



National Collaborating Centre  
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# Hepatitis A Immunization and High-Risk Populations in Canada and Internationally

## Summary and Analysis

May 2022

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# Hepatitis A Immunization and High-Risk Populations in Canada and Internationally

## Summary and Analysis

Summary and Analysis of 2020-2021 Environmental Scan

### INTRODUCTION

This document is intended to be a resource for public health professionals and policy-makers, to identify similarities and differences among hepatitis A policies and immunization criteria in Canada.

We provide a high-level *summary and analysis* of qualitative data collected from Canadian jurisdictions in 2020 and 2021. It includes information on 1) the criteria for which people are considered high-risk for hepatitis A, and 2) eligibility for publicly funded hepatitis A immunization, across Canada's ten provinces and three territories. Definitions in use by other countries and international organizations are also included. Complete data from the *Environmental Scan of High-Risk Groups for Hepatitis A in Canada and Other Countries 2020-2021* are available on the National Collaborating Centre for Infectious Diseases website ([www.nccid.ca](http://www.nccid.ca)).

#### **Immunization**

A process by which a person becomes protected against a disease through vaccination. This term is often used interchangeably with vaccination or inoculation.

Source: <https://www.cdc.gov/vaccines/vac-gen/imz-basics.htm>

#### **Publicly funded**

In Canada, publicly funded health services are financed with general revenue raised through federal, provincial and territorial taxation, such as personal and corporate taxes, sales taxes, payroll levies and other revenue. If a service or product is publicly funded, there is no direct cost to the individual receiving such service or product.

Source: <https://www.canada.ca/en/health-canada/services/health-care-system/reports-publications/health-care-system/canada.html>

### BACKGROUND AND CONTEXT

#### Hepatitis A in Canada

Hepatitis A is a liver infection caused by the Hepatitis A Virus (HAV), a non-developed RNA virus classified as a picornavirus (1). Hepatitis A infection is a result of HAV attacking the liver cells, causing inflammation which can disrupt the normal function of the liver. The most

common signs and symptoms include loss of appetite, fever, fatigue, upset stomach, vomiting, diarrhea, dark urine, light-colored stool, joint pain, and yellowing of the skin or eyes (jaundice) (1). The virus is found in the feces and blood of those infected and is very contagious (1). It can be spread by close personal contact or ingesting contaminated substances like food or drink (1). The risk of hepatitis A increases with a lack of safe water and poor sanitation and hygiene (1).

Hepatitis A in Canada is considered an uncommonly diagnosed infection with a low average annual incidence rate compared to low-to-middle income countries, as a result of good sanitation and wider availability of treated water (2). In contrast to hepatitis C or B, hepatitis A is usually an acute infection lasting between a few weeks to a few months, seldom resulting in a chronic condition (1). Disease severity increases as age increases (1). There is no specified treatment for hepatitis A unless the condition progresses to complications such as liver failure (1).

Underreporting of hepatitis A in Canada is suspected, because of the typical swift recovery and subclinical infection. According to the Public Health Agency of Canada, the actual number of cases may be up to seven times higher than reported (3).

## Hepatitis A Immunization in Canada

Canada has several licensed hepatitis A vaccines for use. Not all vaccines are available in every province and territory, nor are all available vaccines publicly funded. The National Advisory Committee on Immunization (NACI) serves as an advisory body on the use of vaccines in the country, making recommendations for the use of vaccines in Canada (4). However, provincial and territorial governments are responsible for decisions about their own publicly funded immunization programs (5). In Canada, provincial and territorial vaccine schedules do not include routine hepatitis A vaccination, except in Quebec (6). Instead, most provinces and territories fund hepatitis A vaccination only for targeted high-risk groups. Each jurisdiction defines “high-risk” based on their local population and epidemiological trends and patterns, using criteria developed in conjunction with advisory bodies, health departments, and public authorities.

### Quebec Hepatitis A Immunization Policy

Since June 1, 2019, [Québec's immunization schedule](#) has provided one dose of the [hepatitis A and hepatitis B](#) vaccine at 18 months of age. The hepatitis A and B vaccine has also been offered in Grade 4 of primary school since 2013. The school-based immunization program will continue until children born before June 1, 2019 have reached the age of Grade 4 of primary school.

