

# Vaccine Preventable Disease Monitoring Report Hepatitis B, 2017 and 2018

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**PREPARED BY POPULATION HEALTH BRANCH, SASKATCHEWAN MINISTRY OF HEALTH**

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<p><b><u>Purpose:</u></b></p> <p>The Saskatchewan Ministry of Health's Population Health Branch provides routine surveillance of notifiable diseases at the provincial and former regional health authorities (RHAs), Athabasca Health Authority (AHA), First Nations and Inuit Health Branch - Saskatchewan (FNIHB-SK) and Northern Inter-Tribal Health Authority (NITHA) levels.</p> <p>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 Panorama. Limitations associated with these systems have been described elsewhere.</p> <p>Under <i>The Public Health Act, 1994</i> 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. Hepatitis B is a Category II disease.</p> <p><b><u>Report Features:</u></b></p> <p>Background Epidemiological Summary Surveillance Case Definition Case Counts by Year Case Characteristics Vaccine Coverage by AHA and former RHA</p> <p><b><u>Data Source:</u></b></p> <p>Panorama (as of April 1, 2019)</p>	<div> <div> <h2>Background</h2> <p>Hepatitis B is a virus that infects the liver. It can cause permanent scarring and damage to the liver (cirrhosis), liver cancer and death. The hepatitis B virus is found in the body fluids of infected persons. The major risk factors associated with transmission include sexual contact, sharing of drug use equipment, household contact with an infected case, and perinatal transmission. Less than 10% of children and 30%-50% of adults with acute hepatitis B infection will have symptoms, which may include jaundice and the disease is often milder in children.</p> <p>It usually takes two to three months before the insidious onset of clinical illness. However, the incubation period can be as short as two weeks to as long as six to nine months. The case fatality rate is 1%, but is higher in those over 40 years of age.</p> <p>The reported rate of acute hepatitis B infection in the Public Health Agency 2016 Report on Hepatitis B and C in Canada was 0.52 cases per 100,000 people.</p> <p>The risk of chronic infection varies inversely with age. For example, 90% of infants infected at birth will develop chronic infection; while 20%-50% of children infected between ages one to five; and 1%-10% of individuals infected as older children and adults will develop chronic hepatitis B infection.</p> <p>According to the <i>Control of communicable diseases manual</i> (2015), approximately 15%-25% of those with chronic hepatitis B die prematurely of either cirrhosis or liver cancer.</p> </div> <div> <h2>Immunization</h2> <p>The Saskatchewan Routine Immunization Schedule for hepatitis B vaccine includes Grade 6 students; anyone born since January 1, 1984; and those at risk of hepatitis B exposure or infection, including infants born to positive mothers, children whose families emigrated from regions of intermediate or high prevalence, and those with select medical conditions or lifestyle behaviours. Hepatitis B immunization is a two- or three-dose series, depending on age at presentation or vaccine formulation availability.</p> <p>Hepatitis B vaccine is 95% to 100% effective in preventing disease in individuals who complete an appropriate immunization series.</p> </div> <div> <h2>Surveillance</h2> <p><i>Under The Public Health Act, 1994</i>, Saskatchewan health care providers are required to report cases to the local Medical Health Officer (MHO) who then reports the case to the Chief and Deputy Chief Medical Health Officers using the case definition in the Saskatchewan Communicable Disease Control Manual.</p> <p>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 can fluctuate dramatically over time. In these situations, year to year comparisons should be interpreted with caution.</p> <p>Surveillance case definitions ensure uniform reporting and allow comparability of surveillance data. This definition should not be misconstrued as a clinical diagnosis.</p> <p>Currently molecular epidemiology genotyping is not routinely performed for hepatitis B at the Roy Romanow Provincial Laboratory.</p> </div> </div>
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# EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARY

## Hepatitis B (acute) in Saskatchewan: 2018

- One case of lab-confirmed hepatitis B was reported. The case could not be located to ask about possible exposures.
- The case, a female, was in the late childbearing age group.
- There were no reported deaths from hepatitis B.

## Hepatitis B (acute) in Saskatchewan: 2014 to 2018

- Seventeen cases of hepatitis B ranging in age from mid-twenties to over 70 years were reported. The median age of cases was 44 years. Ten cases (59%) were males.
- All but four cases lived in the former Saskatoon Health Region (13 cases, 76%). The others were residents of four separate former health regions.
- Half (53%, 9/17 cases) were co-infected with hepatitis C. One case was co-infected with HIV.
- Self-reported high-risk behaviours for exposure to the virus included injecting illicit drugs (6/17, 35% of cases), high-risk sexual activity (6/17, 35%) and tattooing and body piercing (1/17, 6% of cases).
- Three cases were hospitalized. There were no deaths.
- Only one case was fully immunized with hepatitis B containing antigen. Three other cases had one or two doses. Over three-quarters (76%) had no immunizations despite their high-risk lifestyle.

