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The Overlooked Issue of Shingles Infections in Older Canadians, and How to Address It.

National Institute on Ageing

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About the National Institute on Ageing

The National Institute on Ageing (NIA) is a public policy and research centre based at Toronto Metropolitan University (formerly Ryerson University). The NIA is dedicated to enhancing successful ageing across the life course. It is unique in its mandate to consider ageing issues from a broad range of perspectives, including those of financial, psychological, and social well-being.

The NIA is focused on leading cross-disciplinary, evidence-based, and actionable research to provide a blueprint for better public policy and practices needed to address the multiple challenges and opportunities presented by Canada's ageing population. The NIA is committed to providing national leadership and public education to productively and collaboratively work with all levels of government, private and public sector partners, academic institutions, ageing related organizations, and Canadians.

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List of Acronyms

Adult National Immunization Coverage Survey (**aNICS**)

Canadian Health Survey on Seniors (**CHSS**)

Chronic Obstructive Pulmonary Disease (**COPD**)

Coronavirus Disease 2019 (**COVID-19**)

Emergency Department (**ED**)

First Nations Health Authority (**FNHA**)

Guillain-Barré Syndrome (**GBS**)

Hematopoietic Stem Cell Transplant (**HSCT**)

Herpes Zoster Ophthalmicus (**HZO**)

Human Immunodeficiency Virus (**HIV**)

Incremental Cost-Effectiveness Ratio (**ICER**)

Live-Attenuated Zoster Vaccine (**LZV**)

National Advisory Committee on Immunization (**NACI**)

National Association of Pharmacy Regulatory Authorities (**NAPRA**)

Non-Insured Health Benefits (**NIHB**)

Post-Herpetic Neuralgia (**PHN**)

Potential Immune-Mediated Disorder (**pIMD**)

Public Health Agency of Canada (**PHAC**)

Quality-Adjusted Life Year (**QALY**)

Recombinant Zoster Vaccine (**RZV**)

Respiratory Syncytial Virus (**RSV**)

Varicella Zoster Virus (**VZV**)

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Executive Summary

Canada's National Advisory Committee on Immunization (NACI) strongly recommends that all adults aged 50 years and older without contraindications, as well as immunocompromised adults aged 18 years and older, be offered the recombinant zoster vaccine (RZV) to protect against shingles.[1]

Despite this recommendation, only 38.3% of Canadians aged 50 years and older reported having received at least one dose of the shingles vaccine as of 2023, with rates varying considerably across Canada's provinces and territories.[2]

Shingles (herpes zoster) is an infection that usually presents as a painful rash. It is caused by the reactivation of the varicella zoster virus, which is also the virus responsible for chickenpox infections. The most common complication of a shingles infection is post-herpetic neuralgia (PHN), a painful condition that remains active for more than 90 days from rash onset.[3] Unfortunately, there is no cure for shingles. Current treatment options are aimed principally at managing pain and other symptoms.[4]

Shingles infections often occur as an individual's immune system weakens, which makes older adults, those who are immunocompromised and/or those living with chronic conditions more vulnerable to the risk of infection and complications.[3] While prior to the introduction of varicella zoster virus immunization programs, nearly one in three Canadians was experiencing a shingles infection in their lifetime,[1,5] studies have found that older adults have higher rates of infection as well as shingles-related complications, such as PHN, hospitalizations and deaths.[3,6,7]

Although shingles is not a public health-reportable condition in Canada and there is no national shingles surveillance program,[3] it is estimated that 130,000 new cases occur annually.[8] This has resulted in an annual impact of C$67-82 million on Canadian health care systems, largely associated with the higher prevalence of shingles in older adults and its related complications such as PHN.[6–8]

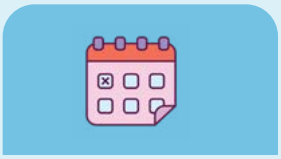
The Canadian vaccine landscape is fragmented, with public coverage varying across provincial, territorial and national programs.

Among Canada's 13 provincial and territorial governments, only 8 currently provide publicly funded coverage for RZV. [9–16]

Of these, only Prince Edward Island and Newfoundland and Labrador offer age-based coverage for all adults aged 50 years and older, with Newfoundland and Labrador also providing coverage to immunocompromised adults aged 18 years and older.[11,14] For Canadians who are not eligible for public coverage, the two-dose vaccine costs approximately C$300–400 and must be paid for out of pocket or through private health insurance.[13,17–19]

Beyond gaps in coverage, several additional barriers impact shingles vaccine uptake in Canada across multiple levels and stakeholders. These include a low perceived importance of shingles vaccination among Canadians, a reliance on national self-reported surveys for monitoring vaccination rates and challenges related to the physical availability of vaccines.

The NIA has developed **eight evidence-informed policy and practice recommendations** that can be used by health authorities and organizations to further support vaccination efforts and increase the overall prevention of shingles across Canada.



1. Promote a Life-Course Vaccination Schedule that Includes Older Adults

2. Improve the Surveillance of Shingles Cases Across Canada and the Implications of Shingles on Canadian Health Care Systems

3. Improve Reporting and Monitoring of Shingles Vaccination Rates

4. Adhere to Canada's Current NACI Statement for Shingles Vaccination

5. Provide the Shingles Vaccine Free of Cost to all NACI-Recommended Populations Across Canadian Jurisdictions

6. Provide Clinician Education and Support for Pharmacists, Primary Care and Other Health Care Providers to Deliver Vaccinations

7. Recommend Administration of the Shingles Vaccine in Conjunction with Other Vaccines, Where Applicable, Including the Influenza and COVID-19 Vaccines to Improve Uptake and Compliance

8. Enhance Vaccine Provision Across and Within Canada's Provinces and Territories

Background and Context

What is Shingles?

Shingles, also known as herpes zoster, is an infection that usually presents as a painful rash caused by the reactivation of the varicella zoster virus (VZV).[20] This virus is also responsible for varicella (chickenpox) infections, which usually occur during childhood.[21] Cases of shingles commonly appear on the chest, followed by the face.[20] Before immunization programs against VZV, nearly one in three Canadians was experiencing a shingles infection in their lifetime.[1,5] While the majority of people will only experience one case of shingles during their lifetime, it is possible for this infection to appear multiple times in the same individual, especially among those who may be immunocompromised.[22,23]

How do you get Shingles?

Cases of shingles are caused by the reactivation of the dormant VZV from an earlier chickenpox infection.[3,24] Reactivation may also occur among individuals who have received the varicella or chickenpox vaccine; however, these individuals are estimated to be four to 12 times less likely to develop shingles.[24]

Cases of shingles often occur when an individual's immune system weakens, most commonly due to the normal ageing process of immunosenescence: the natural suppression or weakening of our immune system as we age.[3]

Those with shingles can transmit VZV only to individuals who have never experienced chickenpox infections or obtained a varicella or chickenpox vaccination.[25] Transmission of VZV occurs during the blister phase of a presenting shingles-associated rash, largely through direct contact.[25,26]

What are the Symptoms of Shingles?

At the beginning stages of a shingles infection, individuals usually feel itching, tingling or pain prior to the rash becoming visible.[6] The rash then appears with blisters, usually as a strip on one part of the body, following the path of an underlying nerve.[24] Unlike chickenpox, where presenting blisters can be at different stages, shingles lesions usually

all present at the same stage, as they are localized around the same nerves.[27] The blisters dry and scab over in seven to 10 days, with the rash fully clearing within weeks, but may sometimes leave behind scars.[24,28] It is important to note that sometimes rashes may be widespread across the body or there may not be a rash at all, a condition known as 'zoster sine herpete.'[6,29] Other infectious symptoms may include chills, upset stomach, malaise (discomfort), headache and fever.[6,30]

What are the Complications of Shingles?

Beyond the discomfort of symptoms, the infection can also cause major complications, the most frequent being 'post-herpetic neuralgia' (PHN).[3] This is a painful condition that affects the nerve fibers and skin, and can remain for more than 90 days after the onset of the rash.[1] Not all individuals experience the same type of pain: some feel constant discomfort, whereas others may experience intermittent or evoked pain.[29] The pain from PHN can also be so intense that it can significantly impact one's quality of life and daily activities.[3,25] Populations with a greater risk of contracting PHN include older adults, those who are immunocompromised and those living with chronic conditions.[1]

When a case of shingles involves the eye and surrounding areas (e.g., forehead, eyelid, nose) it is known as 'herpes zoster ophthalmicus' (HZO). HZO can lead to scarring, chronic pain and vision loss.[3,24] Studies note that HZO and shingles cases are significantly associated with an increased risk of cerebrovascular events (e.g., stroke), with the latter also significantly associated with cardiac events (e.g., coronary artery disease).[31] Other complications may include central nervous system infections (infections of the brain or spinal cord), neuromuscular diseases (e.g., pneumonia, hepatitis), nerve palsies (lack of nerve function) and bacterial superinfections (resistant secondary infections).[1,31,32] Fortunately, the risk of death from contracting shingles is quite low.[3]

What are the Treatments for Shingles?