Source:  
<https://www.quebec.ca/en/health/advice-and-prevention/vaccination/hepatitis-a-vaccine>



## Concepts of High-Risk

According to Nexoe et al. (7), there appears to be no universally accepted definition of risk but generally, “high-risk” refers to an increased likelihood of exposure to harm or increased susceptibility for harm upon exposure, compared with an average. The term “high-risk” is used in an epidemiological sense for a population whose actions (behaviours) or living circumstances – as a group – create disproportionate likelihood of exposure or susceptibility leading to an undesired outcome, compared with the general population. An individual can also be considered “high-risk” in a clinical sense, because of personal behaviour or the circumstances in which the person lives.

Frequently, personal and group characteristics get conflated, and the notion of “high-risk” becomes a short-hand label for all the individuals within a particular sub-population. In a 2007 commentary, for example, Nexoe et al. noted that critics raised concerns that “risk identification and intervention create unfounded anxiety, that the concept of risk is not useful at the individual patient level, that patients’ risk concept(s) is different from an epidemiological one...” among other concerns (7). Having a high-risk characteristic for example, “does not imply that the patient is currently ill but ... may develop disease earlier than others”(7). Similarly, Yotebient et al. commented that, “Theoretical and methodological research on risk-taking practices often frames risk as an individual choice. While risk does occur at individual level, it is determined by aspirations which are connected to others and society... Public health research on risk behavior often consists of identifying statistically significant “risk groups” without taking these societal conditions into account” (8). For example, being at risk for HIV acquisition may be a function of both environment (e.g., living in a community with high underlying HIV incidence) and individual factors (e.g., having a partner with untreated HIV)(9); the same is true for hepatitis A.

Because individual people were lost in biomedical categories in the past, new terminology emerged: “gay men” evolved to “men who have sex with men” to focus on sexual activity instead of orientation, persons who use injection drugs is now used instead of injection drug users, and so on. However, some authors have noted that these renamed categories may continue to create stigma, especially when they are used to essentialize a group over the individual (10). While there is certainly utility in considering “risk”, it must be based on sound theory and empirical data (7).<sup>1</sup>

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<sup>1</sup> A more fulsome discussion of how risk and resilience have been and are conceptualized in health-related fields can be found in Panter-Brick C. Health, risk, and resilience: Interdisciplinary concepts and applications. *Annual Review of Anthropology*. 2014 Oct 21;43:431-48.

## Groups Considered High-Risk for Hepatitis A in Canada

Anyone who has not been infected by, or vaccinated against, the hepatitis A virus is at risk of infection (2). Those considered high-risk have an increased likelihood of contracting the virus or experiencing severe outcomes compared with the rest of the population (11). Travel outside of Canada (specifically to hepatitis A endemic locations), certain behaviours, specific occupations, some medical conditions and treatments, and environmental factors increase the risk for hepatitis A (11). Traveling to some regions in Africa, Asia, and Central and South America increases the risk of hepatitis A due to poorer sanitation, hygiene, and contaminated water and food sources (11).

Certain sexual practices and behaviours that involve fecal-oral contact also increase the risk of contracting and transmitting the virus (3). People who use illicit substances are at greater risk of hepatitis A infection, due to the chance of exposure to contaminated needles or other injection paraphernalia (12). People in occupations that involve potential exposure to the virus, such as sewage professionals, food handlers, healthcare workers, and military personnel have a greater risk for hepatitis A (3). Specific medical conditions and treatments can also increase risk for hepatitis A, including: blood transfusion, hemophilia, HIV, hepatitis B, hepatitis C, chronic liver disease, and upcoming or completed liver transplant (1). Pre-existing medical conditions can heighten the risk of exposure to the virus and increase potential complications if the liver is already compromised. Poor living conditions and economic instability resulting in unsanitary environments can also increase the risk for hepatitis A (12).

Many factors increase the risk of hepatitis A, and definitions of “high risk” differ among provinces, territories, and internationally. Government websites typically do not provide fulsome descriptions of how they assess hepatitis A risk, but decisions are based on multi-level government, international and organization-specific recommendations, funding, and geographical factors.

## Data Collection for the Environmental Scan

The National Collaborating Centre for Infectious Diseases (NCCID) received a request to conduct an environmental scan of how high-risk groups for hepatitis A are characterized and whether immunization for hepatitis A is publicly funded. Information was collected in 2020 and 2021 from Canadian provinces and territories, countries outside of Canada and international health organizations. Sources were publicly available, and included Federal, provincial, and territorial health websites, immunization schedules, immunization manuals, and monographs for specific vaccines. All findings were recorded systematically in a comprehensive spreadsheet to facilitate comparison.

