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

Quarterly Report: June 2021

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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 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.

Reporting Period:

Jul 2020 - Jun 2021

Data Source:

Panorama (as of July 1, 2021)

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. The recommended coverage rate to prevent outbreaks of measles is about 95%.

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

Pertussis: 76.4% and 73.7%

• Measles: 76.4% and 87.5%

• Meningococcal serogroup C disease: 87.2% and

90.2%

The percentage of two-year-old and seven-year-old children who were immunized with all three antigens was 75.1% and 73.5%, respectively.

Provincial immunization coverage declined among two-year-old children for all three antigens compared with June 2020 (the differences being -5.9, -6.4 and -4.5, respectively).

Provincial immunization coverage declined among seven-year-old children for all three antigens compared with June 2020 (the differences being -2.3, -2.9 and -3, 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 53 First Nations communities (FNIHB-SK and NITHA) 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 53 First Nations communities whose data are included in this report. Based on the 2020 Saskatchewan covered population report (Saskatchewan 2020 Covered Population, 31-Aug-2020 Ministry of Health SAS version), these 53 First Nations communities represent an estimated 71% of two-year-old children and 71% of seven-year-old children living in First Nations communities. Therefore, the coverage rates for these 53 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 July 1, 2021. This means this report does not include coverage statistics for the entire provincial or regional population.

Childhood Immunization Coverage Statistics
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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 June 30, 2021.

Jurisdiction	Number of	Number of Eligible Children Immunized (%) (b)				
(with former health	Eligible Children	Pertussis	Measles	Meningococcal serogroup C		
region by peer group)	in Panorama (a)	(4 doses)	(2 doses)	(1 dose)		
Saskatchewan	14,250	10,891 (76.4)	10,885 (76.4)	12,432 (87.2)		
Saskatchewan Health Authority (c)	13,302	10,390 (78.1)	10,374 (78)	11,675 (87.8)		
Peer Group A						
Regina Qu'Appelle	3,586	2,918 (81.4)	2,909 (81.1)	3,206 (89.4)		
Saskatoon	4,551	3,622 (79.6)	3,623 (79.6)	4,041 (88.8)		
Peer Group D						
Cypress	448	363 (81)	360 (80.4)	400 (89.3)		
Five Hills	472	397 (84.1)	395 (83.7)	433 (91.7)		
Heartland	477	371 (77.8)	370 (77.6)	404 (84.7)		
Kelsey Trail	407	333 (81.8)	335 (82.3)	369 (90.7)		
Sun Country	615	551 (89.6)	551 (89.6)	574 (93.3)		
Sunrise	568	410 (72.2)	409 (72)	467 (82.2)		
Peer Group F						
Athabasca Health Authority	41	28 (68.3)	31 (75.6)	38 (92.7)		
Keewatin Yatthé	161	81 (50.3)	81 (50.3)	130 (80.7)		
Mamawetan Churchill River	167	99 (59.3)	99 (59.3)	149 (89.2)		
Peer Group H						
Prairie North	1,003	693 (69.1)	686 (68.4)	798 (79.6)		
Prince Albert Parkland	847	552 (65.2)	556 (65.6)	704 (83.1)		
First Nations and Inuit Health Branch and N	orthern Inter-Tribal H	lealth Authority				
First Nations communities using Panorama	907	473 (52.1)	480 (52.9)	719 (79.3)		

- (a) The denominator is the number of children registered in Panorama who turned two years of age between July 1, 2020 and June 30, 2021; 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 July 1, 2021.
- (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 14,250 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 July 1, 2021.
- 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 76.4%, 76.4% and 87.2%, respectively. Overall 75.1% 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 in this peer group were above
 the provincial average. Both former health regions in
 this peer group experienced lower coverage for all
 three antigens compared with June 2020.
- In Peer Group D, the former Sunrise HR reported immunization coverage below the provincial average for all three antigens. The former Cypress, Five Hills, Kelsey Trail and Sun Country HRs in this peer group had coverage rates higher than the provincial average. All of the former health regions in this peer group reported lower coverage rates compared with June 2020.

- In Peer Group F, the Athabasca Health Authority (AHA) and the former Mamawetan Churchill River HR reported coverage rates higher than the province for meningococcal serogroup C. All other coverage rates in this peer group were lower than the province. With the exception of coverage rate for measles in AHA, immunization rates declined in this Peer Group for all three antigens compared with June 2020. The former Keewatin Yatthé and Mamawetan Churchill River HRs reported a decline of 20 to 25 percentage points for pertussis and measles compared with 2020.
- In Peer Group H, the immunization coverage rates were higher in the former Prairie North HR than those in the former Prince Albert Parkland HR for pertussis and measles. Both former health regions reported lower immunization coverage for all three antigens compared with June 2020. The decline was larger in the former Prairie North HR for all three antigens than in the former Prince Albert Parkland HR.
- The immunization coverage in the First Nations communities included in this report was lower than provincial average for all three antigens and between eight and 10 percentage points lower compared to June 2020. However, these rates do not represent all First Nations children living in First Nations communities.

