

Vaccine Preventable Disease Monitoring Report Rotavirus, 2015 and 2016

Report release date: July, 2017

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

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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 fomites (objects or surfaces contaminated with the virus) 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. Mortality rates associated with rotavirus infection are very low in high income countries such as Canada, however, the risk of death is higher in infants in lower income countries.

Immunization

Rotavirus vaccine is 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 between six weeks and six days of age, and the second dose must be given by eight months 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 rotavirus cases 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	2016	2015	2014	2013	2012*
3 months	1	83.1%	81.6%	81.1%	80.2%	9.5%
4 months	1	87.2%	84.6%	85.0%	83.6%	4.3%
5 months	2	74.5%	71.7%	70.2%	66.2%	0.8%
6 months	2	81.0%	77.8%	77.8%	66.5%	0.6%
8 months	2	83.7%	80.4%	80.7%	55.9%	0.7%

Analysis:

- Rotavirus vaccine was added to the publicly funded immunization program on November 1, 2012. The 2012* rates were extremely low as expected, due to the November start date.
- From 2013 to 2016, provincial immunization coverage rates improved for all age-dose categories.

VACCINE COVERAGE SUMMARIES

Table 2: Rotavirus Vaccine Coverage by Health Region, 2016

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	83.1	87.2	74.5	81.0	83.7
Peer Group A					
Regina Qu'Appelle	85.0	88.2	75.7	82.3	84.8
Saskatoon	82.2	86.7	73.9	80.3	83.2
Peer Group D					
Cypress	85.4	89.2	78.3	83.6	86.2
Five Hills	87.9	91.7	77.8	85.6	88.5
Heartland	85.2	89.6	76.9	84.9	85.3
Kelsey Trail	84.6	88.9	75.1	81.2	84.4
Sun Country	88.5	90.9	87.1	88.9	91.6
Sunrise	85.1	88.8	79.7	84.1	84.8
Peer Group F					
Athabasca Health Authority	90.2	97.4	65.9	87.8	94.6
Keewatin Yatthé	64.3	71.0	52.7	64.6	69.9
Mamawetan Churchill River	72.3	80.2	59.6	71.3	76.2
Peer Group H					
Prairie North	81.6	84.6	72.8	79.0	81.1
Prince Albert Parkland	74.9	81.1	62.1	69.0	75.3

Table 3: Rotavirus Vaccine Coverage by Health Region, 2015

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	81.6	84.6	71.7	77.8	80.4
Peer Group A					
Regina Qu'Appelle	82.3	85.2	73.3	79.4	81.6
Saskatoon	81.6	84.6	73.0	78.3	80.8
Peer Group D					
Cypress	82.0	85.5	70.1	79.0	82.6
Five Hills	85.1	87.3	75.6	80.9	82.5
Heartland	82.4	85.1	73.8	79.1	81.6
Kelsey Trail	80.1	83.0	71.3	77.1	80.3
Sun Country	88.9	90.6	84.0	87.6	88.0
Sunrise	78.2	81.1	68.0	75.6	78.8
Peer Group F					
Athabasca Health Authority	79.4	91.7	51.3	52.8	72.2
Keewatin Yatthé	62.0	69.4	41.6	57.1	60.8
Mamawetan Churchill River	79.1	86.6	53.9	69.3	78.0
Peer Group H					
Prairie North	81.2	83.6	66.9	74.5	76.6
Prince Albert Parkland	76.0	80.4	60.8	68.4	73.1

- Two years of coverage data in five age-dose categories are provided by RHA. Yellow highlight indicates RHAs below the provincial coverage rate.
- At the provincial level, rates showed modest improvements for all age-dose categories from 2015 to 2016.
- In 2016, the two-dose coverage rate was highest at eight months of age compared to six months and five months (83.7%, 81% and 74.5%, respectively). This is consistent with the extended time window for those eight months of age that allows infants behind in their immunization schedule to catch up.
- In 2016, five RHAs were below the provincial rate in all five age-dose categories.
- In 2016, seven RHAs were above the provincial rate in all five age-dose categories and one was above the provincial average in all but one category.

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 twelve health regions and one health authority in Saskatchewan fall into four groups identified by letters A, D, F and H.

Vaccine Coverage Data Source: The Saskatchewan Immunization Management System (SIMS) was a client-based registry recording vaccines delivered by public health services. It did not include vaccines delivered by First Nations (FN) communities that did not use SIMS.

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. It does not include vaccines delivered by FN communities that do not use Panorama.

SIMS was implemented province-wide in 2001 and was replaced by Panorama's immunization module on January 27, 2015. To learn more, please visit: www.ehealthsask.ca/services/panorama/Pages/default.aspx.

This report includes only those children with Saskatchewan health coverage and registered in Panorama under a health region jurisdiction as of January 12, 2017. This means this report does not include coverage statistics for the entire provincial or regional populations.

In Saskatchewan, rotavirus vaccine is given as a live, oral, monovalent, attenuated human rotavirus vaccine in a two-dose series. Immunization coverage is based on those who turned three, four, five, six and eight months by December 31 in 2015 and 2016. For example, the immunization coverage for six-month old children in 2016 is based on clients who were born between July 1, 2015 and June 30, 2016 and the immunization dose they received by the age of six months.