The result was the *Environmental Scan of High-Risk Groups for Hepatitis A in Canada and Other Countries* [\[insert link\]](#) that describes high-risk criteria and hepatitis A immunization policies across Canada and internationally. All sources provided for the identification of high-risk groups are fully cited for the time of retrieval.

## ANALYSIS

Appendix A, the spreadsheet with the *Environmental Scan of High-Risk Groups for Hepatitis A in Canada and Other Countries Data 2020-2021*, contains written descriptions, dashboards, and links to resources and key legislation and policies by province, territory, country, and organization that define high-risk groups and immunization programs for hepatitis A.

There are several notable observations that can be made by comparing provincial, territorial and international policies, immunization programs, and definitions concerning hepatitis A.

### Criteria for Defining High-Risk Groups across Canadian Jurisdictions

Most jurisdictions are consistent in identifying certain prominent high-risk groups; two categories were considered high-risk in all jurisdictions. These were:

- a) having certain medical conditions – predominantly liver disease and bleeding disorders – and;
- b) personal actions, specifically men who have sex with men (MSM), illicit drug use, and high-risk sexual behaviours such as having multiple sexual partners, unprotected intercourse, oral-anal contact, and intercourse with someone who injects drugs (13).

However, within these broad categories, there is considerable variation. For example, only Manitoba includes chronic renal disease as a medical condition that confers high risk status; this is possibly because Manitoba has the highest prevalence rates of End-Stage Kidney Disease in Canada (14).

*Illicit drug use* and *MSM* were consistently defined as high risk in most jurisdictions. However, sexual practices that are assumed to confer high risk status on *MSM* do not also confer high risk status on individuals with other sexual activity (Manitoba, New Brunswick, Newfoundland/Labrador, Northwest Territories, Ontario and Prince Edward Island) (see Text Box on page 6). Saskatchewan is the only province that includes *intercourse with a drug user as a high-risk sexual practice*. Again, this may be connected to provincial context; Saskatchewan

had the highest rates of hospitalizations for opioid use in Canada between 2014-2015 (15). As such, it is important to note that differences in inclusion criteria may reflect jurisdiction-specific circumstances.

The two high-risk categories of medical conditions and certain behaviours align with NACI and vaccine manufacturer recommendations and definitions. In the medical condition category, bleeding disorders and liver disease were identified as high-risk both federally and by all vaccine manufacturers except for Merck (Vaqta®), which did not specify any high-risk groups. *MSM* and *people who use illicit drugs* were recognized as high-risk federally and by all vaccine manufacturers except for Merck (Vaqta®) and GSK (Twinrix®). Provinces/territories all followed NACI and vaccine manufacturer recommendations (except for GSK (Twinrix®)) in defining travel to countries or rural areas where hepatitis A is endemic as high risk.

Demographic characteristics were rarely defined as high-risk criteria in themselves. For example, immigrant populations are considered high-risk only if they are from hepatitis A endemic areas (British Columbia, Prince Edward Island) or if someone is exposed to an immigrant, such as an adopted child (for Prince Edward Island), from a hepatitis A endemic location (Alberta, British Columbia, Ontario, Nova Scotia, Prince Edward Island, Yukon). Alberta, British Columbia, and Ontario are among the provinces with the highest immigration rates, which could be a factor in recognizing exposure within this population as high-risk (16). Although the literature reviewed emphasizes that age increases severity and complications of hepatitis A, only two jurisdictions (Alberta, Yukon) consider the elderly to be high-risk. Indigenous persons (listed as “Aboriginal” in the original) were only mentioned in one province, British Columbia (17,18).

Those who have been exposed to someone with the virus; are living with or caring for someone infected; consumed hepatitis A contaminated food or water; or who work with the virus are eligible for vaccination in all jurisdictions. Post-exposure vaccination can contribute to outbreak

### **Ending Stigma for Gay, Bisexual and Other Men Who Have Sex with Men**

Incidence rates of hepatitis A in Canada have been high among men who have sex with men (MSM) since the 1970s. As a population, MSM are thus considered high-risk, but it is worth noting that the criterion has more to do with individual sexual activity as well as long-standing social stigma and homophobia. On April 28, 2022, Health Canada and Canadian Blood Services (CBS) announced that MSM will no longer be screened out for giving blood, to be more respectful about individual risk and to help reduce stigma for MSM. CBS has revised their screening questions to focus on behaviours that may create risk for transmitting or acquiring certain infections like hepatitis A for all donors.

