

Vaccine Preventable Disease Monitoring Report Rubella, 2014

Report release date: October, 2015

Purpose:

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

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

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

Report Features:

Background
Epidemiological Summary
Surveillance Case Definition
Case Counts by Year
Case Characteristics
Vaccine Coverage by RHA

Prepared by:

Population Health Branch,
Saskatchewan Ministry of Health.

Contact:

Val Mann, PhD
Chief Population Health
Epidemiologist,
Population Health Branch,
Saskatchewan Ministry of Health
email: cdc@health.gov.sk.ca

Background

Rubella, also called German measles or three-day measles, is a contagious viral infection characterized by a distinctive red rash. It is not the same as measles (rubeola) – it is caused by a different virus and is not as infectious or severe.

Symptoms are generally mild and occur 2-3 weeks after exposure, last 2-3 days and may include: mild fever (up to 38.9°); headache, stuffy nose, inflamed, red eyes; enlarged lymph nodes at base of skull, back of neck and behind the ears; a fine pink rash that begins on the face, spreads to the trunk and then arms and legs, disappearing in same sequence; and aching joints, particularly in young women.

Women contemplating pregnancy should ensure their immunizations are up to date. The virus can cause fetal death or serious birth defects, especially in the first trimester. Rubella during pregnancy is the most common cause of congenital deafness.

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 throughout the world. An immunity threshold of 83% to 85% is

Surveillance

Under the *Saskatchewan Public Health Act, 1994*, Saskatchewan health care providers are required to report cases of rubella to the local Medical Health Officer. The MHO then reports cases to the Chief/Deputy Chief Medical Health Officer 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 inability of laboratory tests to identify the organism. Some communicable diseases occur rarely and therefore, rates are based on small numbers of cases which may fluctuate

Rubella virus is a member of the family *Togaviridae*, genus *Rubivirus*.

Rubella was declared eliminated in Canada in 2005. 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.

Rubella continues to be imported into Canada by infected people travelling to Canada or by susceptible people exposed when travelling to areas where rubella cases are still common or experiencing rubella outbreaks. This can lead to spread in Canada, particularly in those who are unvaccinated or under vaccinated.

required to interrupt/stop rubella transmission. Of those immunized against rubella, over 97% develop immunity after one dose of the vaccine.

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.

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 SUMMARY

Rubella in Saskatchewan: 2014

- No cases of lab-confirmed rubella were reported.
- No cases were reported hospitalized.

Rubella in Saskatchewan: 2011 to 2014

- No cases of lab-confirmed rubella were reported.
- No cases were reported hospitalized.

Rubella case counts by year

	2015*	2014	2013	2012	2011	Total
Saskatchewan	0	0	0	0	0	0
Canada	N/A	N/A	2	2	2	6

*preliminary counts to date, April 2015

Rubella case characteristics, 2011-2014

Characteristics of rubella cases – Saskatchewan 2011 - 2014		Cases	Percent of Cases
Total		0	0
Sex	Male	0	0
	Female	0	0
Age	Less than 1 yr	0	0
	1 - 4 yrs	0	0
	5 - 19 yrs	0	0
	20 - 49	0	0
	50 yrs and over	0	0
Hospitalized	Yes	0	0
	No	0	0
	Unknown	0	0
Immunization for rubella vaccine	2 doses	0	0
	1 dose	0	0
	0 dose	0	0
	Too young	0	0
	Unknown	0	0
Source	International	0	0
	Canada	0	0
	Saskatchewan	0	0
Provincial source (n=0)	Domestic Travel	0	0
	Epidemiologically-linked to travel case	0	0
	Epidemiologically-linked to case with unknown source	0	0
	No identified source	0	0
Genotype*	Unknown	0	0