There is currently no cure for shingles. Current treatment options aim to manage the associated pain and symptoms that infections can cause.[4]

The infection is often treated at home through various medications and over-the-counter products (e.g., lotions to reduce itching).[4,33] Antiviral medications (e.g., famciclovir, valaciclovir, acyclovir) are usually prescribed to lessen the duration and severity of symptoms and to reduce certain complications.[28,34] This treatment should be started as soon as possible (within 72 hours of rash onset) to ensure it is most effective.[21,28] For those with severe complications or who are immunocompromised, intravenous antiviral therapy is recommended.[21] Numerous medications are used for managing pain and swelling, with agents such as corticosteroids, opioids and NSAIDs (e.g., ibuprofen) often used to treat severe pain.[21,24,33]

Populations at Greatest Risk of Developing Shingles

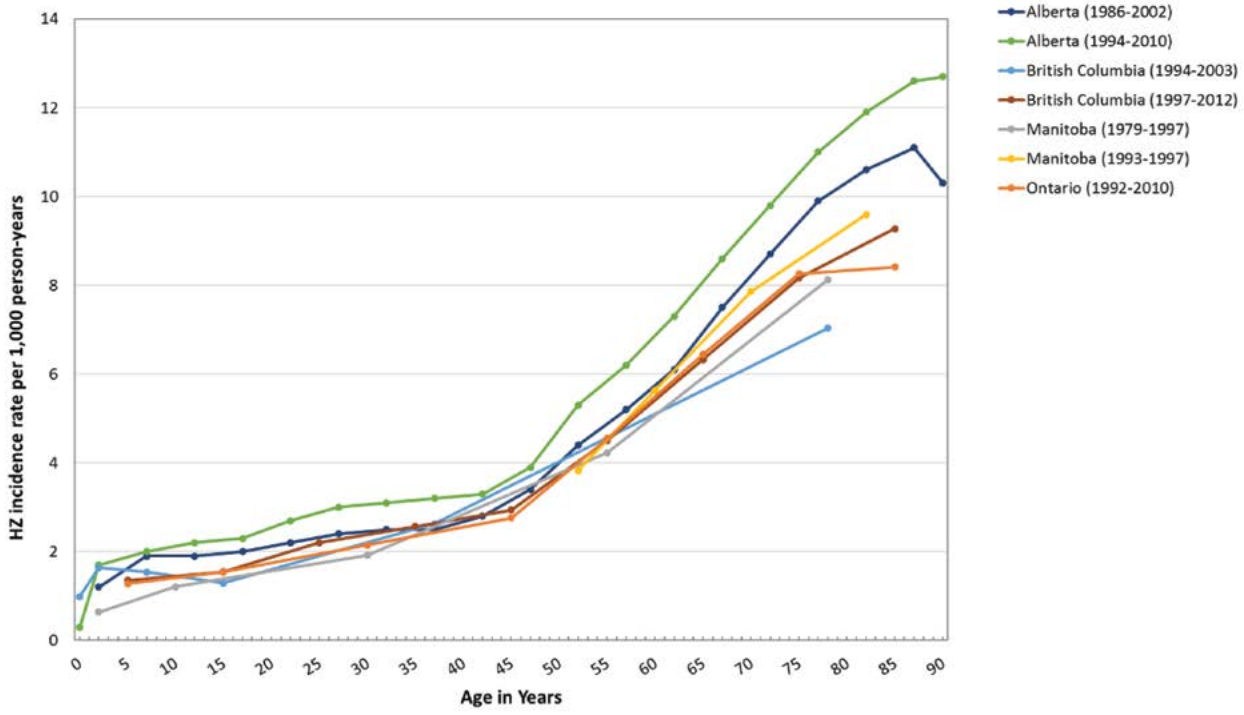
Older Adults

As previously noted, older age is a risk factor for developing shingles, as the immune system tends to naturally weaken as people age in a process known as 'immunosenescence.'[1] This process decreases the body's specific immunity against VZV, increasing the risk of developing a shingles infection.[32,35]

This is made evident by the fact that over two-thirds of shingles cases occur in adults aged older than 50 years.[1]

Figure 1: Age-Specific Shingles Incidence Rates per 1,000 Person-Years Reported Among Published Studies from Canadian Provinces and/or Territories

Please note: where rates were reported for a range of ages, age was plotted based upon the median age of the age category. For age categories that included a non-discrete age range, (i.e., ages less than or greater than a designated age), the category minimum and maximum ages were presumed to be 0 and 90 years, respectively.



From "Updated Recommendations on the Use of Herpes Zoster Vaccines," by Public Health Agency of Canada, 2018. Copyright 2018 by the Minister of Health.

Canadian studies reporting age-specific incidence rates have found a marked increase in shingles incidence with advancing age, noting four to six cases per 1,000 persons per year for adults aged 50 years, and eight to 13 cases per 1,000 persons per year in adults aged 80 years and older (Figure 1).[3] Similarly, a global review assessing cumulative incidence, expressed as cases per 1,000 persons, found that shingles incidence more than doubled between adults aged 50 to 54 years and those aged 80 to 84 years.[36]

Shingles-associated hospitalization rates in Canada are highest for those aged 65 years and older.[3]

Regarding complications, there is a significant association between age and the development of PHN.[6] Furthermore, with each passing decade, a person's risk of experiencing PHN increases between 1.22 and 3.11 times.[37]

While shingles-associated deaths are rare,[38] provincial data have found that the death rates are significantly higher for those aged 65 years and older compared with the overall population (Table 1).[7,39]

Table 1: Shingles-Associated Death Rates Across Provincial Studies[7,39]

	Overall Population	Adults Aged 65 Years and Older
Death Rate (per 1,000,000 Persons Per Year)	**0.7 – 1.2**	**5.5 – 8.6**

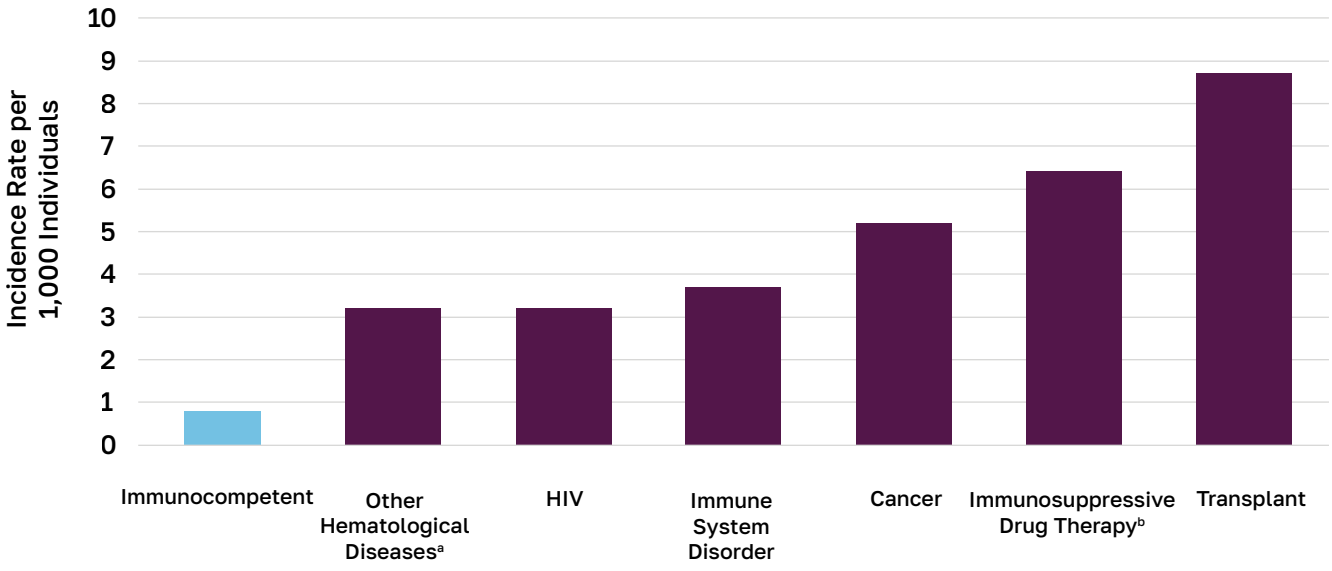
Immunocompromised Individuals

As noted earlier, an increased risk of developing a case of shingles is often related to the decline of the body's specific immunity against VZV.[32] This makes populations who are immunocompromised, either because of a medical condition or treatment, more vulnerable to developing shingles.[22] Examples of conditions that result in elevated risk include autoimmune diseases (e.g., rheumatoid arthritis, systemic lupus erythematosus), cancer (e.g., hematologic malignancies), human immunodeficiency virus (HIV) and transplantation (e.g., solid organ, blood/stem cell).[40–42] Examples of immunosuppressive medication include biologics, steroids or transplant-related drugs.[32,43]

A recent systematic review noted that the risk of shingles infections varied greatly among adults depending on their underlying immunocompromising condition.[41] Transplant recipients, for example, were shown to be more vulnerable than HIV patients (Figure 2).[41,44] Overall, shingles incidence among the immunocompromised population was higher than that observed among immunocompetent adults aged older than 50 years.[41]

In addition to higher incidence rates, those who are immunocompromised are at risk of longer-lasting rashes, more complications and symptoms that spread across the body.[1,32] This is demonstrated in numerous studies that note an increase in the risk of PHN complications, such as persistent long-term pain, for those who are immunocompromised.[37,45]

Figure 2: Annual Hospital-Attended Shingles Incidence Rates of Adult (18 Years and Older) Patients by Immunocompromising Conditions in Ontario, Canada[44]