Sources: <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/scientific-expert-advisory-panels/scientific-advisory-bodies/sexual-behaviour-based-screening-blood-plasma.html>

<https://www.blood.ca/en/blood/am-i-eligible-donate-blood/men-who-have-sex-men/eligibility-criteria-gay-bisexual-and-other>

control in low-endemic areas with minimal viral immunity, such as provinces and territories in Canada (19).

It may be that people considered high risk have greater protection, since they can obtain publicly funded vaccinations and benefit from targeted immunization programs. Despite identifying common categories among jurisdictions leading to various groups being considered high-risk, the incongruity between Canadian jurisdictions poses a challenge of equitable access and recognition of those considered high-risk.

### Criteria for Defining Publicly Funded Vaccination across Canadian Jurisdictions

Medical conditions and lifestyle factors are the main criteria for eligibility for publicly funded vaccination in Canadian jurisdictions. Given the likelihood of more severe outcomes for those with liver disease and bleeding disorders, these groups are eligible for pre-exposure protection in most provinces and territories; for other medical conditions, there is less consistency across jurisdictions. For example, illicit drug use may increase the risk of other liver diseases (s) that can compound hepatitis A severity. Illicit drug use, men who have sex with men, and liver disease share overlapping risk factors (such as higher risk of HIV infection), which can further exacerbate hepatitis A risk. For these reasons, *'individuals with HIV/who are HIV infected'*, in addition to those with *liver disease, [those who are] illicit drug users, and men who have sex with men*, are eligible for publicly-funded vaccination in British Columbia, Manitoba, Nova Scotia, Prince Edward Island, and Yukon. By contrast, HIV-infected individuals are not considered high risk or eligible for publicly funded vaccination in Saskatchewan, although it has the highest increase of HIV in Canada (20).

All jurisdictions exclude *travellers to hepatitis A endemic areas* from their publicly funded eligibility criteria. Specific occupational categories are also excluded from publicly funded eligibility criteria in Canadian provinces and territories, with the exception of Alberta. This is likely because traveling, choice of occupation, and the risk associated with them are largely voluntary.

Prince Edward Island is the only province that identifies immigrants from hepatitis A endemic areas as eligible for a publicly funded vaccination. The Public Health Agency of Canada recommends vaccination for this group, but also suggests serological testing be performed since those born in hepatitis A endemic countries are more likely to be immune (3).

Most jurisdictions do not provide publicly funded immunization for those who practice high risk sexual behaviours, likely because these behaviours are considered an avoidable risk. However,

the sub-category of *sexual interactions with those who use drugs* confers eligibility for a publicly funded vaccine in most jurisdictions, as it overlaps with the criterion of *people engaging in illicit drug use*. This may protect a large proportion of individuals who fall under the category of *high-risk sexual practice(s)*, however it is important to not conflate sexual practices with injection drug use.

Very few jurisdictions that provide publicly funded vaccination include the criterion of confirmed contact, such as: *persons exposed to a case of hepatitis A; eating contaminated food; children aged 12 months exposed to hepatitis A and identified within 14 days of exposure; and household contact of an infected person*. The territory of Nunavut is one of the few jurisdictions that does provide a publicly funded vaccination for *household contacts of hepatitis A*.

No provinces or territories provide a publicly funded vaccine to the elderly population. Given the risk of increased disease severity with age, and the fact that fewer than half of adults aged 30 or older in Canada have immunity to hepatitis A, this may be a gap. Alberta funds the vaccine for those living in a residential or institutional setting, which covers the portion of the older and elderly population who reside in long-term care homes. British Columbia and Yukon are the sole jurisdictions that identify *those who are not immunized or immune to hepatitis A* as eligible for a publicly funded vaccination. However, hepatitis A vaccination for these groups is not part of routine immunization schedules in British Columbia or Yukon. This policy relies on decision-making by the individual or health care professionals, potentially limiting up-take.