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

Rubella vaccine coverage for Saskatchewan by year

Age	Doses	2014	2013	2012
13 months	1	59.1%	55.0%	54.9%
18 months	1	84.3%	83.1%	83.6%
19 months	1	85.7%	84.7%	85.3%
	2	45.7%	43.6%	44.3%
24 months	1	88.4%	89.0%	88.2%
	2	75.6%	75.7%	74.7%
5 years	1	93.4%	92.8%	92.7%
	2	88.0%	87.0%	86.2%
7 years	1	94.3%	94.6%	94.6%
	2	90.7%	91.2%	91.1%
13 years (Grade 6)	1	96.1%	96.4%	96.9%
	2	94.6%	94.7%	95.0%
15 years (Grade 8)	1	97.4%	97.7%	97.7%
	2	95.7%	96.2%	96.3%
17 years	1	97.6%	97.7%	*88.8%
	2	96.2%	96.3%	*87.1%

*Immunization records in SIMS may be incomplete for children born prior to 1996; therefore, the coverage for 17-year-olds may not reflect the actual provincial rate.

EPIDEMIOLOGY SUMMARY

Rubella Vaccine Coverage by Health Region

Rubella vaccine coverage, 2014

Health Region, by Peer Group	Vaccine coverage (% immunized), by age and dose															
	13 months			18 months			19 months		24 months		5 years		7 years	13 years (Grade 6)	15 years (Grade 8)	17 years
	1 dose	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses	2 doses	2 doses	2 doses	2 doses	2 doses	2 doses	
Saskatchewan	59.1	84.3	45.7	88.4	75.6	93.4	88.0	90.7	94.6	95.7	96.2					
<i>Peer Group A</i>																
Regina Qu'Appelle	59.6	83.5	49.1	86.9	74.5	93.1	87.0	92.2	95.3	95.5	96.1					
Saskatoon	62.7	85.8	49.5	89.9	78.4	93.7	88.0	90.5	93.9	95.6	96.4					
<i>Peer Group D</i>																
Cypress	59.2	84.7	51.5	90.5	81.0	95.6	92.5	92.6	96.3	97.5	98.4					
Five Hills	62.8	87.2	48.4	89.2	78.0	93.7	88.9	91.1	96.0	97.0	97.5					
Heartland	65.0	89.5	50.1	92.2	82.9	94.4	90.3	92.5	96.0	97.5	98.5					
Kelsey Trail	48.5	82.9	36.4	87.8	71.3	92.0	86.3	89.9	95.0	95.9	95.8					
Sun Country	68.3	87.5	54.8	91.9	82.5	95.2	91.1	95.0	98.5	97.4	97.9					
Sunrise	58.3	82.9	41.7	87.4	74.3	92.7	89.8	88.4	95.3	97.8	96.6					
<i>Peer Group F</i>																
Athabasca	80.0	97.6	58.1	95.7	87.0	100.0	98.9	95.4	94.2	96.3	98.3					
Keewatin Yatthe	47.3	87.8	23.8	92.7	66.7	99.4	95.7	97.9	99.2	98.6	97.8					
Mamawetan Churchill River	55.3	88.0	24.3	92.6	74.4	97.5	94.7	95.3	96.0	88.8	93.0					
<i>Peer Group H</i>																
Prince Albert Parkland	42.4	77.2	30.2	84.2	66.7	90.8	84.9	86.7	90.9	94.1	93.9					
Prairie North	53.0	79.6	33.5	82.7	67.1	90.6	83.8	84.6	91.7	94.1	94.3					

