

Vaccine Preventable Disease Monitoring Report Rotavirus, 2014

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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) and immunization coverage information as collected by the Saskatchewan Immunization Management System (SIMS) and Panorama. Limitations associated with these systems have been described elsewhere.

Report Features:

Background
Epidemiological Summary
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

Rotavirus infections cause acute gastroenteritis (inflammation of the stomach and intestines). Acute gastroenteritis is the primary cause of diarrhea and related dehydration in infants and young children.

Rotavirus transmission can occur through direct contact with the stool of infected persons and through viral retention on exposed surfaces as the virus is highly stable in the environment.

Individuals infected by rotavirus usually become symptomatic within one to three days of viral exposure and can experience fever and abdominal pain including vomiting and watery diarrhea for three to eight days. When signs of dehydration appear the infection is considered serious and can result in death.

Globally, almost every child is infected by a strain of rotavirus before the age of five years. Given the ubiquity of rotavirus infections among child populations, rotavirus is associated with high health-care utilization. According to the Canadian Immunization Guide, an estimated 36% of Canadian children with rotaviral gastroenteritis visit physicians, 15% visit emergency departments, and 7% require hospitalization. While mortality rates associated with rotavirus infection are very low in developed countries such as Canada, the risk of death is high in young children who do not receive timely treatment.

Immunization

Rotavirus vaccines are administered orally. It is recommended that the first dose of rotavirus vaccine be administered to healthy infants between six and 14 weeks of age. This vaccine is not recommended for infants with a history of intussusception and should not be given to immunocompromised infants without consulting a medical expert. The Saskatchewan Routine Childhood Immunization Schedule recommends a two dose series of rotavirus vaccine at two and four months of age. According to the schedule, the first dose of rotavirus vaccine must be given by 14 weeks and six days of age and the second dose must be given by eight months and zero days of age.

Clinical trials showed that most infants developed antibodies to the vaccine after completing a vaccine series. Efficacy of rotavirus vaccine against diarrhea of any severity in the developed world is 74% to 87% and against severe diarrhea is 85% to 98%. It should be noted that initial rotavirus infection frequently provides only partial immunity. Therefore, infants who have had rotavirus associated gastroenteritis before receiving the full course of the vaccine should still initiate or complete the vaccine series.

Surveillance

The Public Health Act, 1994 does not require Saskatchewan health care providers to report cases of rotavirus to the local medical health officer (MHO). Reporting is not required by the Saskatchewan Disease Control Laboratory (SDCL) to the Chief and Deputy Chief Medical Health Officers. However, SDCL creates counts of positive laboratory specimens and calculates the proportion of positive specimens among specimens tested.

As rotavirus cases are not reportable, there is no provincial surveillance case definition for rotavirus.

EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARY

Rotavirus in Saskatchewan:

- Rotavirus cases are not reported in Saskatchewan; therefore, case counts and case characteristics are not available.

Table 1: Rotavirus vaccine coverage for Saskatchewan by year

Age	Doses	2014	2013	2012*
3 months	1	81.1%	80.2%	9.5%
4 months	1	85.0%	83.6%	4.3%
5 months	2	70.2%	66.2%	0.8%
6 months	2	77.8%	66.5%	0.6%
8 months	2	80.7%	55.9%	0.7%

Analysis:

- 2012 - Rotavirus vaccine was added to the publicly funded immunization program on November 1, 2012.*
- 2013 - Significant improvement in overall rates due to initiation program in 2012.
- 2014 - Improvement in all age categories as expected with the introduction of a new vaccine program; with the most significant improvement in the second dose for eight month olds which went from 55.9% in 2013 to 80.7% in 2014 - a 44.4% positive change.

VACCINE COVERAGE SUMMARIES

Table 2: Rotavirus Vaccine Coverage by Health Region, 2014 (selected age & dose)

Health Region, by Peer group	Vaccine coverage (% immunized), by age and dose				
	3 months	4 months	5 months	6 months	8 months
	1 dose	1 dose	2 doses	2 doses	2 doses
Saskatchewan	81.1	85.0	70.2	77.8	80.7
Peer Group A					
Regina Qu'Appelle	83.4	87.3	71.8	80.5	82.6
Saskatoon	82.3	85.8	73.1	78.5	81.1
Peer Group D					
Cypress	85.4	88.8	72.2	81.6	82.6
Five Hills	84.0	87.7	74.4	81.1	85.7
Heartland	81.5	85.0	70.8	79.3	82.9
Kelsey Trail	80.0	83.2	63.3	74.2	77.5
Sun Country	87.3	89.7	83.1	86.2	86.1
Sunrise	78.1	83.7	68.3	77.3	81.0
Peer Group F					
Athabasca Health Authority	82.8	96.6	53.1	81.1	97.4
Keewatin Yatthé	68.1	71.7	47.9	57.9	66.7
Mamawetan Churchill River	68.5	79.3	52.7	66.8	72.3
Peer Group H					
Prince Albert Parkland	69.9	74.1	56.3	65.7	71.9
Prairie North	76.1	81.4	63.5	72.2	76.4

Three years of coverage data in five age-dose categories are provided by RHA. A yellow highlighted cell means the RHA's coverage rate is below the provincial coverage rate.

