

Childhood Immunization:

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

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<p><u>Purpose:</u></p> <p>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 in the Saskatchewan Immunization Manual, are presented for the province, First Nations communities using Panorama, Athabasca Health Authority and the former health regions clustered by peer groups.</p> <p><u>Reporting Period:</u></p> <p>Oct 2019 - Sep 2020</p> <p><u>Data Source:</u></p> <p>Panorama (as of October 1, 2020)</p>	<div> <div> <h2>Executive Summary</h2> <p>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. The recommended coverage rate to prevent outbreaks of measles is about 95%.</p> <p>In Saskatchewan, the immunization coverage rates of three key antigens by the second and seventh birthdays, respectively, are:</p> <ul style="list-style-type: none"> • Pertussis: 81.3% and 75.9% • Measles: 81.6% and 90.4% • Meningococcal serogroup C disease: 91.5% and 93.2% <p>The percentage of two-year-old and seven-year-old children who were immunized with all three antigens was 79.9% and 75.6%, respectively.</p> <p>Provincial immunization coverage for pertussis and measles declined but coverage for meningococcal serogroup C disease improved for two-year-old children compared with September 2019 (the differences being -1.4, -1.2 and 0.2, respectively).</p> <p>Provincial immunization coverage among seven-year-old children improved for pertussis, declined for measles, and did not change for meningococcal serogroup C disease compared with September 2019 (the differences being 0.5, -0.1 and 0, respectively).</p> </div> <div> <h2>Background</h2> <p>Immunization is a cost-effective preventive measure which has saved more lives than any other health measure.</p> <p>In Saskatchewan, immunization programs are primarily delivered by public health services.</p> <p>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 50 First Nations communities (FNIHB-SK and NITHA) are included in this report.</p> <p>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.</p> </div> <div> <h2>Limitations</h2> <p>Vaccines delivered outside regional public health services (e.g., in an emergency department, a physician's office) may not be recorded in Panorama.</p> <p>There are 50 First Nations communities whose data are included in this report. Based on the 2019 Saskatchewan covered population report (Saskatchewan 2019 covered population, 2020-Feb-24 Ministry of Health SAS version, v6), these 50 First Nations communities represent an estimated 66% of two-year-old children and 68% of seven-year-old children living in First Nations communities. Therefore, the coverage rates for these 50 First Nations communities do not represent the entire First Nations population living in First Nations communities.</p> <p>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 October 1, 2020. This means this report does not include coverage statistics for the entire provincial or regional population.</p> </div> </div>
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Immunization Coverage of 2-year-old Children

Pertussis:

- According to the Saskatchewan 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 Saskatchewan 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 Saskatchewan 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 September 30, 2020.

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	14,403	11,707 (81.3)	11,746 (81.6)	13,182 (91.5)
Saskatchewan Health Authority (c)	13,407	11,110 (82.9)	11,121 (82.9)	12,319 (91.9)
Peer Group A				
Regina Qu'Appelle	3,542	2,987 (84.3)	2,983 (84.2)	3,284 (92.7)
Saskatoon	4,647	3,833 (82.5)	3,841 (82.7)	4,291 (92.3)
Peer Group D				
Cypress	482	408 (84.6)	405 (84)	445 (92.3)
Five Hills	501	427 (85.2)	423 (84.4)	452 (90.2)
Heartland	472	412 (87.3)	412 (87.3)	438 (92.8)
Kelsey Trail	373	350 (93.8)	349 (93.6)	363 (97.3)
Sun Country	713	663 (93)	659 (92.4)	676 (94.8)
Sunrise	559	442 (79.1)	443 (79.2)	492 (88)
Peer Group F				
Athabasca Health Authority	33	26 (78.8)	25 (75.8)	33 (100)
Keewatin Yatthé	155	106 (68.4)	104 (67.1)	143 (92.3)
Mamawetan Churchill River	151	121 (80.1)	120 (79.5)	144 (95.4)
Peer Group H				
Prairie North	989	775 (78.4)	783 (79.2)	883 (89.3)
Prince Albert Parkland	823	586 (71.2)	599 (72.8)	708 (86)
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority				
First Nations communities using Panorama	963	571 (59.3)	600 (62.3)	830 (86.2)

(a) The denominator is the number of children registered in Panorama who turned two years of age between October 1, 2019 and September 30, 2020; 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 October 1, 2020.

(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.

