

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

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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 health regions clustered by peer groups.

Reporting Period:

Jan 2017 - Dec 2017

Data Source:

Panorama
(as of January 1, 2018)

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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: 78.5% and 75.9%
- Measles: 77.8% and 90%
- Meningococcal serogroup C disease: 89.3% and 93%

The percentage of two-year-old and seven-year-old children who were immunized with all three antigens was 76.2% and 75.5% respectively.

Immunization coverage for pertussis, measles and meningococcal serogroup C disease increased for two-year-old children from December 2016 (the differences being 1.7, 1.5 and 1, respectively).

Immunization coverage for pertussis and measles decreased, but coverage for meningococcal serogroup C disease increased for seven-year-old children from December 2016 (the differences being -0.3, -0.2 and 0.1, 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 Region 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 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 Regina Qu'Appelle Health Region (RQHR) is immunized in Saskatoon, she will be counted and reported under the RQHR, not under the 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.

Panorama under a health region jurisdiction as of January 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.

This report includes only those children with Saskatchewan health coverage and registered in

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 January 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 health region as of December 31, 2017.

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	14,155	11,113 (78.5)	11,015 (77.8)	12,645 (89.3)
Peer Group A				
Regina Qu'Appelle	3,773	2,832 (75.1)	2,793 (74)	3,282 (87)
Saskatoon	4,837	3,894 (80.5)	3,869 (80)	4,350 (89.9)
Peer Group D				
Cypress	523	433 (82.8)	432 (82.6)	480 (91.8)
Five Hills	615	504 (82)	503 (81.8)	570 (92.7)
Heartland	506	435 (86)	434 (85.8)	468 (92.5)
Kelsey Trail	398	349 (87.7)	352 (88.4)	383 (96.2)
Sun Country	705	650 (92.2)	645 (91.5)	677 (96)
Sunrise	562	461 (82)	458 (81.5)	506 (90)
Peer Group F				
Athabasca Health Authority	37	26 (70.3)	26 (70.3)	35 (94.6)
Keewatin Yatthé	160	99 (61.9)	99 (61.9)	135 (84.4)
Mamawetan Churchill River	135	98 (72.6)	103 (76.3)	129 (95.6)
Peer Group H				
Prairie North	1,074	775 (72.2)	750 (69.8)	921 (85.8)
Prince Albert Parkland	830	557 (67.1)	551 (66.4)	709 (85.4)

(a) The denominator is the number of children registered in Panorama who turned two years of age between January 1, 2017 and December 31, 2017; have Saskatchewan provincial health coverage; and are flagged as under health region jurisdiction for public health services, as of January 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 14,155 children aged two years registered in Panorama with provincial health coverage and whose public health jurisdiction was flagged with a health region, as of January 1, 2018. They represent approximately 89.7% 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 78.5%, 77.8% and 89.3%, respectively. Overall 76.2% of children received all three vaccine agents by age two years.

In Peer Group A, the immunization coverage rates were higher in Saskatoon Health Region than in Regina Qu'Appelle Health Region for all three antigens. Vaccine coverage in Saskatoon Health Region was above the provincial average as well. The coverage rates in Regina Qu'Appelle were below the provincial coverage rates for all three antigens. Saskatoon Health Region experienced higher coverage rate for measles but lower coverage for pertussis and meningococcal serogroup C compared to December, 2016. On the other hand, Regina Qu'Appelle Health Region experienced higher coverage rates for pertussis and

meningococcal serogroup C and lower coverage for measles compared to December, 2016.

All the health regions in Peer Group D had coverage rates higher than the provincial average for all three antigens. Since December 2016, Cypress Health Region experienced a drop in immunization coverage for all three antigens, while all the other health regions in this peer group saw an improvement during the same time period.

With the exception of meningococcal serogroup C in Athabasca Health Authority and Mamawetan Churchill River Health Region, Peer Group F had coverage rates lower than the provincial average for all three antigens. Mamawetan Churchill River Health Region reports higher coverage rates than either Athabasca Health Authority or Keewatin Yatthé Health Region. The coverage rate for meningococcal serogroup C in the Mamawetan Churchill River Health Region was higher than the provincial coverage rate.

In Peer Group H, the immunization coverage in Prairie North Health Region was higher than that in Prince Albert Parkland Health Region 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 January 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 health region as of December 31, 2017.

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)
Saskatchewan	15,125	11,481 (75.9)	13,619 (90)	14,071 (93)
Peer Group A				
Regina Qu'Appelle	3,914	2,961 (75.7)	3,522 (90)	3,644 (93.1)
Saskatoon	4,914	3,572 (72.7)	4,360 (88.7)	4,533 (92.2)
Peer Group D				
Cypress	511	429 (84)	478 (93.5)	484 (94.7)
Five Hills	700	552 (78.9)	636 (90.9)	661 (94.4)
Heartland	549	479 (87.2)	521 (94.9)	526 (95.8)
Kelsey Trail	491	410 (83.5)	466 (94.9)	473 (96.3)
Sun Country	726	655 (90.2)	699 (96.3)	704 (97)
Sunrise	712	538 (75.6)	636 (89.3)	659 (92.6)
Peer Group F				
Athabasca Health Authority	47	42 (89.4)	43 (91.5)	43 (91.5)
Keewatin Yatthé	191	127 (66.5)	168 (88)	173 (90.6)
Mamawetan Churchill River	275	188 (68.4)	245 (89.1)	259 (94.2)
Peer Group H				
Prairie North	1,100	786 (71.5)	963 (87.5)	992 (90.2)
Prince Albert Parkland	995	742 (74.6)	882 (88.6)	920 (92.5)