## Vaccine Availability in Canadian Jurisdictions

There are several hepatitis A vaccines available for use in Canada. All provinces and territories except for Manitoba (where vaccine details are not publicly available) provide a monovalent vaccination for hepatitis A, the most commonly used being Havrix®. This is likely because hepatitis B is part of regular immunization; the non-monovalent combination hepatitis A and hepatitis B (HAHB) vaccine (Twinrix®) is unusable for those already protected against hepatitis B. The pediatric formulation of the Twinrix® vaccine is explicitly identified as available for use in most jurisdictions, except Ontario, Manitoba, and Nunavut.<sup>2</sup> This strategy has been used in Quebec; by funding the Twinrix® vaccine Quebec is the only province in Canada providing routine vaccination for hepatitis A as well as hepatitis B. The current availability of both a monovalent and combination hepatitis A vaccination in most jurisdictions is important, however, as not all people are eligible for a combination vaccine.

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<sup>2</sup> However, one region in Ontario does mention the Twinrix® Junior dosing schedule, but does not comment on its availability. See: <https://www.hpepublichealth.ca/hepatitis-a-b-vaccine-twinrix-faqs>

Examining the potential cost-benefits, and cost-effectiveness of providing the Twinrix® combination vaccine (HAHB) in all jurisdictions or as part of regular immunization schedules would be useful for improved national standardization.

## Criteria for Defining High-Risk Groups Internationally Relative to Canadian Jurisdictions

*Men who have sex with men* and *people engaging in illicit drug use* are the prominent high-risk groups for hepatitis A identified by international countries and organizations in the environmental scan, which aligns with Canadian jurisdictions. As noted, Canadian jurisdictions emphasize liver disease, bleeding disorders, and other medical conditions, but these conditions are less central to international criteria for high-risk. The countries included in the scan have a low burden of hepatitis A, and so it is possible that only specific pre-existing diseases that result in the most severe outcomes are defined as high-risk. Post-exposure categories such as *household contacts of an infected person*, are identified by most countries and organizations (Australia, ECDC, France, USA), in recognition of the risk for transmission and potential outbreaks. The United Kingdom (UK), France, and United States of America (USA) identify the group *persons exposed to a case of hepatitis A* as high-risk; this would likely provide overlap and redundancy for those in the former group.

Only the UK and Germany use occupational categories – specifically, sewage workers in Germany - to define high-risk. This occupation has increased exposure to raw fecal matter and wastewater that can be contaminated with hepatitis A. It is worth considering how this exposure affects the health of sewage workers in Canada in assessing eligibility for publicly funded vaccination.

Demographic categories were not identified as priority high-risk groups for hepatitis A in the countries considered in this scan. British Columbia and Australia identify First Nations/Aboriginal people as high-risk, but this is not the case in other settler states with large Indigenous populations, such as New Zealand and the United States of America. The homeless population is not identified as high-risk by Canadian jurisdictions, but is by the ECDC, USA, and WHO. The CDC notes that congregate living environments like shelters can increase the risk of hepatitis A transmission and outbreak (1).

The USA recognizes all children at age 1-year as high-risk for hepatitis A. This is similar to the Canadian province of Quebec, which has implemented hepatitis A immunization for children at 18 months and for children in primary school in Grade 4.



Examination of international precedents, and their similarities and dissimilarities with provincial and territorial policies in Canada, provides a useful starting point in developing a consistent definition of “high risk” for hepatitis A.

## SUMMARY

Despite potential underreporting, hepatitis A is not as prevalent in Canada as it is in other low- to middle-income countries, decreasing the risk of infection to the general population within Canada. However, there are many groups recognized as high-risk, and only a few high-risk groups eligible for publicly funded vaccination in Canada. Several groups are variously identified as high-risk for hepatitis A across Canadian jurisdictions and internationally. Many of these groups are not eligible for publicly funded vaccination, which may increase the likelihood of hepatitis A transmission and outbreaks.

A targeted approach to vaccination is economical and protects the most vulnerable, but it can also create gaps and inequality. This approach places responsibility for assessing risk on the individual or health professional(s), and it is likely that many individuals are unaware of their vulnerability and eligibility for publicly funded vaccination. Including hepatitis A vaccination in routine childhood immunizations, as is done in Quebec, could increase awareness of and access to vaccine availability, increase community protection, reach those at high risk and decrease outbreaks, as well as ultimately reducing unnecessary suffering.



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