoon	5,337	3,717 (69.6)	4,650 (87.1)	4,850 (90.9)
Peer Group D				
Cypress	516	451 (87.4)	492 (95.3)	498 (96.5)
Five Hills	658	533 (81)	612 (93)	617 (93.8)
Heartland	558	488 (87.5)	529 (94.8)	538 (96.4)
Kelsey Trail	419	351 (83.8)	401 (95.7)	403 (96.2)
Sun Country	694	621 (89.5)	662 (95.4)	663 (95.5)
Sunrise	651	504 (77.4)	579 (88.9)	597 (91.7)
Peer Group F				
Athabasca Health Authority	29	24 (82.8)	28 (96.6)	28 (96.6)
Keewatin Yatthé	174	139 (79.9)	160 (92)	166 (95.4)
Mamawetan Churchill River	182	157 (86.3)	174 (95.6)	177 (97.3)
Peer Group H				
Prairie North	1,034	767 (74.2)	925 (89.5)	951 (92)
Prince Albert Parkland	897	690 (76.9)	807 (90)	833 (92.9)
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority				
First Nations communities using Panorama	672	492 (73.2)	635 (94.5)	653 (97.2)

(d) The denominator is the number of children registered in Panorama who turned seven years of age between January 1, 2019 and December 31, 2019, have Saskatchewan provincial health coverage, and are flagged as under a First Nations community using Panorama whose data are included here, AHA, or a former health region for public health services, as of January 1, 2020.

(e) The numerator includes children from the denominator who received the recommended number of doses of the respective antigen by their seventh birthday.

(f) Saskatchewan Health Authority data do not include the data from AHA and First Nations communities using Panorama.

- A total of 16,047 children aged seven years were registered in Panorama with provincial health coverage and whose public health jurisdiction was flagged with a First Nations community using Panorama whose data are included here, AHA, or a former HR as of January 1, 2020.

- Of these, 75.3% received five doses of pertussis, 90.1% received two doses of measles and 92.8% received one dose of meningococcal serogroup C vaccine by their seventh birthday. Overall, 74.9% received all three vaccine agents by age seven years.

- 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. Coverage rates were either below or on par with the provincial coverage rates for all three antigens for both former HRs in this peer group. Both the former Regina Qu'Appelle and Saskatoon HRs experienced lower coverage rates for all three antigens compared with December 2018.

- The former Sunrise HR reported coverage rates below the provincial average for measles and meningococcal serogroup C. Coverage rates in all other former health regions in Peer Group D were above the provincial coverage rates for all three antigens. The former Sunrise HR experienced a decline in coverage for all three antigens compared with December 2018. Coverage rates either improved or remained stable in the former Cypress, Five Hills, Heartland and Kelsey Trail HRs compared with December 2018.

- AHA and the former Keewatin Yatthé and Mamawetan

Churchill River HRs experienced coverage rates above the provincial average for all three antigens in Peer Group F. While AHA reported decline in immunization coverage for all three antigens compared with December 2018, the former Keewatin Yatthé and Mamawetan Churchill River HRs saw an improvement in coverage for all three antigens compared with December 2018.

- In Peer Group H, the immunization coverage in the former Prince Albert Parkland HR was higher than those in the former Prairie North HR for all three antigens. Both former health regions in this peer group experienced improvement in immunization coverage rates for all three antigens from December 2018.

- Coverage rates in the First Nations communities using Panorama were higher than the provincial coverage rates for measles and meningococcal serogroup C but lower for pertussis. These rates do not represent all First Nations children living in First Nations communities.

- It is noteworthy that children require two doses of measles and one dose of meningococcal serogroup C by both their second birthday and their seventh birthday. Therefore, the percentage of children immunized against measles and meningococcal serogroup C will be higher at age seven than at two years because of the longer time window that allows for those who are behind in their immunization schedule to catch up. There is also greater opportunity for contact with public health for children attending school.

