Vaccine Preventable Disease Monitoring Report

Rubella, 2017 and 2018

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PREPARED BY POPULATION HEALTH BRANCH, SASKATCHEWAN MINISTRY OF HEALTH

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Purpose:

The Saskatchewan Ministry of Health's Population Health Branch provides routine surveillance of notifiable diseases at the provincial, Athabasca Health Authority (AHA), former regional health authority (RHA), First Nations and Inuit Health Branch - Saskatchewan (FNIHB-SK) and Northern Inter-Tribal Health Authority (NITHA) levels.

This report presents the most recent data for reportable communicable diseases as collected by Panorama and the Integrated Public Health Information System (iPHIS), and immunization coverage information as collected by Panorama. Limitations associated with these systems have been described elsewhere.

Under *The Public Health Act, 1994* and the accompanying Disease Control Regulations, local medical health officers (MHOs) must report Categories I and II Communicable Diseases, as well as any communicable disease outbreaks to the Chief and Deputy Chief Medical Health Officers. Rubella is a Category I disease.

Report Features:

Background

Epidemiological Summary

Surveillance Case Definition

Case Counts by Year

Case Characteristics

Vaccine Coverage by AHA and former RHA

Data Source:

Panorama (as of April 1, 2019)

Background

Rubella, also called German measles or three-day measles, is a contagious viral infection characterized by a distinctive red rash. It is commonly mistaken for measles, but it is caused by a different virus and is not as infectious or severe. Rubella virus is a member of the family *Togaviridae*, genus *Rubivirus*.

The incubation period ranges from 12-21 days (most commonly between 14-17 days). Symptoms are generally mild and up to 50% are subclinical. Symptoms are non-specific and are commonly mistaken for other viruses. They tend to last two to three days and may include: mild fever (up to 38.9° C); enlarged lymph nodes at the base of the skull, back of the neck and behind the ears; and a fine pink rash that begins on the face, spreads to the trunk and then arms and legs, disappearing in the same sequence. In adults, it is often accompanied by aching joints.

Women contemplating pregnancy should ensure their immunizations are up to date. Infection in the first trimester of pregnancy can cause fetal death or serious birth defects. Rubella during pregnancy is the most common cause of congenital deafness and it can also cause defects of the heart, eyes or other organs.

Since 2005, when rubella was declared eliminated from Canada, only sporadic cases have occurred because of importations associated with travel. This can lead to spread in Canada, particularly in those who are unvaccinated or under-vaccinated. In 2015, the World Health Organization (WHO) declared rubella eliminated from the Americas (North America, Central America and South America). Rubella virus is still circulating in the rest of the world.

Immunization

The Saskatchewan Routine Childhood Immunization Schedule recommends two doses of rubella containing vaccine for infants, children and adolescents. The first dose is recommended at 12 months of age and a second dose at 18 months.

Rubella is highly communicable and occurs worldwide. Rubella infections can be prevented by immunization. Of those immunized against rubella, over 97% develop immunity after one dose of the vaccine. Studies revealed that the duration of immunity induced by rubella-containing vaccine exceeds 20 years. Routine infant immunization programs have resulted in sustained high rates of immunity against rubella in the general population in Canada, but cases can be imported from regions with higher incidence.

Immunization coverage is a reliable indicator of the preventative measures to control the spread of disease. It measures the proportion of individuals immunized with the recommended doses.

Surveillance

Under *The Public Health Act, 1994*, Saskatchewan health care providers are required to report cases to the local medical health officer (MHO) who then reports cases to the Chief and Deputy Chief Medical Health Officers using the case definition in the Saskatchewan Communicable Disease Manual.

Notifiable diseases may be undetected, therefore underreported, due to a number of factors including lack of contact with the health care system or lack of detection related to lab methodology. Some communicable diseases occur rarely and therefore, rates are based on small numbers of cases which may fluctuate dramatically over time. In these cases, year to year comparisons should be interpreted with caution.

Surveillance case definitions ensure uniform reporting to allow comparability of surveillance data. The definitions are not intended to be used for clinical or laboratory diagnosis or management of patients.

Rubella molecular epidemiology (genotyping) may be used to establish whether connections exist between concurrent rubella cases or outbreaks and/or to indicate possible sources of importations from outside Canada.

EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARY

Rubella in Saskatchewan: 2018

- A congenital rubella case was reported in 2018 as the result of the mother's visit to her home country where she unknowingly contracted the virus during her pregnancy. The baby showed no untoward sequelae of rubella infection.
- The most recent case of rubella, prior to this case, was reported in 2006.

Table 1: Rubella case counts by year

	2018	2017	2016	2015	2014	Total
Saskatchewan	1	0	0	0	0	1
Canada	N/A	N/A	1	0	1	2

N/A = not available

Rubella in Saskatchewan: 2014 to 2018

- Only one case of rubella was reported in this time period.
- No cases were reported hospitalized.

Table 2: Rubella case characteristics, Saskatchewan 2014-2018

		Cases	Percent of Cases
Total		1	100
Sex	Male	1	100
	Female	0	0
Age	Less than 1 year	1	100
	1 - 4 years	0	0
	5 - 19 years	0	0
	20 - 49 years	0	0
	50 years and over	0	0
Hospitalized	Yes	0	0
	No	1	100
	Unknown	0	0
Immunization status for rubella vaccine	2 doses	0	0
	1 dose	0	0
	0 dose	0	0
	Too young	1	100
	Unknown	0	0
Source	International	0	0
	Canada	0	0
	Saskatchewan	1	100
Provincial source (n=1)	Domestic Travel	0	0
	Epidemiologically-linked to travel case	1	100
	Epidemiologically-linked to case with unknown source	0	0
	No identified source	0	0
Genotype*	Unknown	1	100

*Laboratory analyses can identify different genotypes of rubella which may help identify whether the virus was imported or possibly related to other cases.

Rubella Coverage in Saskatchewan: 2014 to 2018

- From 2014 to 2018, provincial immunization coverage rates improved up to and including 24 months of age, while the rate declined for children five years of age and older.
- In the two most recent years, the coverage rate improved from 2017 to 2018 for all age-dose categories except 13 years, where it remained stable.

Table 3: Rubella coverage for Saskatchewan by age, dose and year, 2014-2018

Age	Doses	2018	2017	2016[a]	2015[a]	2014[b]
13 months	1	64.2%	60.8%	58.5%	59.5%	59.1%
18 months	1	86.3%	85.6%	84.4%	82.8%	84.3%
19 months	2	54.9%	49.2%	46.5%	46.4%	45.7%
24 months	1	90.5%	89%	88.6%	87.9%	88.4%
	2	80.5%	76.3%	76.3%	73.4%	75.6%
5 years	1	93.2%	91.5%	93.3%	91.2%	93.4%
	2	87.3%	84.7%	87.8%	84.6%	88%
7 years	2	90.1%	89.3%	90.2%	88.5%	90.7%
13 years	2	93.5%	93.5%	93.1%	92.6%	94.6%
15 years	2	95%	94.5%	94.8%	94%	95.7%
17 years	2	94.6%	93.7%	94.5%	94.9%	96.2%

[a] Vaccine Preventable Disease Monitoring Report: Rubella , 2015 and 2016 (Data source: Panorama January 12, 2017)
[b] Vaccine Preventable Disease Monitoring Report: Rubella , 2014 (Data source: SIMS January 16, 2015)

Epidemiology and Vaccine Coverage Summary

Table 4: Rubella vaccine coverage by Athabasca Health Authority and former health region, 2018