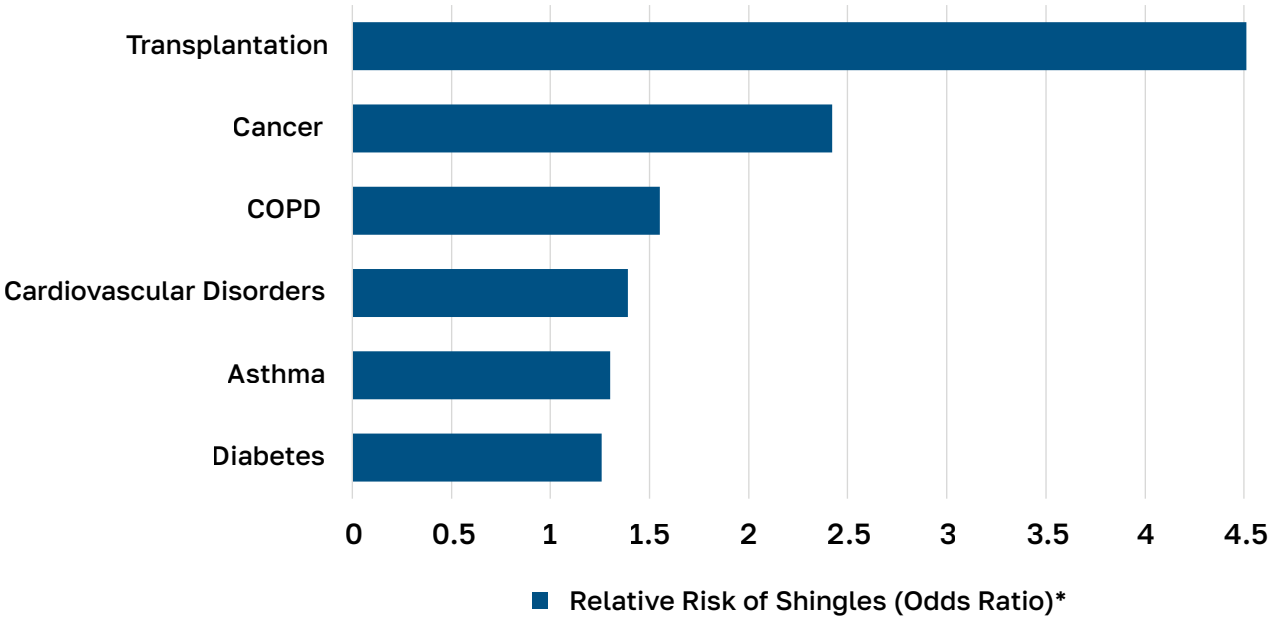
a Does not include hematologic malignancies, which are included in the cancer category.
b Only individuals aged 65 years and older.

Living with Chronic Conditions

Numerous chronic conditions have been associated with an increased incidence of shingles, including asthma, diabetes, cardiovascular disorders, inflammatory bowel disease and chronic obstructive pulmonary disease (COPD).[40]

The impact of chronic conditions on shingles risk is greater among younger age groups compared with older adults.[23] However, the magnitude of increased risk associated with chronic conditions is generally lower than that observed for certain immunocompromising conditions, such as organ transplantation and cancer (Figure 3).[42] In addition, some chronic conditions have been associated with a higher risk of developing postherpetic neuralgia, including asthma and diabetes.[46–48]

Figure 3: The Increased Risk for Shingles Incidence for Selected Health Conditions[42]



* Values greater than 1 indicate an increased risk of shingles compared with individuals without the condition.

Women

Research has consistently found higher rates of shingles in females compared with males.[36,40,49]

A systematic review and meta-analysis found that females are about 1.3 times more likely to experience shingles infections than males.[40] The increase in risk may be linked to women's greater health-seeking behaviour or immune/hormonal responses to VZV.[23,40,50] Despite research on the relationship of sex and PHN risk, findings have been inconclusive.[37,47,48]

The Burden of Shingles in Canada

Shingles Infections

In Canada, shingles is not a public health-reportable condition, which means that no national surveillance program exists. As a result, administrative data is primarily being used to generate provincial case estimates (while no readily available data on territorial populations appears to exist).[3]

Before immunization programs against VZV, nearly one in three Canadians was experiencing a shingles infection in their lifetime.[1,5]

In a 2008 study, it was estimated that there were 130,000 new shingles cases, 17,000 PHN cases and 20 deaths likely occurring annually in Canada due to this disease.[8]

Provincial studies have reported that medically-attended shingles incidence ranges from three to five cases per 1,000 persons per year.[3] Across studies, shingles incidence has generally increased over time, as the populations in these provinces have aged.[23,50,51]

Impact of Varicella Vaccination Programs

The influence of varicella (chickenpox) vaccination programs on the incidence of shingles has been explored in various Canadian studies and reports to better understand the potential impact of this vaccine on future case incidences across the life course. Following the implementation of the varicella vaccination program, shingles incidence among children younger than 10 years of age was reduced.[23,38,52] It had been hypothesized that high varicella vaccine uptake could reduce VZV circulation in the population, thereby limiting natural immune boosting and potentially increasing the incidence of shingles in adults.[7] To date, however, varicella vaccination programs in Canada have not been shown to impact overall shingles cases.[23,38,50,52]

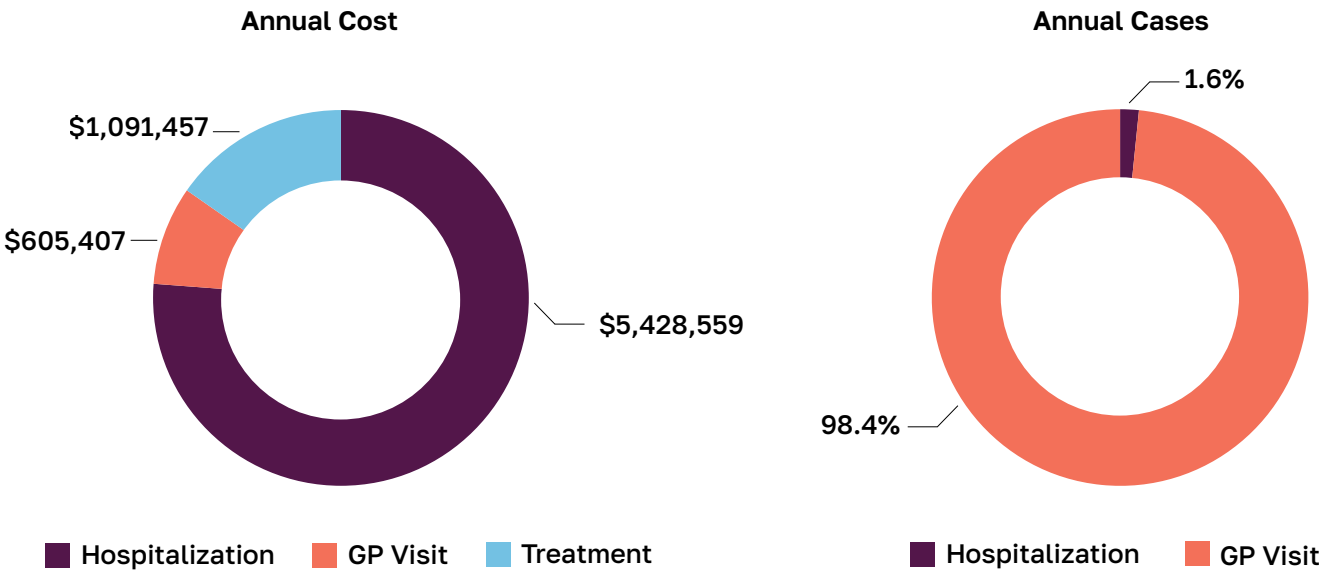
The Associated Burden and Costs of Shingles Infections in Canada

The associated financial impact of shingles infections on Canadian health care systems is estimated around C$67-82 million annually.[8,53,54]

This is largely due to the growing prevalence of shingles and its associated complications, such as PHN, in those aged 60 years and older.[8]

Interestingly, treatment costs per case have been dropping due to the greater availability of generic antiviral medications.[50,51] However, studies have indicated an increasing incidence of primary care provider visits annually for both shingles and PHN over the years.[5,39,50] Despite hospitalization rates decreasing and representing a small number of annual cases, hospitalizations are still responsible for a sizable portion of costs related to shingles (Figure 4).[50,55]

Figure 4: Annual Shingles-Related Cost & Case Distribution in British Columbia (2005-12)[50]



The Shingles Vaccine

History

In 2008, the first shingles vaccine, a live-attenuated zoster vaccine (LZV) marketed as Zostavax, was authorized for use in Canada.[56] This vaccine was provided as a single dose for adults 50 years and older.[57] In 2011, a refrigerator-stable version of this vaccine was approved, marketed as Zostavax II.[3] Similarly, it was a single-dose vaccine for adults aged 50 years and older.[58] The LZV has the same components as the vaccine used to prevent chickenpox (varicella vaccine), but has a stronger concentration of attenuated virus to improve the body's immune response.[3]

In 2017, a recombinant zoster vaccine (RZV), marketed as Shingrix, was authorized for use in Canada.[59] This vaccine is provided as two doses for adults 50 years and older, as well as adults 18 years and older who are or will be at increased risk of shingles due to immunodeficiency or immunosuppression caused by known disease or therapy.[60] As of 2023, Shingrix (RZV) became the only shingles vaccine available in Canada, following the discontinuation of Zostavax II (LZV).[61]

How does the Recombinant Zoster Vaccine Work?

RZV is composed of varicella-zoster virus (VZV) glycoprotein E and the ASO1B adjuvant system. Glycoprotein E plays an important role in VZV replication and transmission between cells. This has been combined with the ASO1B adjuvant system to help promote an immune response within the body of a vaccine recipient.[60,62]

By combining these components, the vaccine helps to better protect recipients against shingles and its various complications. As this vaccine does not contain the virus and therefore cannot cause shingles, it is the first shingles vaccine authorized for use in immunocompromised individuals.[60,62]

Results of Recombinant Zoster Vaccine Clinical Studies

Immunocompetent Individuals

Clinical trials have consistently demonstrated RZV achieving strong protection against shingles and its complications, measured as vaccine efficacy, across multiple populations.