## Hepatitis B Coverage in Saskatchewan: 2014 to 2018

- From 2014 to 2018, provincial immunization coverage rates declined or remained stable for all age-groups.
- In the two most recent years, immunization coverage either improved or remained stable from 2017 to 2018.

**Table 1: Hepatitis B (acute) case counts by year**

	2018	2017	2016	2015	2014	Total
Saskatchewan	1	2	1	6	7	17
Canada	N/A	N/A	N/A	149	175	324

N/A = not available

**Table 2: Hepatitis B (acute) case characteristics, Saskatchewan 2014 - 2018**

		Cases	Percent of Cases
Total		17	100
Sex	Male	10	59
	Female	7	41
	Unknown	0	0
Age	Less than 1 year	0	0
	1 - 4 years	0	0
	5 - 19 years	0	0
	20 - 49 years	10	59
	50 years and over	7	41
Hospitalized	Yes	3	18
	No	14	82
	Unknown	0	0
Immunization status for hepatitis B vaccine	3 doses	1	6
	2 doses	2	12
	1 dose	1	6
	0 dose	13	76
	Too young	0	0
	Unknown	0	0
Source	International	0	0
	Canada	1	6
	Saskatchewan	16	94
	Unknown	0	0
Genotype	Not applicable	17	100

**Table 3: Hepatitis B vaccine coverage rates for Saskatchewan by age, dose, and year, 2014-2018**

Age	Doses	2018	2017	2016 <sup>a</sup>	2015 <sup>a</sup>	2014 <sup>b</sup>
13 years	1	88.3%	87.9%	87.4%	87.6%	88.3%
	2	82%	81.5%	80.1%	80.7%	81.9%
15 years	1	90.7%	90.7%	91.2%	90.5%	91.8%
	2	87.3%	87.4%	87.0%	86.7%	88.7%
	3	N/A	N/A	N/A	N/A	71.6%
17 years	1	91.6%	91%	91.5%	91.8%	92.3%
	2	89%	88.3%	88.5%	88.9%	89.7%
	3	N/A	N/A	70.6%	N/A	N/A

<sup>a</sup> Vaccine Preventable Disease Monitoring Report: Hepatitis B, 2015 and 2016 (Data source: Panorama January 12, 2017)

<sup>b</sup> Vaccine Preventable Disease Monitoring Report: Hepatitis B, 2014 (Data source: SIMS January 16, 2015)

N/A = not applicable because the three-dose series was used only in 2010-11, which primarily affected the 1999 birth cohort who were 15 in 2014 and 17 in 2016.

# EPIDEMIOLOGY AND VACCINE COVERAGE SUMMARY

**Table 4: Hepatitis B 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 years		15 years		17 years	
	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses
<b>Saskatchewan</b>	<b>88.3</b>	<b>82</b>	<b>90.7</b>	<b>87.3</b>	<b>91.6</b>	<b>89</b>
<b>Saskatchewan Health Authority</b>	<b>88.3</b>	<b>82</b>	<b>90.6</b>	<b>87.2</b>	<b>91.6</b>	<b>89</b>
<b>Peer Group A</b>						
Regina Qu'Appelle	89.2	83.1	91.9	88.2	92.5	90.2
Saskatoon	88.1	80.9	91.4	87.6	92.3	89.5
<b>Peer Group D</b>						
Cypress	91	87.2	91.8	90.4	92.7	91.3
Five Hills	87.7	84.7	91.3	88.8	90.8	89
Heartland	88.3	84.9	93.1	91.4	94.3	93.3
Kelsey Trail	89.2	85.5	90.9	89.4	92.4	91.7
Sun Country	92.8	89.6	91.8	89.8	95.4	94.1
Sunrise	88.5	86.2	91.1	89.3	93.4	92.1
<b>Peer Group F</b>						
Athabasca Health Authority	93.3	88.3	95.8	93.8	95.7	95.7
Keewatin Yatthé	70.7	42.7	80	69.3	85.9	81.9
Mamawetan Churchill River	79.6	62.4	81.6	71.1	82.4	66.2
<b>Peer Group H</b>						
Prairie North	84	76.9	83.5	79.9	85	82.5
Prince Albert Parkland	90.4	82.3	89.4	85.9	89	83.8