Rotavirus vaccine was added to the publicly-funded immunization program on November 1, 2012. It is a two-dose series recommended at two and four months of age. The 2012 coverage rates are, as expected, extremely low.

Table 3: Rotavirus Vaccine Coverage by Health Region, 2013 (selected age & dose)

Health Region, by Peer group	Vaccine coverage (% immunized), by age and dose				
	3 months	4 months	5 months	6 months	8 months
	1 dose	1 dose	2 doses	2 doses	2 doses
Saskatchewan	80.2	83.6	66.2	66.5	55.9
Peer Group A					
Regina Qu'Appelle	81.3	84.4	67.5	65.6	54.1
Saskatoon	81.3	83.8	69.0	68.7	58.2
Peer Group D					
Cypress	78.2	82.4	61.0	62.5	53.2
Five Hills	83.7	87.2	70.1	71.7	56.7
Heartland	79.0	82.8	68.4	69.9	56.4
Kelsey Trail	77.5	80.6	63.6	64.2	55.5
Sun Country	85.4	87.9	78.0	76.4	65.9
Sunrise	80.1	85.4	67.6	69.0	57.6
Peer Group F					
Athabasca Health Authority	80.0	93.5	67.7	81.3	66.7
Keewatin Yatthé	70.7	77.4	55.7	59.0	54.5
Mamawetan Churchill River	74.5	80.4	48.8	55.8	51.0
Peer Group H					
Prince Albert Parkland	74.4	80.3	52.2	57.1	49.7
Prairie North	76.2	79.7	59.1	61.2	50.8

At a provincial level, coverage improved at all reported age-dose categories from 2013 to 2014. The greatest improvement, 44.4%, was seen for two doses at eight months of age. All regions showed an improvement for this age-dose group.

In 2014 all regions except the Athabasca Health Authority reported their highest immunization rate for rotavirus vaccine at one dose by four months of age. Only Athabasca Health Authority reported a higher coverage rate for the second dose by eight months of age.

Table 4: Rotavirus Vaccine Coverage by Health Region, 2012 (selected age & dose)

Health Region, by Peer group	Vaccine coverage (% immunized), by age and dose				
	3 months	4 months	5 months	6 months	8 months
	1 dose	1 dose	2 doses	2 doses	2 doses
Saskatchewan	9.5	4.3	0.8	0.6	0.7
Peer Group A					
Regina Qu'Appelle	8.3	2.4	0.4	0.5	0.6
Saskatoon	10.1	5.3	1.0	0.6	0.8
Peer Group D					
Cypress	9.0	3.1	0.2	0.2	0.8
Five Hills	9.1	4.4	0.5	0.2	0.2
Heartland	10.3	7.0	0.8	0.2	0.2
Kelsey Trail	12.4	3.7	0.3	0.0	0.0
Sun Country	14.0	10.9	5.1	3.3	4.3
Sunrise	10.8	4.6	0.4	0.4	0.7
Peer Group F					
Athabasca Health Authority	16.1	0.0	0.0	0.0	0.0
Keewatin Yatthé	9.8	4.9	0.7	0.7	0.0
Mamawetan Churchill River	4.4	3.9	0.0	0.0	0.0
Peer Group H					
Prince Albert Parkland	8.8	3.6	0.3	0.2	0.1
Prairie North	7.4	1.5	0.0	0.1	0.0

In 2014, six RHAs reported coverage rates equal to or above the provincial average for all age-dose categories compared to 2013 when only two RHAs did so.

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

SURVEILLANCE CASE DEFINITION:

Rotavirus cases are not reported in Saskatchewan; therefore, a surveillance case definition is not available.

DATA NOTES

There are 10 peer groups used by Statistic Canada, each identified by a letter (A to J). A peer group consists of health regions with similar socio-economic characteristics which facilitates comparisons within a peer group. The thirteen health regions in Saskatchewan fall into four groups identified by letters A, D, F and H.

Vaccine Coverage Data Source: The Saskatchewan Immunization Management System (SIMS), 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 or regional populations.

In Saskatchewan, rotavirus vaccine is given as live, oral, monovalent, attenuated human rotavirus vaccine in a two doses series.

Immunization coverage is based on those who turned three, four, five, six and eight months by December 31 in 2012, 2013 and 2014. For example, the immunization coverage for three-month old children in 2014 is based on clients who were born between October 1, 2013 and September 30, 2014 and their records up to December 31, 2014.