Two pivotal large-scale trials, ZOE-50 and ZOE-70, assessed vaccine efficacy among immunocompetent older adults over mean follow-up periods of 3.2 and 3.8 years. The trials found that vaccine efficacy against shingles and PHN was very high among adults 50 years and older, as well as among adults 70 years and older (Table 2).[62,63]

Table 2: Vaccine Efficacy of RZV Against Shingles and Postherpetic Neuralgia in Immunocompetent Adults 50+ and 70+[62,63]

Shingles Incidence	Adults Aged 50 Years and Older	**97.2%**
	Adults Aged 70 Years and Older	**91.3%**
PHN incidence	Adults Aged 50 Years and Older	**91.2%**
	Adults Aged 70 Years and Older	**88.8%**

* Apart from shingles incidence among adults aged 50 years and older that was from the ZOE-50 study, all other values were from pooled analysis of ZOE-50 and ZOE-70 studies. Follow-up period of 3.2 to 3.8 years.

Additional analyses of the pooled trial data were conducted after the studies were completed. These analyses found that RZV demonstrated consistently high vaccine efficacy against shingles across multiple subgroups, including individuals who were frail, those with specific medical conditions and those with at least one potential immune-mediated disorder (pIMD).[64,65] Vaccine efficacy against shingles was also similar between males and females.[66]

Vaccine Efficacy of RZV Against Shingles in Immunocompetent Adults 50+[64,65]

- **90.5%** among adults with **three or more medical conditions**
- **90.9%** among adults with **six or more medical conditions**
- **90.5%** among adults with **at least one potential immune mediated disease**
- **90%** among **frail adults**

* Follow-up period 3.2 to 3.8 years

Participants from the ZOE-50 and ZOE-70 trials were followed over the long term, including 11 years since vaccination with RZV.

Even in the eleventh year following vaccination, vaccine efficacy against shingles remained high at 82.0%.

Across the entire duration of observation, from one month post-vaccination to the end of the long-term follow-up, vaccine efficacy rates remained high across complications (e.g., PHN) and age groups (e.g., 50+ and 70+) and by sex.[67]

Immunocompromised Individuals

RZV has been found to be efficacious in preventing shingles among certain immunocompromised adult populations, including autologous hematopoietic stem cell transplant (HSCT) recipients and individuals living with hematological malignancies.[59,65] Compared with the pooled ZOE trial results in immunocompetent adults, vaccine efficacy in immunocompromised populations is lower; however, more shingles cases are prevented (Table 3). This reflects the higher risk of shingles in immunocompromised adults, despite their reduced immune responses to vaccination.[68]

Table 3: Vaccine Efficacy of the RZV and Anticipated Reduction in Shingles Cases Among Immunocompetent and Immunocompromised Adults[68]

Population	Vaccine Efficacy Against Shingles	Anticipated Reduction in Shingles Cases (per 10,000 Person-Years)
Immunocompetent Adults Aged 50 Years and Older	**94%**	**86**
Immunocompromised Adults Aged 18 Years and Older	**70%**	**618**

* Immunocompetent estimates are based on pooled data from ZOE-50 and ZOE-70 randomized controlled trials. Immunocompromised estimates are based on randomized trials in immunocompromised populations.

RZV has been evaluated for immunogenicity — defined as the ability to generate an immune response[69] — among immunocompromised adult populations.[59] Immunogenicity data can help indicate potential protection among groups where vaccine efficacy studies are difficult to conduct.[70] Studies have shown that RZV is immunogenic across various immunocompromised groups, including individuals living with HIV, individuals with solid tumours and renal transplant recipients.[59]

Safety

Across clinical studies of immunocompetent adults aged 50 years and older and immunocompromised adults aged 18 years and older, RZV has been shown to be generally well tolerated. Solicited injection-site and systemic reactions were more frequently reported among individuals who received RZV compared with control groups. However, most solicited reactions were mild to moderate in intensity and lasted on average one to three days. Rates of other outcomes, including serious adverse events, pIMDs, and deaths, were similar between RZV recipients and control groups.[60,68]

Among studies involving immunocompetent adults aged 50 years and older, no safety concerns were identified across subgroups defined by medical conditions, pIMDs, frailty or sex.[64–66] Long-term follow-up, from approximately five to 11 years post-vaccination, did not identify any vaccine-related serious adverse events.[67]

Co-Administration

Multiple clinical trials have evaluated the co-administration of RZV with other vaccines in adults aged 50 years and older. These include vaccines targeting influenza, respiratory syncytial virus (RSV), coronavirus disease 2019 (COVID-19), pneumococcal and tetanus and diphtheria. It has been found that generally, co-administration does not impact immune response of these vaccines.[59]

In addition, co-administration demonstrated an acceptable safety profile, with no safety concerns found (e.g., solicitation reactions).[59]

Results of Recombinant Zoster Vaccine Real-World Studies

Vaccine Effectiveness

Studies evaluating the performance of the recombinant zoster vaccine in real-world settings, referred to as vaccine effectiveness, have found RZV to be effective in preventing shingles among adults aged 50 years and older, as well as among immunocompromised adults aged 18 years and older.[68,71] Completion of the two-dose series, compared with single-dose administration, has been associated with greater vaccine effectiveness against shingles.[72–74] However, vaccine effectiveness estimates were lower than vaccine efficacy estimates observed in clinical trials,[68,71,72,74] which could have been due to various reasons including differences in case identification and the inclusion of more heterogeneous populations in real-world settings.[71]

In studies evaluating RZV among older individuals, the vaccine was found to be effective against HZO and PHN,[71,75,76] with effectiveness comparable to that observed against shingles.[71]

In addition, prior vaccination with LZV within the past five years, or concomitant vaccination with other vaccines, did not impact vaccine effectiveness among participants.[71,76]

Safety

The safety of RZV in real-world studies was found to be generally consistent with findings from clinical trials among adults aged 50 years and older and immunocompromised adults.[71] No unexpected serious adverse events were found through surveillance of RZV use in real world-settings, with the exception of an observed increased incidence of Guillain-Barré syndrome (GBS).[68] Two studies in the United States among adults aged 65 years and older found there was an increased risk of GBS following RZV vaccination. It is important to note this is a rare event, with an estimated three to seven excess cases of GBS per million doses administered.[60] Current evidence is insufficient to confirm a causal association between RZV and GBS.[68,71]

Comparison of Benefits Between the Recombinant Zoster Vaccine and Live Attenuated Zoster Vaccine

It is important to highlight the benefits of RZV, particularly in comparison with the previously authorized LZV. There has been one head-to-head study, which noted RZV may have a better immune response than LZV over a five-year period.[77] In addition, comparisons across clinical studies of immunocompetent adults demonstrate that RZV achieves higher vaccine efficacy against shingles than LZV.[75]

In terms of long-term protection, as noted above, RZV has demonstrated sustained high vaccine efficacy for up to 11 years following vaccination.[67] In contrast, long-term follow-up studies of individuals who received LZV show substantially lower and waning protection over time. Vaccine efficacy against shingles following LZV was 51.3% during the first 0 to 4.9 years after vaccination and declined to 21.1% during the 4.7 to 11.6 years post-vaccination period.[78]

Taken together, these findings underscore the superior and more durable protection provided by RZV compared with LZV and support the importance of offering RZV to individuals who were previously vaccinated with LZV.

The Evidence Associating the Shingles Vaccination with a Reduced Risk of Dementia

Recent observational studies have examined the potential link between shingles and dementia, and the impact of LZV and RZV on dementia incidence and progression.

Evidence related to LZV suggests that this shingles vaccination may influence multiple stages of dementia disease courses. This has been examined by evaluating the impact of publicly funded vaccination programs that resulted in substantial increases in LZV uptake. Findings from these studies indicated that receiving LZV appeared to reduce the future incidence of both mild cognitive impairment (MCI) and dementia.[79,80] In one study, receiving LZV was found to reduce the incidence of dementia by as much as 20% over a seven-year follow-up period.[79] Further, research also found that LZV appeared to reduce disease progression among those living with dementia, by a reduction in both deaths due to dementia and overall mortality over a nine-year follow-up period.[80]

RZV has also been associated with a reduced incidence of dementia among older adult populations.[81–84] Across two studies on adults aged 65 years and older, RZV was associated with reductions in the incidence of dementia of up to 51%, including a lower incidence of Alzheimer's disease and vascular dementia.[81,82] In addition, RZV was associated with a lower risk of developing dementia compared with individuals vaccinated with the tetanus, diphtheria and pertussis (Tdap) vaccine.[81,82,84] This comparison helped to address 'healthy vaccinee bias' related concerns, whereby individuals who receive vaccines may already be healthier and at lower risk of developing dementia. In one study, the association of RZV with a reduced incidence of dementia was observed consistently across multiple subgroups, including age, sex, MCI status, ethno-racial groups and those with prior LZV vaccination.[81]

These increasingly observed associations between the shingles vaccination and a reduced risk of dementia may be partially explained by a reduction in the reactivation of VZV within the nervous system. Various possible mechanisms that link VZV reactivation to dementia have been suggested, including neuroinflammation, cerebrovascular injury, and neurodegenerative processes.[79] Further research, however, is needed around the association between the shingles vaccination and dementia incidence, and to establish whether a causal relationship exists.

Understanding the Impact of the Recombinant Zoster Vaccine in Canada

Adults Aged 50 Years and Older

Two studies, published in 2019 and 2024, modeled the cost-effectiveness of RZV in Canada — from both the health care payer perspective, referring to direct medical costs, and the societal perspective, which incorporates indirect costs. These studies estimated the health and economic impact of RZV, including reductions in herpes zoster, postherpetic neuralgia, related complications and deaths. Cost-effectiveness was assessed using the incremental cost-effectiveness ratio (ICER), expressed as the cost per quality-adjusted life year (QALY) gained, and compared against a commonly used willingness-to-pay threshold of C$50,000 per QALY gained.[85,86] If an initiative costs less than C$50,000 to gain one year of life in full health, it is generally considered to be cost-effective.