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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 June 30, 2021.

Number of Eligible Children in Panorama (d) 16,659	Number of Pertussis (5 doses)	Measles	Immunized (%) (e) Meningococcal serogroup (
in Panorama (d)			Meningococcal serogroup (
	(5 doses)		Meningococcal serogroup				
16 6EQ		(2 doses)	(1 dose)				
10,033	12,282 (73.7)	14,576 (87.5)	15,031 (90.2)				
15,609	11,527 (73.8)	13,605 (87.2)	14,025 (89.9)				
4,248	3,123 (73.5)	3,726 (87.7)	3,858 (90.8)				
5,554	3,729 (67.1) 4,645 (83.6)		4,852 (87.4)				
535	461 (86.2)	495 (92.5)	501 (93.6)				
627	490 (78.1)	562 (89.6)	574 (91.5)				
561	481 (85.7)	515 (91.8)	517 (92.2)				
425	367 (86.4)	391 (92)	390 (91.8)				
767	693 (90.4)	721 (94)	725 (94.5)				
646	479 (74.1)	574 (88.9)	580 (89.8)				
30	23 (76.7)	25 (83.3)	29 (96.7)				
162	117 (72.2)	146 (90.1)	149 (92)				
154	137 (89)	146 (94.8)	147 (95.5)				
1,020	754 (73.9)	864 (84.7)	894 (87.6)				
910	696 (76.5)	820 (90.1)	838 (92.1)				
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority							
1,020	732 (71.8)	946 (92.7)	977 (95.8)				
	15,609 4,248 5,554 535 627 561 425 767 646 30 162 154 1,020 910 thern Inter-Tribal H	15,609 11,527 (73.8) 4,248 3,123 (73.5) 5,554 3,729 (67.1) 535 461 (86.2) 627 490 (78.1) 561 481 (85.7) 425 367 (86.4) 767 693 (90.4) 646 479 (74.1) 30 23 (76.7) 162 117 (72.2) 154 137 (89) 1,020 754 (73.9) 910 696 (76.5) thern Inter-Tribal Health Authority	15,609 11,527 (73.8) 13,605 (87.2) 4,248 3,123 (73.5) 3,726 (87.7) 5,554 3,729 (67.1) 4,645 (83.6) 535 461 (86.2) 495 (92.5) 627 490 (78.1) 562 (89.6) 561 481 (85.7) 515 (91.8) 425 367 (86.4) 391 (92) 767 693 (90.4) 721 (94) 646 479 (74.1) 574 (88.9) 30 23 (76.7) 25 (83.3) 162 117 (72.2) 146 (90.1) 154 137 (89) 146 (94.8) 1,020 754 (73.9) 864 (84.7) 910 696 (76.5) 820 (90.1) thern Inter-Tribal Health Authority				

- (d) The denominator is the number of children registered in Panorama who turned seven years of age between July 1, 2020 and June 30, 2021, 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 July 1, 2021.
- (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 16,659 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 July 1, 2021
- Of these, 73.7% received five doses of pertussis, 87.5% received two doses of measles and 90.2% received one dose of meningococcal serogroup C vaccine by their seventh birthday. Overall, 73.5% 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 the former Saskatoon HR were below the provincial coverage as well. Both former health regions experienced lower coverage rates for all three antigens compared with June 2020.
- With the exception of meningococcal serogroup C in the former Sunrise HR, coverage rates in Peer Group D were above the provincial coverage rates for all three antigens. Pertussis coverage rate in the former Heartland HR remained stable, while all other former health regions experienced a decline in coverage for all three antigens compared with June 2020.
- With the exception of pertussis in the former Keewatin Yatthé HR and measles in AHA, Peer Group F experienced coverage rates above the provincial average. The former Mamawetan Churchill River HR reported an improvement in coverage for pertussis

- compared to June 2020. AHA and the former Keewatin Yatthé HR experienced a decline in coverage rates for all three antigens compared to June 2020. AHA reported a decline of greater than ten percentage points for measles coverage compared to June 2020.
- In Peer Group H, coverage in the former Prince Albert Parkland HR was higher than those reported provincially and in the former Prairie North HR for all three antigens. Coverage rates in this peer group saw a decline compared to June 2020.
- 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 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 a 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:

 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 July 1, 2020 and June 30, 2021 were extracted from the Panorama database as of July 1, 2021. Only children with Saskatchewan health coverage and flagged under AHA, a former health region jurisdiction or a First Nations community using Panorama (53 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 July 2018 and June 2019 were followed for up to two years.
- For coverage of seven-year-old children, immunization histories for children born between July 2013 and June 2014 were followed for up to seven years.
- The Childhood Immunization: Coverage statistics for 2- and 7-year-old children, June 2020 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).