Jurisdiction (with former health region by Peer Group)	Immunization coverage (% immunized), by age and dose										
	13 months	18 months	19 months	24 months		5 years		7 years	13 years	15 years	17 years
	1 dose	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses	2 doses	2 doses	2 doses	2 doses
Saskatchewan	**64.2**	**86.3**	**54.9**	**90.5**	**80.5**	**93.2**	**87.3**	**90.1**	**93.5**	**95**	**94.6**
Saskatchewan Health Authority	**64.2**	**86.3**	**54.9**	**90.5**	**80.5**	**93.1**	**87.3**	**90.1**	**93.5**	**95**	**94.7**
Peer Group A											
Regina Qu'Appelle	67.9	86.6	60.6	89.1	78.5	93	86.2	90.8	94.7	95.7	94.6
Saskatoon	58.4	86.4	48.2	91.2	81.4	91.2	84.8	87.9	92.2	94.7	94.7
Peer Group D											
Cypress	70.9	89.6	63.3	92.4	84.8	95.9	92.1	93.2	94.9	96.3	95.6
Five Hills	73.2	87	65.6	92.2	83.3	95.1	89.4	89.9	93.1	95.8	95.9
Heartland	68.6	89.4	66.5	93	88.7	94.3	92.9	94.5	95.5	95.9	96
Kelsey Trail	79.1	94	69.1	95.6	91.7	97.3	95.7	94.5	95.9	97.9	96.2
Sun Country	85	94.2	76.7	94.9	92.3	96.7	94.7	94.8	95.9	97	98.5
Sunrise	67.8	83.7	54.4	90.4	81	93.2	89	91.9	94.9	95.3	95.8
Peer Group F											
Athabasca Health Authority	71.4	88.5	41.4	94.4	80.6	100	94.3	100	96.7	91.7	91.3
Keewatin Yatthé	49	78.3	28.5	89.2	66.2	93.8	88.1	89.7	86	95	94.6
Mamawetan Churchill River	65.5	91.6	50.3	96.9	84	100	98	95.4	89.8	92.6	93.3
Peer Group H											
Prairie North	61.2	81.2	47.4	86.8	74.3	93.6	87.2	87.3	90.7	90.6	90.6
Prince Albert Parkland	50.4	78.9	40.8	87.3	70.4	94.6	86.4	88.9	95.1	94.6	92.8

Table 5: Rubella vaccine coverage by Athabasca Health Authority and former health region, 2017

Jurisdiction (with former health region by Peer Group)	Immunization coverage (% immunized), by age and dose										
	13 months	18 months	19 months	24 months		5 years		7 years	13 years	15 years	17 years
	1 dose	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses	2 doses	2 doses	2 doses	2 doses
Saskatchewan	**60.8**	**85.6**	**49.2**	**89**	**76.3**	**91.5**	**84.7**	**89.3**	**93.5**	**94.5**	**93.7**
Saskatchewan Health Authority	**60.9**	**85.6**	**49.2**	**89**	**76.3**	**91.5**	**84.6**	**89.3**	**93.6**	**94.6**	**93.7**
Peer Group A											
Regina Qu'Appelle	56.6	83.9	48.3	86.8	72.9	91	83.6	89	93.4	94.5	93.2
Saskatoon	60.5	85.5	45.5	89	77.5	90	81.9	87.5	93	94.3	93.5
Peer Group D											
Cypress	64.3	88.9	58.8	91	81.9	95.4	89.5	91.4	95.4	95.4	95.3
Five Hills	67	88.6	57.1	92	79.8	91.4	85.9	90.1	93.5	96.6	94.3
Heartland	68.3	91.8	59.9	93	84.5	94.7	91.1	94.9	95.4	95.8	96
Kelsey Trail	74.7	92.7	61	95.5	87.4	95.4	91.6	93.6	96.1	96.7	93.8
Sun Country	79.1	92.4	70.3	94.2	88.1	95.9	93	95.3	95.1	96.6	96.6
Sunrise	69.3	87.2	60.3	90.5	78.9	91.6	85.4	89.6	94.2	94.1	94.4
Peer Group F											
Athabasca Health Authority	52.8	88.4	36.6	97.3	73	96.7	93.3	89.6	90.2	82.6	92.5
Keewatin Yatthé	50.3	84.1	31.3	85.1	61.5	94.8	88.5	88.5	90.5	94.9	87.9
Mamawetan Churchill River	54.8	89.9	44.4	94.1	75.6	98.1	95.7	92.8	92.6	96.8	92.6
Peer Group H											
Prairie North	57.5	81.5	43.5	85.2	69.8	90.6	83.9	88.1	91.8	92.2	92.2
Prince Albert Parkland	51.7	80.4	37.9	88.3	68.1	92.5	86.1	88.7	94	93.3	93.8