The most recent 2024 analysis estimated that, from the health care payer perspective, the ICER for RZV was C$27,486 per QALY gained among adults aged 50 years and older. From a societal perspective, which accounts for indirect costs such as absenteeism and presenteeism, the ICER was estimated at C$22,097 per QALY gained. These findings indicate that RZV vaccination represents a cost-effective initiative from both the health care payer and societal perspectives for this population.[86]

Modelled scenario analyses have further demonstrated that increasing first-dose vaccine uptake from the estimated 17.5% uptake to 40% would more than double the number of prevented shingles cases, PHN cases, complications and deaths.[86]

In addition, a recent modelling report examining the impact of RZV on the Canadian health care system and broader society estimated that achieving 80% vaccine uptake among adults aged 50 years and older would result in an overall return on investment of 1.69. This indicates that for every dollar invested in RZV, an estimated $1.69 would be returned in health benefits and productivity gains.[87]

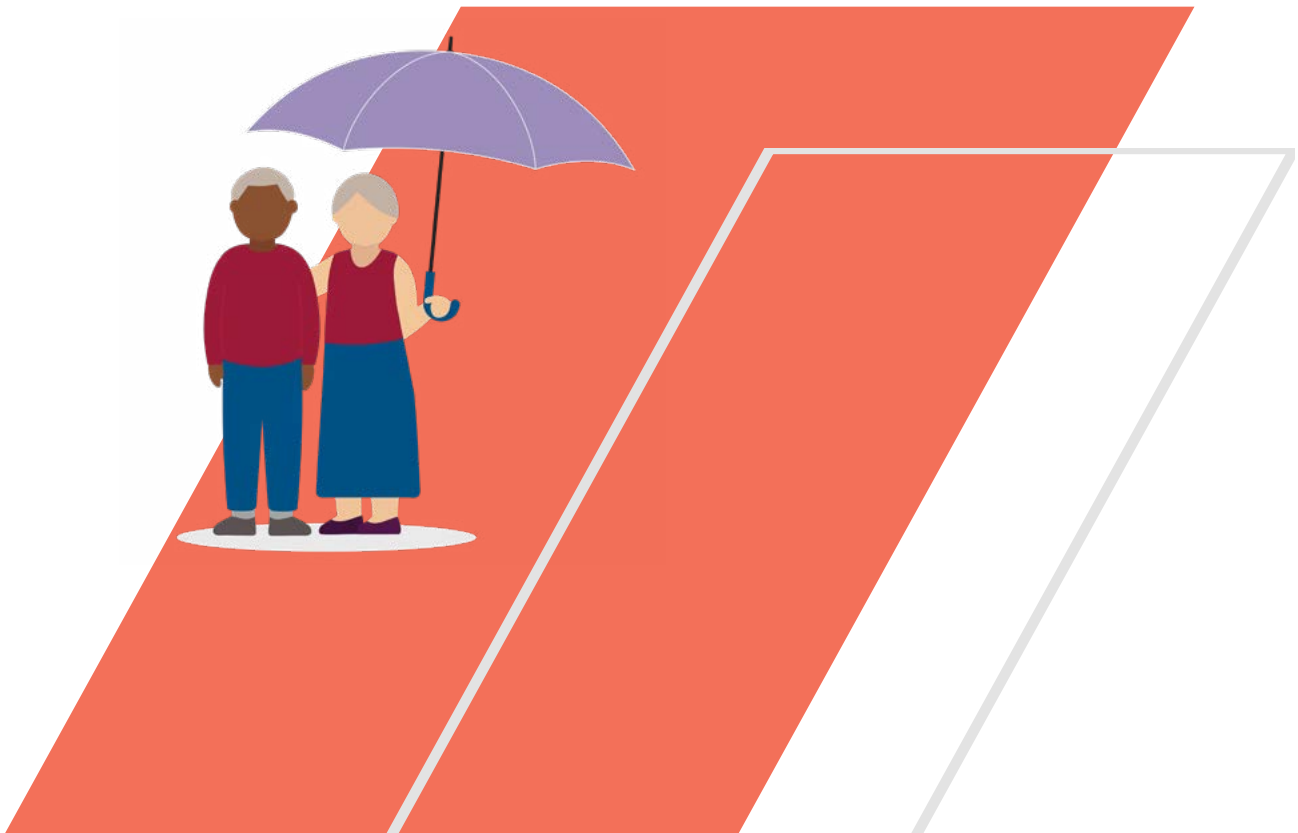
Immunocompromised Population

Like the above model, the cost-effectiveness and public health impact of RZV have also been evaluated across various immunocompromised adult populations. It was found that RZV positively impacted outcomes and was cost-effective for certain immunocompromised populations. Estimated ICERs ranged from C$22,648 per QALY gained among hematopoietic stem cell transplant recipients to C$81,470 per QALY gained among individuals with Hodgkin lymphoma.[88]

Understanding the Impact of Publicly Funded Shingles Vaccine Programs in Canada

As RZV has only been publicly funded in various Canadian jurisdictions in the last few years, and Ontario was the only jurisdiction to offer a publicly funded shingles vaccine program prior to the COVID-19 pandemic,[56] evidence on the population-level impact of publicly funded shingles vaccination programs in Canada remains limited.

There has been one Ontario study that evaluated the impact of the previously authorized LZV, when it was available exclusively through private purchase and subsequently after its inclusion in a publicly funded program beginning in 2016. The study found that private availability of LZV alone was not associated with reductions in shingles incidence or shingles-related emergency department (ED) visits and hospitalizations. In contrast, following the introduction of public funding for LZV among adults aged 65 to 70 years, there was a reduction in shingles incidence, shingles-related ED visits and hospitalizations.[56]



NACI Recommendations

What is the National Advisory Committee on Immunization?

The National Advisory Committee on Immunization (NACI) is a national committee consisting of many experts in the fields of pediatrics, infectious diseases, immunology, nursing, pharmacy and public health, among other specialties. NACI makes recommendations around the use of vaccines to the Public Health Agency of Canada (PHAC).[89]

Who Should Get Vaccinated Against Shingles?

NACI strongly recommends RZV for the following populations:

- Adults aged 50 years and older without contraindications
- Adults aged 18 years and older who are or will be immunocompromised

Current NACI Recommendations

Adults Aged 50 Years and Older Without Contraindications

Contraindications of RZV include a history of anaphylaxis after previous administration of RZV or a proven immediate or anaphylactic hypersensitivity to any part of RZV or its container.[1]

Adults aged 50 years and older without contraindications also include those who have previously received LZV or who have had a previous episode of shingles. Vaccination with RZV may be considered at least one year after receipt of LZV or a previous episode of shingles.[1]

Adults Aged 18 Years and Older Who Are or Will Be Immunocompromised

NACI has provided a list of immunocompromising conditions or therapies that can be used as guidance. This is not a comprehensive list and clinical judgement and/or consultation with the treating physician should be applied.[59]

Among this group, NACI notes that those who will be at an increased risk for shingles due to immunodeficiency or immunosuppression (e.g., because they are starting immunosuppressive treatments), the second dose of RZV can be administered at least four weeks after the first dose, rather

Immunocompromised Populations NACI Notes May Benefit from RZV Immunization*

- Primary immunodeficiencies affecting innate, humoral, and T cell-mediated immunity
- HSCT
- SOT
- Hematological malignancies
- Solid tumour malignancies on immunosuppressive treatment
- HIV infection
- Chronic or ongoing immunosuppressive therapy:
  - Immunosuppressive chemotherapy
  - Immunosuppressive radiation therapy
  - Calcineurin inhibitors
  - Cytotoxic medications
  - Anti-metabolites
  - Immune effector cell therapies (e.g., CAR T cell therapy)
  - Biological response modifiers, targeted therapies and antibodies that target lymphocytes and immune pathways (e.g., anti-CD20, anti-TNF-α, JAK inhibitors)
  - Long-term, high-dose systemic corticosteroids (prednisone equivalent of ≥ 2 mg/kg/day, or 20 mg/day if weight >10 kg, for ≥ 14 days)

* In consultation with the treating physician. Not a comprehensive list.

than following the recommended two-to-six month schedule. Additionally, for optimal immune response, the two-dose series should be completed at least 14 days before beginning immunosuppressive treatments.[59]

General Recommendations

RZV should be provided regardless of whether an individual has been exposed to VZV (e.g., varicella infection or vaccination). There are no known safety risks with administering RZV to healthy individuals who have not been infected with VZV.[1]

Inactivated vaccines like RZV may be administered at the same time, or any time before or after live or inactivated vaccines for other diseases.[1]

For improved completion of the two-dose series, the second dose of RZV may be considered to be given after 12 months (e.g., at the next annual check-up or next immunization of the influenza vaccine).[1]

Currently, there is no recommendation for booster doses of RZV as it is not known if they are beneficial.[1]

Vaccination Coverage and Administration

Following Canadian authorization of LZV in August 2008 and its market availability in September 2009, the vaccine was not publicly funded by governments or programs for several years. During this period, LZV could only be accessed through private purchase, including by out-of-pocket payment or private health insurance coverage.[56] Over time, public coverage for shingles vaccination has expanded for different populations across Canada.

Provincial and Territorial Government Coverage

RZV is currently publicly funded by 8 of Canada's 13 provincial and territorial governments (Table 4).

Coverage varies by jurisdiction and includes age-based eligibility and/or specific population groups. A common trend across jurisdictions has been the expansion of eligibility over time to include additional populations.