Registered in SIMS as of January 15, 2015

Rubella vaccine coverage, 2013

Health Region, by Peer Group	Vaccine coverage (% immunized), by age and dose															
	13 months			18 months			19 months		24 months		5 years		7 years	13 years (Grade 6)	15 years (Grade 8)	7 years
	1 dose	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses	2 doses	2 doses	2 doses	2 doses	2 doses	2 doses	
Saskatchewan	55.0	83.1	43.6	89.0	75.7	92.8	87.0	91.2	94.7	96.2	96.3					
<i>Peer Group A</i>																
Regina Qu'Appelle	55.7	82.8	49.8	88.5	76.9	92.2	86.3	91.9	94.9	96.1	96.4					
Saskatoon	57.3	84.3	45.4	90.3	78.9	93.1	86.6	92.3	94.5	96.6	96.7					
<i>Peer Group D</i>																
Cypress	55.8	84.4	41.2	90.6	75.5	95.6	92.3	91.5	96.6	96.4	97.8					
Five Hills	59.1	85.3	43.9	91.0	76.7	93.7	88.7	90.3	95.3	97.8	98.1					
Heartland	63.2	89.6	45.1	92.1	80.0	94.5	91.5	92.3	96.3	96.7	98.0					
Kelsey Trail	49.2	81.7	34.9	86.4	69.9	89.6	87.3	89.4	93.7	94.9	96.0					
Sun Country	70.0	89.6	61.1	92.6	84.7	95.7	91.9	96.8	98.1	98.4	98.5					
Sunrise	52.2	81.3	34.1	87.3	71.7	93.5	87.7	92.1	95.9	96.6	97.0					
<i>Peer Group F</i>																
Athabasca	65.2	95.5	32.6	100.0	92.5	96.6	93.1	94.6	96.6	94.6	95.8					
Keewatin Yatthe	52.2	87.3	25.9	95.3	80.0	94.9	92.3	91.8	96.4	100.0	97.2					
Mamawetan Churchill River	49.2	84.2	29.3	94.4	69.2	94.3	88.5	84.9	91.4	90.5	89.5					
<i>Peer Group H</i>																
Prince Albert Parkland	39.4	75.3	29.5	84.4	61.8	91.5	85.3	87.9	93.3	94.1	93.9					
Prairie North	45.5	75.8	29.9	82.7	65.3	89.5	81.2	85.2	92.0	95.6	93.9					

Registered in SIMS as of January 15, 2014

Rubella vaccine coverage, 2012

Health Region, by Peer Group	Vaccine coverage (% immunized), by age and dose															
	13 months			18 months			19 months		24 months		5 years		7 years	13 years (Grade 6)	15 years (Grade 8)	7 years
	1 dose	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses	2 doses	2 doses	2 doses	2 doses	2 doses	2 doses	
Saskatchewan	54.9	83.6	44.3	88.2	74.7	92.7	86.2	91.1	95.0	96.3	* 87.1					
<i>Peer Group A</i>																
Regina Qu'Appelle	57.6	83.7	53.0	88.2	77.1	92.2	84.8	92.5	95.6	96.3	* 55.6					
Saskatoon	56.9	83.9	44.2	88.1	74.9	93.8	86.8	91.2	94.4	96.6	95.4					
<i>Peer Group D</i>																
Cypress	51.0	86.4	43.2	91.4	77.0	93.3	87.9	93.8	96.0	98.7	97.4					
Five Hills	53.3	86.6	41.4	90.0	74.1	94.0	88.7	91.6	96.8	97.8	97.5					
Heartland	54.5	88.4	47.5	90.5	80.8	93.3	90.0	94.8	96.8	98.9	97.4					
Kelsey Trail	52.0	84.9	39.7	88.6	73.5	88.9	84.4	90.5	95.7	95.3	95.0					
Sun Country	64.3	92.1	57.1	94.7	86.5	96.5	92.1	95.3	97.4	97.6	95.1					
Sunrise	54.0	81.9	41.5	90.2	75.1	92.9	87.5	91.3	96.7	96.7	95.2					
<i>Peer Group F</i>																
Athabasca	67.5	92.0	49.1	94.4	83.3	94.1	92.6	94.2	90.4	96.6	83.1					
Keewatin Yatthe	48.2	88.2	21.4	90.9	76.6	98.1	96.1	96.1	98.6	97.8	94.4					
Mamawetan Churchill River	43.8	83.2	32.6	87.5	67.0	89.2	84.0	78.2	82.9	90.5	80.8					
<i>Peer Group H</i>																
Prince Albert Parkland	41.5	77.0	27.4	83.3	64.2	90.4	83.8	88.6	93.5	94.0	93.8					
Prairie North	50.4	76.3	33.3	83.2	65.8	89.7	81.0	83.9	93.4	94.4	94.5					

Registered in SIMS as of January 15, 2013

Three years of coverage data in 11 age/dose categories are provided by RHAs which are clustered by peer group. Yellow highlighting indicates RHAs below the provincial coverage rate.