- Two years of coverage data in 11 age-dose categories are provided by former RHA and Athabasca Health Authority (AHA). Yellow highlighted numbers indicate rates below the provincial coverage rate.
- At the provincial level, coverage from 2017 to 2018 remained stable for 13-year-old children. Other rates showed modest improvements for ages up to and including 17 years.
- In 2018, ten former RHAs and AHA exceeded the provincial average for one-dose at five years of age and only two former RHAs were below.
- In 2018, eight former RHAs and AHA exceeded the provincial average at 13 months, 18 months, 24 months (two doses), five years (two doses) and seven years of age and four were below. Nine former RHAs exceeded or were on par with the provincial average at 17 years of age.
- In 2018, the one-dose coverage rate was higher among the 18-month age group compared to the 13-month age group: 86.3% vs. 64.2%. The two-dose coverage rate for the 24-month age group was also higher than the 19-month age group: 80.5% vs. 54.9%.
- In 2018, one former RHA was below the provincial rate in all but one age-dose category and one was below in all but two categories.
- In 2018, four former RHAs were at or above the provincial rate in all eleven age-dose categories and one was at or above the provincial average in all but one category.
- Coverage rates for health regions in Peer Groups F and H should be interpreted with caution (see Data Notes).

Surveillance Case Definition: Saskatchewan CDC Manual

Respiratory and Direct Contact

Rubella

Notification Timeline:

From Lab/Practitioner to Public Health: Within 48 hours.

From Public Health to Saskatchewan Health: Within 72 hours.

Public Health Follow-up Timeline: Immediate.

Case Definition (adopted from Public Health Agency of Canada, 2008)

Confirmed Case	Laboratory confirmation of infection in the absence of recent immunization with rubella containing vaccine: • isolation of rubella virus from an appropriate clinical specimen **OR** detection of rubella virus RNA **OR** • seroconversion or a significant (e.g., fourfold or greater) rise in rubella IgG titre by any standard serologic assay between acute and convalescent sera **OR** • positive serologic test for rubella IgM antibody using a recommended assay in a person with an epidemiologic link to a laboratory-confirmed case or who has recently travelled to an area of known rubella activity. **OR** Clinical illness[1] in a person with an epidemiologic link to a laboratory-confirmed case.
Probable Case	Clinical illness • in the absence of appropriate laboratory tests **OR** • in the absence of an epidemiologic link to a laboratory-confirmed case **OR** • in a person who has recently travelled to an area of known measles activity.

Photo Courtesy of Centers for Disease Control

[1]Clinical illness is characterized by fever and rash, and at least one of the following:

- arthralgia/arthritis;
- lymphadenopathy;
- conjunctivitis.

Data Notes

Case Data Source: Panorama and the Integrated Public Health Information System (iPHIS) are information systems that support public health surveillance. Confirmed cases must meet the provincial surveillance case definition. Panorama replaced iPHIS on October 1, 2018.

Rubella molecular epidemiology is a tool for tracking rubella virus importations, establishing whether connections exist between concurrent rubella cases or outbreaks, and demonstrating the absence of sustained rubella transmission. Genotyping is performed by the National Medical Laboratory.

There are 10 peer groups used by Statistic Canada, each identified by a letter (A to J). A peer group consists of former health regions with similar socio-economic characteristics which facilitates comparisons within a peer group. The twelve former health regions and one health authority in Saskatchewan fall into four groups identified by letters A, D, F and H. Peer groups used in this report are based on Statistics Canada's 2011 peer groupings and should not be compared to the current Statistics Canada peer groupings (2014).

Vaccine Coverage Data Source: Panorama is a comprehensive, integrated public health information system. Of the five modules in the system, four have been implemented: vaccine inventory, immunization, investigations and outbreaks management. When fully functional, it will help public health professionals work together to effectively manage vaccine inventories, immunizations, investigations, outbreaks and family health. To learn more, please visit: www.ehealthsask.ca/services/panorama/Pages/default.aspx.

Most FNIHB-SK and NITHA communities, with the exception of those in AHA, are not currently using Panorama. Therefore, immunization data for most First Nations children are missing or are incomplete. This report includes only those children with Saskatchewan health coverage and registered in Panorama under a former health region or AHA as of April 1, 2019. In other words, children with Saskatchewan health coverage and registered in Panorama under FNIHB-SK or NITHA jurisdiction are excluded (including those from FNIHB-SK and NITHA communities in AHA). This means this report does not include coverage statistics for the entire provincial or regional population.

The rubella vaccine is currently administered as measles, mumps, rubella and varicella (MMRV) or measles, mumps and rubella (MMR) vaccine. Immunization coverage is based on those who turned 13, 18, 19 and 24 months, and five, seven, 13, 15 and 17 years by December 31 in 2017 and 2018. For example, the rate for seven-year -old children in 2018 is based on clients who were born in 2011 and the immunization doses they received by their seventh birthdays.