(c) Saskatchewan Health Authority data do not include data from AHA and First Nations communities.

- In Saskatchewan, there were 14,403 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 October 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 81.3%, 81.6% and 91.5%, respectively. Overall 79.9% of children received recommended number of doses for all three agents by age two years.

- In Peer Group A, the immunization coverage rates were higher in the former Regina Qu'Appelle HR than the former Saskatoon HR for all three antigens. Vaccine coverage rates were above the provincial average for all three antigens. The former Regina Qu'Appelle HR experienced higher coverage rates for all three antigens and the former Saskatoon HR experienced lower coverage for pertussis and measles compared with September 2019.

- In Peer Group D, the former Five Hills HR reported immunization coverage below the provincial average for meningococcal serogroup C and the former Sunrise HR reported immunization coverage below the provincial average for all three antigens. All other former HRs in this peer group had coverage rates higher than the provincial average for all three antigens. The former Kelsey Trail and Sunrise health regions reported improved immunization coverage for

all three antigens and the former Cypress, Five Hills and Sun Country health regions reported a decline in immunization coverage rates for all three antigens compared with September 2019.

- In Peer Group F, Athabasca Health Authority (AHA), the former Mamawetan Churchill River and Keewatin Yatthé health regions reported coverage rates lower than the province for pertussis and measles but higher than the province for meningococcal serogroup C. Compared with September 2019, AHA and the former Mamawetan Churchill River HR experienced declines of greater than 10 percentage points in pertussis and measles coverage rates. On the other hand, AHA and the former Keewatin Yatthé had an increase in coverage for meningococcal serogroup C of eight and three percentage points respectively compared with 2019.
- 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. The former Prairie North HR reported improved immunization coverage for all three antigens and the former Prince Albert Parkland HR reported declined immunization coverage for all three antigens compared with September 2019.
- The immunization coverage in the First Nations communities included in this report was lower than 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 Saskatchewan 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 Saskatchewan 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 Saskatchewan 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 September 30, 2020.

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	16,200	12,301 (75.9)	14,646 (90.4)	15,102 (93.2)
Saskatchewan Health Authority (f)	15,206	11,580 (76.2)	13,718 (90.2)	14,137 (93)
Peer Group A				
Regina Qu'Appelle	4,093	3,066 (74.9)	3,677 (89.8)	3,806 (93)
Saskatoon	5,424	3,784 (69.8)	4,728 (87.2)	4,920 (90.7)
Peer Group D				
Cypress	521	440 (84.5)	492 (94.4)	501 (96.2)
Five Hills	676	555 (82.1)	627 (92.8)	640 (94.7)
Heartland	515	447 (86.8)	485 (94.2)	491 (95.3)
Kelsey Trail	407	361 (88.7)	385 (94.6)	385 (94.6)
Sun Country	711	648 (91.1)	684 (96.2)	686 (96.5)
Sunrise	587	476 (81.1)	545 (92.8)	551 (93.9)
Peer Group F				
Athabasca Health Authority	32	24 (75)	30 (93.8)	32 (100)
Keewatin Yatthé	178	137 (77)	165 (92.7)	170 (95.5)
Mamawetan Churchill River	164	147 (89.6)	159 (97)	161 (98.2)
Peer Group H				
Prairie North	978	757 (77.4)	885 (90.5)	918 (93.9)
Prince Albert Parkland	952	762 (80)	886 (93.1)	908 (95.4)
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority				
First Nations communities using Panorama	962	697 (72.5)	898 (93.3)	933 (97)

- (d) The denominator is the number of children registered in Panorama who turned seven years of age between October 1, 2019 and September 30, 2020, 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 October 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 data from AHA and First Nations communities.

- A total of 16,200 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 and whose data are included here, AHA, or a former HR as of October 1, 2020.
- Of these, 75.9% received five doses of pertussis, 90.4% received two doses of measles and 93.2% received one dose of meningococcal serogroup C vaccine by their seventh birthday. Overall, 75.6% received recommended number of doses for all three 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 in this peer group were below the provincial rates. The former Regina Qu'Appelle HR experienced lower coverage rates for pertussis and measles and the former Saskatoon HR experienced lower coverage rates for measles and meningococcal serogroup C compared with September 2019.
- Peer Group D coverage rates were above the provincial coverage rates for all three antigens. The former Five Hills, Sun Country and Sunrise HRs experienced an improvement in coverage for all three antigens compared with September 2019. The former Cypress HR saw a decline in coverage for all three antigens compared with September 2019. The former Kelsey Trail HR saw an improvement in pertussis coverage of eight (8) percentage points over 2019.
- With the exception of pertussis in AHA, Peer Group F experienced coverage rates above the provincial average. AHA reported a decline in pertussis coverage rate compared with September 2019 of 11.7 percentage points.
- In Peer Group H, the immunization coverage was higher than the provincial coverage for all three antigens. 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 experienced improvement in immunization coverage rates for all three antigens from September 2019.
- Coverage rates in the First Nations communities included in this report were higher than the provincial coverage rates for measles and meningococcal serogroup C but lower than the provincial coverage for pertussis. However, 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 and seventh birthdays. 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 by 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>