Technical Notes

Panorama:

- Panorama is a comprehensive, integrated public health information system. Of the five modules in the system, four have been implemented: vaccine inventory, immunization, and investigation and outbreak management. 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

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: <https://opendata.ehealthsask.ca/MicroStrategyPublic/asp/Main.aspx>

Data and Methods:

- Immunization data for the children who turned two and seven years between January 1, 2019 and December 31, 2019 were extracted from the Panorama database as of January 1, 2020. Only children with Saskatchewan health coverage and flagged under AHA, a former health region jurisdiction or a First Nations community using Panorama (29 included in this report), at the date of data extraction were included.
- For coverage of two-year-old children, immunization histories for children born between January 2017 and December 2017 were followed up to two years since birth.
- For coverage of seven-year-old children, immunization histories for children born between January 2012 and December 2012 were followed up to seven years since birth.
- The Childhood Immunization: Coverage statistics for 2- and 7-year-old children, December 2018 report 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.
- First Nations analysis is included in collaboration with First Nations and Inuit Health Branch, Saskatchewan Region and the Northern Inter-Tribal Health Authority.

Peer Group:

A peer group consists of AHA and former health regions with similar socio-economic characteristics. Statistics Canada grouped 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).

Peer groupings used in this report are based on Statistics Canada 2011 peer groupings and should not be compared to the current Statistics Canada peer groupings (2014).

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

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 (one dose) between this report (December 2019) and the December 2018 childhood immunization coverage report, Childhood Immunization: Coverage statistics for 2- and 7-year-old children.

Jurisdiction (with former health region by peer group)	Pertussis		Measles		Meningococcal serogroup C	
	December 2018	Difference	December 2018	Difference	December 2018	Difference
Saskatchewan	80.5	2.4	80.5	2.6	90.2	1.4
Saskatchewan Health Authority	81	2.7	80.9	2.9	90.2	1.5
Peer Group A						
Regina Qu'Appelle	79.2	4.4	78.7	5	88.4	2.5
Saskatoon	82	2.1	82	2	91.1	1.2
Peer Group D						
Cypress	84.6	5.4	85.4	4.4	92.2	1.1
Five Hills	83.7	3.7	83.7	2.5	91.7	1.2
Heartland	87.8	0.9	88.5	-0.5	92.4	0.3
Kelsey Trail	92	0.4	92.8	0.7	95.5	1.5
Sun Country	92.3	1.9	92.6	1.3	94.8	0.7
Sunrise	83.2	-5.5	81.2	-3.7	90.4	-2.7
Peer Group F						
Athabasca Health Authority	71.4	17.5	80	1.5	94.3	-1.7
Keewatin Yatthé	62.9	7.6	66	4.5	88.7	1.2
Mamawetan Churchill River	84.3	5.4	86.2	4.7	97.5	1.3
Peer Group H						
Prairie North	75.5	3	74.2	4.9	86.7	2.4
Prince Albert Parkland	70.3	2.8	70.4	4.9	87.3	1.3
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority						
First Nations communities using Panorama	65.9	0.4	68.1	-0.7	87.9	2.4

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 (one dose) between this report (December 2019) and the December 2018 childhood immunization coverage report, Childhood Immunization: Coverage statistics for 2- and 7-year-old children.

Jurisdiction (with former health region by peer group)	Pertussis		Measles		Meningococcal serogroup C	
	December 2018	Difference	December 2018	Difference	December 2018	Difference
Saskatchewan	76	-0.7	90.6	-0.5	93.4	-0.6
Saskatchewan Health Authority	75.8	-0.4	90.4	-0.5	93.2	-0.6
Peer Group A						
Regina Qu'Appelle	76	-1.5	91	-1.1	94	-1.2
Saskatoon	71.7	-2.1	88.5	-1.4	91.9	-1
Peer Group D						
Cypress	86.1	1.3	93.7	1.6	94.9	1.6
Five Hills	76.7	4.3	90	3	93.8	0
Heartland	83.3	4.2	94.7	0.1	96.1	0.3
Kelsey Trail	81	2.8	94.6	1.1	95.5	0.7
Sun Country	88.9	0.6	95.5	-0.1	95.9	-0.4
Sunrise	79.6	-2.2	91.3	-2.4	94.2	-2.5
Peer Group F						
Athabasca Health Authority	86.7	-3.9	100	-3.4	100	-3.4
Keewatin Yatthé	74.7	5.2	89.8	2.2	93	2.4
Mamawetan Churchill River	73	13.3	95.4	0.2	96.9	0.4
Peer Group H						
Prairie North	73.2	1	87.3	2.2	90.6	1.4
Prince Albert Parkland	73.9	3	89.5	0.5	92.2	0.7
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority						
First Nations communities using Panorama	80.5	-7.3	95.9	-1.4	97.9	-0.7