<u>Table 3:</u> 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
А	Regina Qu'Appelle, Saskatoon	 Urban-rural mix Average percentage of aboriginal population Average percentage of immigrant population
D	Cypress, Five Hills, Heartland, Kelsey Trail, Sun Country, Sunrise	Mainly rural regionsAverage percentage of aboriginal populationHigh employment rate
F	Athabasca Health Authority, Keewatin Yatthé, Mamawetan Churchill River	 Northern and remote regions Very high proportion of aboriginal population Very low employment rate Low proportion of immigrants
Н	Prairie North, Prince Albert Parkland	 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 (June 2021) and the June 2020 childhood immunization coverage report, Childhood Immunization: Coverage statistics for 2- and 7-year-old children.

Jurisdiction (with former health	Pertussis		Measles		Meningococcal serogroup C		
region by peer group)	June 2020	Difference	June 2020	Difference	June 2020	Difference	
Saskatchewan	82.3	-5.9	82.8	-6.4	91.7	-4.5	
Saskatchewan Health Authority	83.6	-5.5	83.8	-5.8	91.9	-4.1	
Peer Group A							
Regina Qu'Appelle	84.2	-2.8	84.1	-3	92.2	-2.8	
Saskatoon	83.8	-4.2	84.2	-4.6	92.1	-3.3	
Peer Group D							
Cypress	87.9	-6.9	88.3	-7.9	93.2	-3.9	
Five Hills	87.2	-3.1	87.1	-3.4	92.8	-1.1	
Heartland	86.2	-8.4	86	-8.4	91.7	-7	
Kelsey Trail	92.7	-10.9	92.7	-10.4	96.9	-6.2	
Sun Country	94.3	-4.7	93.5	-3.9	95.1	-1.8	
Sunrise	78.5	-6.3	79.7	-7.7	88.2	-6	
Peer Group F							
Athabasca Health Authority	78.1	-9.8	75	0.6	96.9	-4.2	
Keewatin Yatthé	71.4	-21.1	71.4	-21.1	92.9	-12.2	
Mamawetan Churchill River	84.3	-25	83.6	-24.3	96.4	-7.2	
Peer Group H							
Prairie North	78.3	-9.2	79.5	-11.1	89.7	-10.1	
Prince Albert Parkland	71.8	-6.6	73.5	-7.9	86.9	-3.8	
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority							
First Nations communities using Panorama	63	-10.9	66.2	-13.3	87.9	-8.6	

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 (June 2021) and the June 2020 childhood immunization coverage report, Childhood Immunization: Coverage statistics for 2- and 7-year-old children.

Jurisdiction	Pertussis		Measles		Meningococcal serogroup C		
(with former health							
region by peer group)	June 2020	Difference	June 2020	Difference	June 2020	Difference	
Saskatchewan	76	-2.3	90.4	-2.9	93.2	-3	
Saskatchewan Health Authority	76.2	-2.4	90.2	-3	93	-3.1	
Peer Group A							
Regina Qu'Appelle	74.7	-1.2	89.8	-2.1	92.9	-2.1	
Saskatoon	70.1	-3	87.6	-4	90.9	-3.5	
Peer Group D							
Cypress	86.8	-0.6	95	-2.5	96.7	-3.1	
Five Hills	83.7	-5.6	93.4	-3.8	95.3	-3.8	
Heartland	85.7	0	93.5	-1.7	95.4	-3.2	
Kelsey Trail	89.2	-2.8	95.7	-3.7	96.1	-4.3	
Sun Country	90.8	-0.4	95.9	-1.9	96.1	-1.6	
Sunrise	79.9	-5.8	91	-2.1	93.6	-3.8	
Peer Group F							
Athabasca Health Authority	83.3	-6.6	96.7	-13.4	100	-3.3	
Keewatin Yatthé	79.3	-7.1	92	-1.9	94.7	-2.7	
Mamawetan Churchill River	86.8	2.2	96	-1.2	97.1	-1.6	
Peer Group H							
Prairie North	77.1	-3.2	90.4	-5.7	93.4	-5.8	
Prince Albert Parkland	78.5	-2	92.1	-2	94.8	-2.7	
First Nations and Inuit Health Branch and Northern Inter-Tribal Health Authority							
First Nations communities using Panorama	72.4	-0.6	93.8	-1.1	97.5	-1.7	