(c) The denominator includes children registered in Panorama who turned seven years of age between January 1, 2017 and December 31, 2017, have Saskatchewan provincial health coverage, and are flagged as under health region jurisdiction for public health services, as of January 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 15,125 children aged seven years were registered in Panorama with provincial health coverage and whose public health jurisdiction was flagged as under health region jurisdiction, as of January 1, 2018. They represent approximately 94.7% 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% received two doses of measles and 93% 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 Regina Qu'Appelle Health Region than in Saskatoon Health Region for all three antigens. The coverage rates in Saskatoon Health Region were below the provincial coverage rates for all three antigens. With the exception of meningococcal serogroup C in Regina Qu'Appelle Health Region, both Regina Qu'Appelle and Saskatoon health regions experienced lower coverage rates for all three antigens compared to

December, 2016.

- With the exception of coverage for all three antigens in Sunrise Health Region, all health regions in Peer Group D were at or above the provincial coverage rates for all three antigens. Heartland, Kelsey Trail and Sun Country health regions saw improvement in coverage rates for all three antigens from 2016, while Sunrise Health Region saw declines in coverage rates for all three antigens.

- In Peer Group F, Athabasca Health Authority reports coverage rates above the provincial average for pertussis and measles and Mamawetan Churchill River Health Region reports higher than provincial coverage rate for meningococcal serogroup C.

- In Peer Group H, the immunization coverage in Prince Albert Parkland Health Region was higher than that in Prairie North Health Region 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

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 January 1, 2017 and December 31, 2017 were extracted from the Panorama database (as of January 1, 2018). Only children with Saskatchewan health coverage and flagged under 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 in 2015 (between January 2015 and December 2015) were followed up to two years since birth.
- For coverage of seven-year-old children, immunization histories of the children born in 2010 (between January 2010 and December 2010) were followed up to seven years since birth.
- The immunization coverage report on children who turned two and seven years in 2016 (between January 2016 and December 2016) with a 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 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 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 health regions and one health authority and 2006 Census data).

Peer Group	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 disease (one dose) between this report (December 2017) and the December 2016 childhood immunization coverage report.

Health Region, by Peer Group	Pertussis		Measles		Meningococcal serogroup C	
	December 2016	Difference	December 2016	Difference	December 2016	Difference
Saskatchewan	76.8	1.7	76.3	1.5	88.3	1
Peer Group A						
Regina Qu'Appelle	75	0.1	75.1	-1.1	86.5	0.5
Saskatoon	80.8	-0.3	79.9	0.1	90.2	-0.3
Peer Group D						
Cypress	87.8	-5	88	-5.4	93.3	-1.5
Five Hills	77.2	4.8	75.7	6.1	89	3.7
Heartland	82.8	3.2	80.8	5	90.8	1.7
Kelsey Trail	76.7	11	77.2	11.2	89.8	6.4
Sun Country	89	3.2	88.7	2.8	93.5	2.5
Sunrise	73.9	8.1	73.1	8.4	86.8	3.2
Peer Group F						
Athabasca Health Authority	82.9	-12.6	82.9	-12.6	91.4	3.2
Keewatin Yatthé	54.7	7.2	56.5	5.4	82.6	1.8
Mamawetan Churchill River	66.2	6.4	64.1	12.2	86.7	8.9
Peer Group H						
Prairie North	69	3.2	68.7	1.1	85.3	0.5
Prince Albert Parkland	61	6.1	60.8	5.6	81.6	3.8

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 (December 2017) and the December 2016 childhood immunization coverage report.

Health Region, by Peer Group	Pertussis		Measles		Meningococcal serogroup C	
	December 2016	Difference	December 2016	Difference	December 2016	Difference
Saskatchewan	76.2	-0.3	90.2	-0.2	92.9	0.1
Peer Group A						
Regina Qu'Appelle	76	-0.3	90.3	-0.3	92.7	0.4
Saskatoon	74.3	-1.6	89.9	-1.2	93	-0.8
Peer Group D						
Cypress	82	2	92.6	0.9	95.1	-0.4
Five Hills	78.3	0.6	91.3	-0.4	93.5	0.9
Heartland	82.7	4.5	93.6	1.3	95.1	0.7
Kelsey Trail	80.7	2.8	91.6	3.3	93.9	2.4
Sun Country	84.9	5.3	94	2.3	95.4	1.6
Sunrise	81.6	-6	90.6	-1	93	-0.4
Peer Group F						
Athabasca Health Authority	92.3	-2.9	97.8	-6.3	100	-8.5
Keewatin Yatthé	72.3	-5.8	88.6	-0.6	91.3	-0.7
Mamawetan Churchill River	71	-2.6	89.5	-0.4	93.1	1.1
Peer Group H						
Prairie North	71.7	-0.2	87.3	0.2	90.2	0
Prince Albert Parkland	70.4	4.2	86.7	1.9	90.7	1.8