Data and Methods:

- Immunization data for the children who turned two and seven years between October 1, 2019 and September 30, 2020 were extracted from the Panorama database as of October 1, 2020. Only children with Saskatchewan health coverage and flagged under AHA, a former health region jurisdiction or a First Nations community using Panorama (50 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 October 2017 and September 2018 were followed up to two years since birth.
- For coverage of seven-year-old children, immunization histories for children born between October 2012 and September 2013 were followed up to seven years since birth.
- The Childhood Immunization: Coverage statistics for 2- and 7-year-old children, September 2019 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 Immunization Manual) 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 multiplying 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 with 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 • Low proportion of immigrants

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 (September 2020) and the September 2019 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	
	September 2019	Difference	September 2019	Difference	September 2019	Difference
Saskatchewan	82.7	-1.4	82.8	-1.2	91.3	0.2
Saskatchewan Health Authority	83.4	-0.5	83.5	-0.6	91.4	0.5
Peer Group A						
Regina Qu'Appelle	83.1	1.2	83.2	1	90.9	1.8
Saskatoon	84.2	-1.7	84.1	-1.4	92.1	0.2
Peer Group D						
Cypress	88.8	-4.2	90	-6	93.3	-1
Five Hills	86.4	-1.2	85.4	-1	92.5	-2.3
Heartland	87.8	-0.5	87.2	0.1	92.2	0.6
Kelsey Trail	91.9	1.9	93.5	0.1	96.5	0.8
Sun Country	95.1	-2.1	95.2	-2.8	96.2	-1.4
Sunrise	77.7	1.4	76.7	2.5	86.6	1.4
Peer Group F						
Athabasca Health Authority	92	-13.2	88	-12.2	92	8
Keewatin Yatthé	69.8	-1.4	68.6	-1.5	89.3	3
Mamawetan Churchill River	90.6	-10.5	92.4	-12.9	100	-4.6
Peer Group H						
Prairie North	77	1.4	77	2.2	87.8	1.5
Prince Albert Parkland	73	-1.8	74.1	-1.3	87.6	-1.6
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority						
First Nations communities using Panorama	65.5	-6.2	66	-3.7	90.1	-3.9

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 (September 2020) and the September 2019 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	
	September 2019	Difference	September 2019	Difference	September 2019	Difference
Saskatchewan	75.4	0.5	90.5	-0.1	93.2	0
Saskatchewan Health Authority	75.3	0.9	90.2	0	93	0
Peer Group A						
Regina Qu'Appelle	75.1	-0.2	90.3	-0.5	93	0
Saskatoon	69.4	0.4	87.4	-0.2	91.4	-0.7
Peer Group D						
Cypress	88.8	-4.3	96.1	-1.7	96.5	-0.3
Five Hills	78.9	3.2	92.4	0.4	93.5	1.2
Heartland	85.4	1.4	95.2	-1	96.1	-0.8
Kelsey Trail	80.7	8	95.3	-0.7	96	-1.4
Sun Country	89.4	1.7	95.6	0.6	95.7	0.8
Sunrise	78.8	2.3	91.1	1.7	93.7	0.2
Peer Group F						
Athabasca Health Authority	86.7	-11.7	96.7	-2.9	96.7	3.3
Keewatin Yatthé	77.1	-0.1	89.2	3.5	94	1.5
Mamawetan Churchill River	87.6	2	97.8	-0.8	98.3	-0.1
Peer Group H						
Prairie North	74.3	3.1	89.7	0.8	91.9	2
Prince Albert Parkland	76.6	3.4	90.6	2.5	93.5	1.9
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority						
First Nations communities using Panorama	75.8	-3.3	95.3	-2	97.7	-0.7