Ontario was the first province to introduce public coverage for shingles vaccination in 2016, initially funding LZV for adults aged 65 to 70 years.[90] Since fall 2020, Ontario has transitioned its publicly funded program from LZV to RZV. Adults who previously received a publicly funded shingles vaccine or who privately purchased Zostavax II (LZV) are not eligible for publicly funded RZV in Ontario.[9]

Yukon introduced public coverage for RZV in January 2021 for adults aged 65 to 70 years and subsequently expanded eligibility to include adults aged 65 to 79 years and certain immunocompromised adults aged 18 years and older.[10,91] Alberta began publicly funding RZV in September 2021, initially for solid organ transplant recipients aged 18 years and older.[92] Coverage has since expanded to include adults aged 18 years and older who are solid organ transplant candidates or recipients, as well as autologous HSCT recipients.[16] Prince Edward Island introduced coverage for adults aged 65 years and older in February 2022 and has since expanded eligibility to include adults aged 50 years and older.[11,93] Quebec implemented public coverage in May 2023 for adults aged 80 years and older and immunocompromised adults aged 18 years and older,[94] and has expanded coverage to include adults aged 71 years and older as of February 2026.[12,95]

In 2025, three additional jurisdictions began publicly funding RZV. Nova Scotia introduced coverage in May 2025 for adults aged 65 years and older.[13] Newfoundland and Labrador implemented a phased approach from June to September 2025,[96] with current coverage extending to all adults aged 50 years and older and immunocompromised adults aged 18 to 49 years.[14] Saskatchewan began publicly funding RZV in June 2025 for solid organ transplant candidates and recipients aged 18 years and older, as well as autologous, CAR T cell therapy and allogeneic HSCT recipients aged 18 years and older.[15,97]

Other Coverage Programs

Beyond provincial and territorial programs, British Columbia's First Nations Health Authority (FNHA) began covering the cost of RZV in 2019 for eligible First Nations residents aged 65 to 69 years. Coverage may also be considered for individuals outside this age range when supported by medical documentation from a primary care provider.[98] Age-based eligibility has since been expanded to include eligible First Nations residents aged 60 years and older.[99]

At the national level, Indigenous Services Canada's Non-Insured Health Benefits (NIHB) program began covering RZV in January 2021 for eligible First Nations and Inuit clients, including adults aged 65 to 70 years, individuals undergoing cancer treatment and immunocompromised clients on an exceptional basis.[100] Age-based eligibility has since expanded to include eligible clients aged 60 years and older.[101]

Veterans Affairs Canada provides coverage for RZV to eligible members aged 50 years and older across Canada.[102] Correctional Service Canada provides coverage for RZV for certain federally incarcerated individuals including adults aged 65 years and older and immunocompromised adults aged 50 years and older.[103]

Vaccination Provision and Costs

RZV can be obtained from a wide array of locations depending on the province or territory. Publicly funded vaccines are most commonly administered through public health units, primary care clinics and pharmacies.[9,109,110] Several jurisdictions have implemented targeted delivery models to support uptake, including mobile vaccination units and immunization clinics in Nova Scotia,[111,112] as well as specialty immunization clinics in Saskatchewan that serve individuals with complex medical conditions.[113] Privately funded vaccines are commonly offered through primary care clinics, pharmacies and travel health clinics.[19,104,114]

A majority of Canadian jurisdictions allow primary health care providers and pharmacists to provide RZV that are publicly and/or privately funded. A key change facilitating pharmacist provision of RZV occurred in July 2021, when the National Association of Pharmacy Regulatory Authorities (NAPRA) reclassified RZV as a Schedule II product.[115] NAPRA administers the National Drug Schedules program, which is adopted in various capacities by all provinces and territories (except Quebec).[a118] This reclassification allows pharmacists to provide RZV without a prescription.[119] With the exception of British Columbia, this change was automatically incorporated into provincial and territorial drug schedules.[120]

The cost of RZV is approximately C$300-400 for the two-dose series (C$150 per dose).[13,17–19] There may be an additional injection fee when the vaccine is administered in settings outside a physician's office (e.g., pharmacies), which costs around C$10-20.[121] In the absence of public coverage, RZV may be purchased out-of-pocket or covered through private health insurance plans.

a Since 2021, pharmacists in Quebec have been allowed to prescribe and administer vaccines.[116,117]

Table 4: Canadian Provincial and Territorial Coverage of the Shingles Vaccine (RZV/Shingrix)

Jurisdiction	Coverage[a]
Alberta	Public: Solid organ transplant adult candidates/ recipients; autologous HSCT adult recipients[16]
British Columbia	Private[b] [104]
Manitoba	Private[105]
New Brunswick	Private[106]
Newfoundland and Labrador	Public: Adults aged 50 years and older; immunocompromised adults aged 18 to 49 years[14]
Northwest Territories	Private[107]
Nova Scotia	Public: Adults aged 65 years and older[13]
Nunavut	Private[108]
Ontario	Public: Adults aged 65 to 70 years (except those who have previously received a publicly funded shingles vaccine or paid for Zostavax II [LZV])[9]
Prince Edward Island	Public: Adults aged 50 years and older[11]
Quebec	Public: Adults aged 71 years and older; immunocompromised adults[95]
Saskatchewan	Public: Solid organ transplant adult candidates and recipients; autologous, CAR T cell therapy and allogeneic hematopoietic stem cell adult recipients[15]
Yukon	Public: Adults aged 65 to 79 years; certain immunocompromised adults[10]

a Coverage is also provided by the following groups and initiatives for specific populations: Correctional Service Canada; Indigenous Services Canada's Non-Insured Health Benefits program; and Veterans Affairs Canada.[101-103]

b Coverage is provided through the First Nations Health Authority for certain eligible First Nations and Inuit residents.[99]

Shingles Vaccine Uptake in Canada

There remains a notable lack of comprehensive data on shingles vaccine uptake in Canada, as it is not a reportable illness and there are no established national vaccination targets.[3] Additionally, as there are no national vaccine registries to monitor vaccine uptake,[122] shingles vaccine uptake continues to be estimated through self-reported surveys.

National Vaccine Uptake

National data on shingles vaccine uptake have only been collected in recent years through surveys conducted by PHAC and Statistics Canada. PHAC's Seasonal Influenza Vaccination Coverage Survey reported shingles vaccine uptake among adults aged 50 years and older in only two survey cycles, at 28% in 2019 and 27% in 2021.[123,124]

The two largest and most comprehensive surveys assessing shingles vaccination in Canada are Statistics Canada's Canadian Health Survey on Seniors (CHSS), which collected data among adults aged 65 years and older between 2019 and 2020,[122] and PHAC's Adult National Immunization Coverage Survey (aNICS), which surveyed adults aged 50 years and older in 2023.[2] Results from these surveys indicate relatively low uptake levels.

Specifically, the CHSS found that 36.3% of adults aged 65 years and older reported having received a shingles vaccine,[122] while the aNICS found that 38.3% of adults aged 50 years and older reported having received at least one dose of the shingles vaccine.[2]

It is important to note that, unlike the previously authorized LZV, which required a single dose,[58] the RZV authorized since 2017 requires a two-dose series.[59] A Canadian study found that approximately 75% of individuals received their second dose within one year of receiving the first dose.[125] This suggests that the national vaccine uptake rates noted above could potentially be lower when taking into account whether all doses have been received.

Jurisdictional Vaccine Uptake

Various surveys have provided data on shingles vaccine uptake across Canadian jurisdictions and regions. The CHSS (2019-20) and the University of Toronto & 19 to Zero National Vaccine Survey Fall 2021 found that Ontario had the highest uptake amongst provinces/regions, particularly among adults aged 65 years and older.[122,126] At the time these surveys were conducted, Ontario was the only jurisdiction with a publicly funded shingles vaccine program that had been in place for several years, having been introduced in 2016.[90]

This report focuses primarily on findings from the aNICS survey, as it is the most recent national survey and the only one to report uptake estimates for the territories (Figure 5).[2] Among the provinces, Ontario and Prince Edward Island reported the highest shingles vaccine uptake for adults aged 50 years and older. This likely reflects the fact that, prior to the start of the aNICS data collection period in 2023, these were the only provinces with age-based public coverage programs in place.[90,93] Prince Edward Island introduced public coverage in February 2022 and had expanded eligibility from adults aged 65 years and older to those aged 60 years and older by the time of the survey.[93,127] Uptake in the province is expected to be higher in 2026, following further expansion of coverage to adults aged 50 years and older in 2024.[128]