As rubella vaccine is recommended at 12 and 18 months, data for 13 and 19 months are shown.

At a provincial level, coverage at 13 months has improved by 8% from 2012 to 2014.

Other rates remained steady or have shown modest improvements for ages up to and including 5 years.

For 13 months (2014), seven RHAs exceeded the provincial average (59.1%); six were below. For 19 months (two doses), seven RHAs exceeded the provincial average (45.7%); six were below.

There is a significant increase in coverage from the 19 to the 24 month age groups in 2014 - an increase of 65% (two doses).

Across all 11 categories, two RHAs were below the provincial rate in all 11 categories.

Coverage rates for health regions in Peer Group F and H should be interpreted with caution.

**Immunization records in SIMS may be incomplete for children born prior to 1996; therefore, the immunization coverage for 17-year-olds may not reflect the actual provincial or regional rates.

SURVEILLANCE CASE DEFINITION: Saskatchewan CDC Manual

Respiratory and Direct Contact Rubella

Notification Timeline:

From Lab/Practitioner to Public Health: Within 48 hours
(or immediate if an outbreak is suspected).

From Public Health to Ministry of Health: Within 72 hours
(or immediate if an outbreak is suspected).

Public Health Follow-up Timeline: Initiate within 24-48 hrs.

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

Confirmed Case	<p>Laboratory confirmation of infection in the absence of recent immunization with rubella containing vaccine:</p> <ul style="list-style-type: none"> • 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. <p>OR</p> <p>Clinical illness¹ in a person with an epidemiologic link to a laboratory-confirmed case.</p>
Probable Case	<p>Clinical illness¹</p> <ul style="list-style-type: none"> • 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 rubella activity.



Photo Courtesy of Centers for Disease Control

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

- arthralgia/arthritis;
- lymphadenopathy;
- conjunctivitis.

DATA NOTES

Case Data Source: Saskatchewan Integrated Public Health Information System (iPHIS), a provincially mandated integrated client-centered case management information system that supports public health surveillance. Confirmed cases must meet the provincial surveillance case definition.

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 (NML).

Peer groups were created by Statistics Canada. A peer group consists of health regions with similar socio-economic characteristics so that important differences may be detected by comparing within a peer group. The thirteen health regions in Saskatchewan fall into four (identified by letters A, D, F and H) of the ten peer groups (A to J) across Canada.

Vaccine Coverage Data Source: Saskatchewan Immunization Management System (SIMS) is a client-based registry recording vaccines delivered by Regional Public Health services. It does not include vaccines delivered out of province or by First Nations communities that declined to use SIMS. Immunization data from Keewatin Yatthé and Mamawetan Churchill River health regions and historical data from Athabasca Health Authority are incomplete. As a result, this report does not provide immunization coverage for the entire provincial/regional population. For further methodology information, please refer to <http://www.saskatchewan.ca/residents/health/public-health-advisories/public-health-monitoring-and-surveillance#saskatchewan-population-health-assessment-and-surveillance-reports>.

Rubella vaccine is currently administered as measles-mumps-rubella-varicella (MMRV) or measles-mumps-rubella (MMR) vaccine. Immunization coverage is based on those who turned 13, 18, 19 and 24 months, and 5, 7, 13, 15 and 17 years by December 31 in 2012, 2013 and 2014. For example, the immunization coverage for 7 year olds in 2014 is based on clients who were born in 2007 and their immunization records up to December 31, 2014.