**Table 5: Hepatitis B 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 years		15 years		17 years	
	1 dose	2 doses	1 dose	2 doses	1 dose	2 doses
<b>Saskatchewan</b>	<b>87.9</b>	<b>81.5</b>	<b>90.7</b>	<b>87.4</b>	<b>91</b>	<b>88.3</b>
<b>Saskatchewan Health Authority</b>	<b>87.8</b>	<b>81.5</b>	<b>90.7</b>	<b>87.4</b>	<b>90.9</b>	<b>88.3</b>
<b>Peer Group A</b>						
Regina Qu'Appelle	88.4	82.7	91.2	88.2	91.2	88.3
Saskatoon	88.8	80.7	91.8	88.1	91.6	89.2
<b>Peer Group D</b>						
Cypress	90.4	86.7	91.1	89.8	93.4	92
Five Hills	85.8	83.4	92	88.8	91.8	90.4
Heartland	90.2	85.5	92.9	91.5	93.5	92.6
Kelsey Trail	90.1	84.9	91	89.3	91.1	90.9
Sun Country	90.7	88.8	93	91.3	93.8	92.9
Sunrise	88.5	85	90.9	90	91.7	87.5
<b>Peer Group F</b>						
Athabasca Health Authority	98	92.2	97.8	97.8	100	98.1
Keewatin Yatthé	65.9	44.4	83.3	68.1	79.4	72.3
Mamawetan Churchill River	80.6	60.8	83.6	74.4	85.1	71.9
<b>Peer Group H</b>						
Prairie North	84	77.7	85.6	81.3	85.3	81.5
Prince Albert Parkland	85	77.7	88.3	82.9	89.8	87.1

- Two years of coverage data in six age-dose categories are provided by Athabasca Health Authority (AHA) and former regional health authority (RHA). A yellow highlighted cell means the coverage rate is below the provincial coverage rate.
- Hepatitis B vaccine is recommended at Grade 6 and since 2011/12 has been provided as a two-dose series.
- At a provincial level, coverage improved or remained stable for all age-dose categories from 2017 to 2018.
- In 2018, AHA and six former RHAs reported coverage rates equal to or above the provincial average for all age-dose categories and two former RHAs were at or above the provincial average in all but two age-dose categories.
- In 2018, three former RHAs were below the provincial coverage in all age-dose categories.

# SURVEILLANCE CASE DEFINITION: SASKATCHEWAN CDC MANUAL

## Blood and Body Fluid Pathogens Hepatitis B



Photo Courtesy of Centers for Disease Control

### Notification Timeline:

From Lab/Practitioner to Public Health: Within 72 hours.

From Public Health to Ministry of Health: Within 2 weeks.

Public Health Follow-up Timeline: Within 24-48 hours.

Case Definition (adopted from Public Health Agency of Canada, 2009)

### Acute Hepatitis B Confirmed Case

Hepatitis B surface antigen (HBsAg) and immunoglobulin M antibody to hepatitis B core antigen (anti-HBcIgM) positive in the context of a compatible clinical history or probable exposure  
**OR**  
clearance of HBsAg in a person who was documented to be HBsAg positive within the last six months in the context of a compatible clinical history or probable exposure.

### Acute Hepatitis B Probable case

Acute clinical illness in a person who is epidemiologically linked to a confirmed case.

### Chronic Hepatitis B Confirmed Case

HBsAg positive for more than 6 months  
**OR**  
detection of HBsAg in the documented absence of anti-HBc-IgM  
**OR**  
detection of hepatitis B virus (HBV) DNA for more than 6 months.

### Unspecified Hepatitis B Confirmed Case

Does not fit the criteria for either of the above  
**AND**  
HBsAg positive  
**OR**  
detection of HBV DNA.

Laboratory Note: Occult HBV infection is characterized by a positive HBV DNA and presence of anti-HBc alone, or anti-HBc and anti-HBs in the absence of HBsAg. Further isolate characterization is indicated.

## 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.

Genotyping is a tool for detecting and differentiating characteristics of hepatitis B. Mapping the genotypes worldwide is a useful tool for establishing imported infections or infections acquired while travelling abroad. Genotyping is performed by the National Medical Laboratory (NML) but is not routinely monitored among cases occurring in Saskatchewan.

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, investigation management and outbreak

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](http://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.

Hepatitis B-containing vaccines may be administered in combination with hepatitis A or individually as hepatitis B. Immunization coverage is based on those who turned 13, 15 & 17 years by December 31 in 2017 and 2018. For example, the immunization coverage for 13-year old children in 2018 is based on clients who were born in 2005 and the immunization doses they received by their thirteenth birthdays.