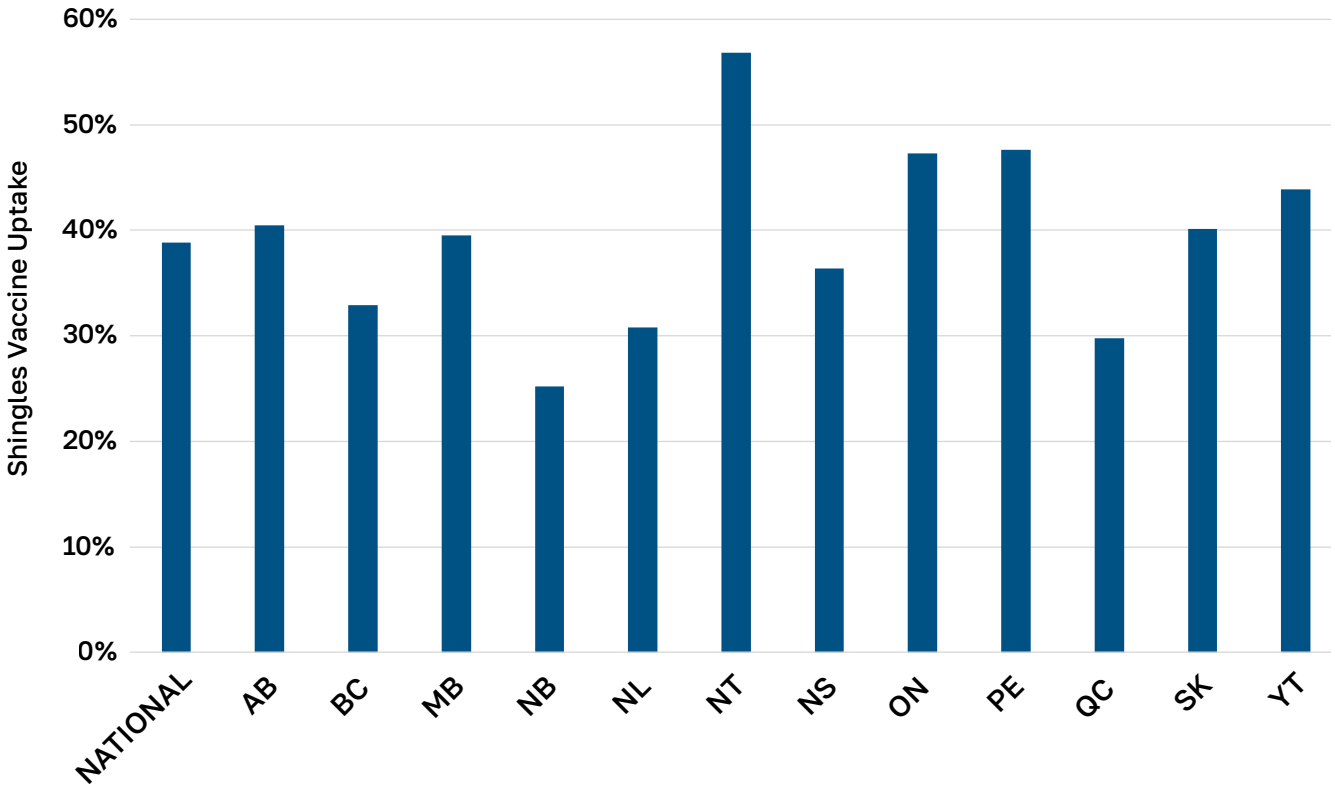
Uptake rates in several other provinces are also expected to have increased. In Quebec, an age-based shingles vaccine coverage program was introduced in May 2023,[12] midway through the aNICS data collection period, which ran from April to July 2023.[129] At that time, eligibility was limited to adults aged 80 years and older and immunocompromised adults aged 18 years and older,[94] which may partly explain the relatively lower reported uptake rate of 29.8%. Nova Scotia and Newfoundland and Labrador introduced age-based shingles vaccine coverage in 2025,[13,130] after the aNICS survey period. In contrast, publicly funded programs in Alberta, implemented in 2021,[92] and Saskatchewan, implemented in 2025,[15] focus primarily on specific immunocompromised populations and are therefore not expected to substantially influence overall provincial uptake rates among the general adult population.

Among the territories, reported shingles vaccine uptake exceeded the national average, with the Northwest Territories reporting the highest uptake at 56.8%.[2] Notably, the Northwest Territories does not operate a territorial shingles vaccine coverage program.[107] The elevated uptake may be influenced by coverage provided through the NIHB program for eligible First Nations and Inuit individuals.[100] Indigenous people comprise a substantial proportion of the population in the Northwest Territories, accounting for approximately 49.6% of residents.[131] Yukon also reported relatively high uptake,[2] which may reflect the combined influence of its territorial shingles vaccine program, introduced in 2021,[91] and NIHB coverage, given that approximately 22.3% of its population identifies as Indigenous.[132] Although data for Nunavut were not reported in the aNICS survey,[2] uptake may be expected to be high, as Indigenous people account for approximately 85.8% of this territory's population.[133]

Across the 11 adult vaccines assessed in the aNICS survey, shingles vaccination demonstrated the greatest variation in uptake across Canada's provinces and territories, with a difference of 32% between jurisdictions.[2]

With the exception of pneumococcal vaccines, uptake for all other adult vaccines varied by less than 20% across jurisdictions,[2] highlighting the particularly uneven implementation and access to shingles vaccination across Canada.

Figure 5: 2023 Shingles Vaccine Uptake by Canadian Province and Territory Among Adults Aged 50 Years and Older[2]



* Shingles vaccine uptake for Nunavut was not available.

Population Factors Influencing Shingles Vaccine Uptake

The CHSS and aNICS surveys provide important insights into population-level factors associated with shingles vaccine uptake. Although these surveys focus on different age groups (50+ and 65+) and report some differences in trends across specific population characteristics such as gender, age and the presence of chronic conditions, several consistent patterns related to shingles vaccine uptake have emerged across both datasets.[2,122]

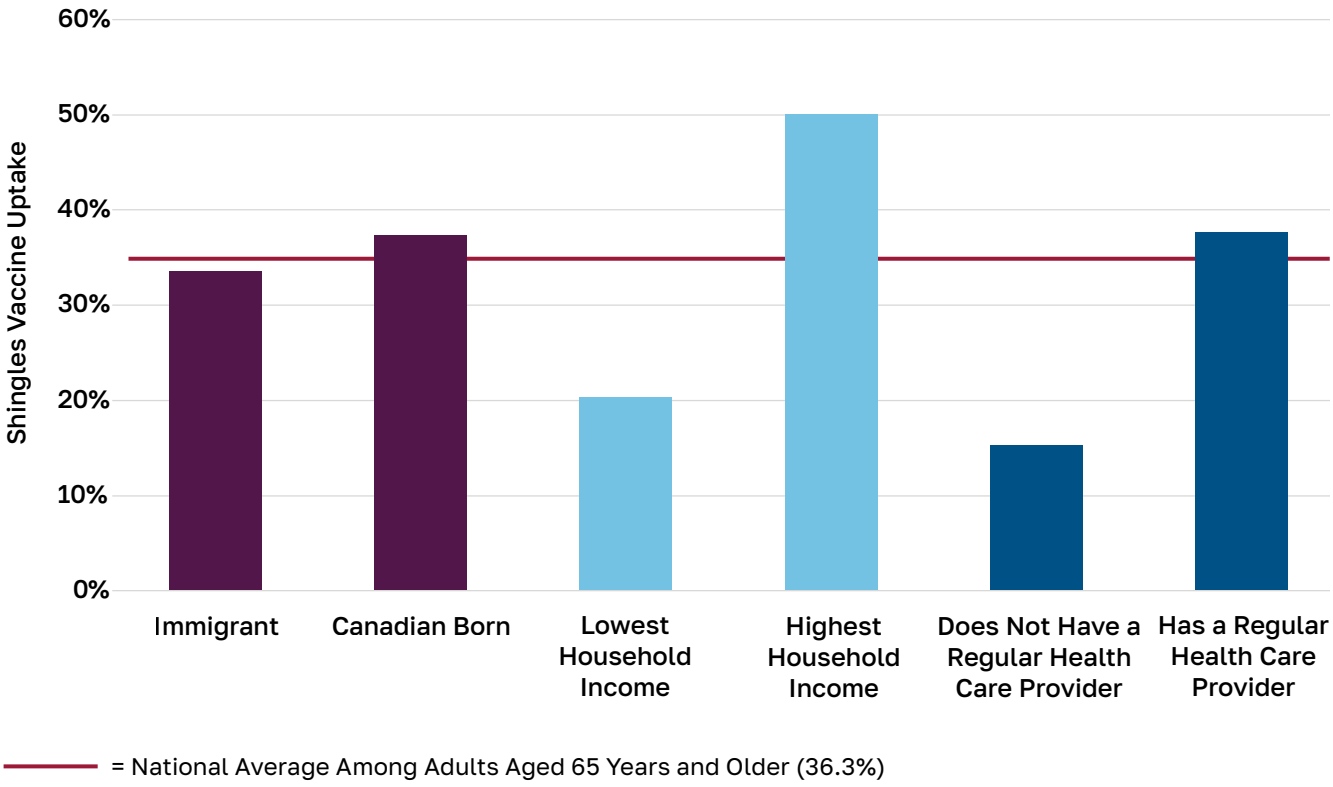
A clear trend observed was the varying levels of reported vaccine uptake rates across ethno-racial groups. Both surveys have indicated that white (aNICS) and non-Indigenous, non-racialized populations (CHSS) have the highest reported uptake, with other groups having lower reported vaccine uptake rates.[2,122] In the aNICS survey, approximately half of the ethno-racial groups reported uptake rates below 30%, with Indigenous respondents reporting the lowest uptake rate of 22.4%, almost half the uptake rate of 40.9% reported by white respondents (Table 4).[2] The CCHS survey also found that compared with Canadian-born participants, immigrant participants had lower odds of getting the shingles vaccine.[122]

Table 5: Shingles Vaccine Uptake Across Ethno-Racial Groups Among Adults Aged 50 Years and Older[2]

Ethno-Racial Group	Vaccine Uptake
National Average	**38.8%**
Black	**26.6%**
East-Southeast Asian	**35.4%**
Indigenous	**22.4%**
Latino/Latina	**27.9%**
Middle Eastern and North African	**31.6%**
South Asian	**26.5%**
White	**40.9%**

It was found that reported uptake rates were higher among adults in urban or larger settings compared with rural settings.[2,122] The CHSS survey also analyzed household income, finding a significant increase between participants from the lowest to highest household income groups. In addition, shingles vaccination rates among individuals with a regular health care provider were more than double those observed among individuals without one. Even after controlling other factors by doing a multivariable analysis, the CHSS survey found that the impact of all three indicators (population centre, household income and regular health care provider) was still apparent.[122]

Figure 6: Shingles Vaccine Uptake Across Population Factors Among Adults Aged 65 Years and Older in Canadian Provinces[122]



Vaccine Hesitancy

In Canada, despite the availability of shingles vaccines since 2009,[56] the national uptake for at least one dose of the vaccine is only 38.8% among adults aged 50 years and older.[2] There could be various explanations for the low vaccine uptake, including accessibility, administration and awareness among eligible Canadians. When discussing issues regarding low vaccine uptake, it is important to understand the term "vaccine hesitancy" and the factors that impact it. The SAGE Working Group on Vaccine Hesitancy has defined this term as the "delay in acceptance or refusal of vaccination despite availability of vaccination services."[134] There are five factors influencing this concept:[134,135]

- **Complacency:** low perceived risk of disease and when vaccination is not viewed as a needed preventive measure
- **Confidence:** trust in the vaccine (i.e., effectiveness and safety), in the health care system (e.g., health care providers, services) and in the agenda of policymakers
- **Convenience:** issues of accessibility (e.g., physical availability, cost, an individual's health literacy)
- **Calculation:** an individual's information search prior to deciding on vaccination
- **Collective Responsibility:** the aim to protect others by vaccinating oneself

Complacency

The impact of complacency on vaccination behaviour has been evident across studies, both in terms of perceived disease risk and the perceived importance of vaccination. It has been found that individuals with low perceived risks are more likely to be unvaccinated,[136] whereas individuals with higher perceived risk have higher vaccine uptake.[137,138] A global systematic review found that greater perceived severity of shingles and increased perceived susceptibility were associated with greater willingness to receive the shingles vaccine.[139] However, findings from a national survey conducted by Léger in 2023 indicate that many Canadians aged 50 years and older underestimate or are unaware of the risk of shingles. Specifically, fewer than 10% of respondents were aware that one in three adults aged 50 years and older will experience shingles, and 72% of participants reported either not knowing or underestimating the risk of developing shingles.[140] This highlights the work that still needs to be done in educating Canadians on the perceived risk of shingles.

Perceptions regarding the importance of vaccination further contribute to complacency.

Across numerous national surveys of adults aged 50 years and older and 65 years and older, the most frequently cited reason for not receiving the shingles vaccine was the belief that vaccination was unnecessary.[122–124]

For example, the CHSS survey found that among unvaccinated Canadians aged 65 years and older, excluding the territories, 39.7% reported that they did not believe the shingles vaccine was needed.[122]

Convenience

Cost and physical availability has been found to impact the provision of the shingles vaccine in Canada.

In findings from three national surveys conducted by the Public Health Agency of Canada and Statistics Canada, cost was among the top three reasons cited by Canadians aged 50 years and older, as well as those aged 65 years and older, for not receiving the shingles vaccine.[122–124]

Although these surveys were conducted between 2019 and 2021, prior to the implementation of many current public coverage programs, cost remains a relevant barrier.

Among the 8 of the 13 total provincial and territorial Canadian jurisdictions that currently provide public coverage for the recombinant zoster vaccine, six offer age-based eligibility.[9–16] Only two provinces, Prince Edward Island and Newfoundland and Labrador, align age-based coverage with NACI's recommendation for adults aged 50 years and older.[1,11,14] Newfoundland and Labrador is also the only jurisdiction that provides coverage for both NACI-recommended groups: adults aged 50 years and older and immunocompromised adults aged 18 years and older.[1,14] These gaps indicate that further expansion of public coverage is needed to improve access to RZV, particularly for older adults, who are more likely to live on fixed incomes, such as pensions,[141] and less likely to have access to private health insurance coverage than the general population.[142]

Beyond its impact on overall vaccine uptake, cost also contributes to inequities in access to RZV and protection against severe shingles-related outcomes. This was evident in Ontario prior to the introduction of public funding for shingles vaccination in 2016.

During the period when the vaccine was available only through private purchase, individuals in lower-income groups were found to experience higher rates of shingles and PHN.[143]

Physical availability represents another important dimension of convenience within the Canadian shingles vaccination landscape. Barriers to pharmacist provision of RZV persist in certain provinces and territories. While most jurisdictions enable pharmacists to provide vaccines, this is not currently the case in the Northwest Territories and Nunavut.[144] However,

this may change, as a bill enabling pharmacists to administer vaccines has progressed through multiple readings in Nunavut.[145] In Manitoba, despite the NAPRA classifying RZV as not requiring a prescription, pharmacists are not permitted to administer privately funded vaccines such as RZV without a prescription from a physician.[115,146] As a result, individuals may be required to visit two locations to obtain vaccination if the prescribing provider does not stock the vaccine. This added time may impact uptake of RZV, especially for individuals with mobility challenges.

In Ontario, although a publicly funded shingles vaccination program has been in place since 2016,[90] publicly funded doses can only be obtained and administered through primary care providers. Pharmacy-based administration is limited to privately purchased doses.[9] With many Canadians lacking access to primary care services,[147] pharmacy administration of vaccination is important to ensure equitable access.

Beyond pharmacist provision, inconsistencies in vaccine availability across sites further affect convenience. For example, in Quebec, only some CLSCs provide vaccination services,[110] while in Alberta, individuals are advised to contact their doctor or pharmacist to confirm if they sell RZV.[114] Inconsistent availability across locations adds additional steps for individuals seeking vaccination and represents another barrier that may negatively impact uptake.

Confidence

An aspect of confidence that has evidently influenced vaccine acceptance has been trust in the vaccine. The aNICS survey found that among routine vaccines, including the shingles vaccine, the three most commonly reported reasons for hesitancy or reluctance were concerns about vaccination safety, effectiveness and insufficient research conducted.[2] Similarly, a global systematic review noted that the main reasons for unwillingness to accept a shingles vaccination included a lack of trust in vaccine effectiveness and concerns about vaccine safety.[139]

Other Factors

Evidence suggests that gaps in knowledge about vaccine-preventable diseases and routine adult vaccination recommendations remain prevalent among Canadians. Results from a national Léger survey found that many Canadians aged 50 years and older held misconceptions regarding the prevention, transmission and impact of shingles. Notably, nearly half of respondents were unaware that increasing age is a risk factor for shingles.[140] In addition, the Canadian 2023/2024 National Influenza and Respiratory Viruses Survey, conducted by the NIA in partnership with Seqirus, found that 50% of adults aged 65 years and older reported difficulty keeping track of their recommended vaccines.[148] These issues are further enhanced by the fact that health care providers do not appear to be recommending the shingles vaccine, with the CHSS survey finding that 20% of adults 65 years and older reported their doctor not mentioning the vaccine as the reason for not getting vaccinated.[122]

Regarding Canadian health care providers, a 2019 study found that shingles vaccines (LZV and RZV) were among the adult vaccines providers most commonly reported reluctance to recommend.[149] Another Canadian study found that health care providers' lack of knowledge or experience with RZV was a barrier to patients.[150] In addition, many providers reported difficulty keeping up-to-date with the vaccination histories of their patients.[151] These findings highlight the need for strategies that address both patient- and provider-level barriers to vaccination.

Other factors to consider are the varying uptake rates across ethno-racial groups and the lower uptake rates of immigrants compared with Canadian-born residents. Studies have found that barriers to vaccination among immigrant groups included cultural factors, knowledge and language barriers.[152,153]

Opportunities to Improve Shingles Vaccination Rates

Health care provider engagement and recommendation represent a critical avenue for improving shingles vaccination rates. The aNICS survey indicates that health care providers are reported as the most trusted source of information about vaccines. The survey also found that among adult Canadians who were not vaccinated for at least one routine vaccine, most are generally likely to receive vaccination if recommended by their health care provider.

Of the 11 routine adult vaccines assessed, the shingles vaccine had the highest proportion of respondents reporting they would be likely to receive it following their health care provider's recommendation (75.1%).

A Quebec survey found that shingles vaccination among adults aged 50 years and older was associated with higher levels of vaccine awareness and health care provider recommendation.[154] Increasing and improving conversations between health care providers and patients has the potential to reduce complacency, increase vaccine uptake and improve confidence in vaccines and the health care system.

To enable this process and improve vaccination rates, various reminder mechanisms for health care providers and patients have been studied. Provider alerts via electronic systems have been found to significantly improve shingles vaccination rates and facilitate the completion of the two-dose RZV series.[155,156] For example, the use of an electronic best practice alert method for health care providers significantly increased shingles vaccination rates among rheumatoid arthritis patients aged 60 years and older, from 10.1% to 51.7%.[156] Patient-facing reminders, including automated or personalized phone calls, text messages and mailed letters, have also been associated with increased vaccination rates and improved uptake of the second dose.[157–159] Studies evaluating combined provider and patient reminder strategies similarly reported positive effects on shingles vaccine uptake.[160,161] The value of these approaches is reinforced by evidence from both Canadian health care

providers and patients, who cite forgetfulness as a barrier to shingles vaccination.[150]

At the health policy and regulatory level, enabling pharmacists to easily provide and administer RZV across all jurisdictions, regardless of whether the vaccine is publicly or privately funded, represents an important opportunity to improve access. Findings from the University of Toronto & 19 to Zero National Vaccine Survey Fall 2021 indicate that the majority of Canadians value proximity, no delays, appointment flexibility and convenience when it comes to immunization sites for routine vaccination.[126] Pharmacies are well positioned to meet these preferences, as they have shorter wait times, do not necessarily require an appointment and are usually available for more hours each day than other health care providers.[162] In addition, pharmacies are geographically accessible, with 95% of Canadians living within five kilometres of a pharmacy.[163]

The impact of pharmacy-based vaccination is evident in influenza immunization patterns, with pharmacies being reported as the most common site for influenza vaccination among adults in Canada.[164]

There have been numerous reviews that have looked into vaccine uptake and models among ethno-racial groups and immigrant populations. Across all groups, a tailored approach and leveraging community partnerships (e.g., respected community representatives and other trusted sources) were important strategies for increased uptake.[165–168] In influenza vaccination programs, targeting knowledge and language barriers (e.g., through bilingual materials and staff) was an effective strategy.[169] Across systematic reviews among ethno-racial populations, it was evident the importance of targeting vaccination importance and involvement of trusted health care professionals to improve uptake.[167,168]

Reporting and Monitoring of Vaccination Rates

National data on shingles vaccine uptake in Canada are derived from self-reported surveys.

Although CHSS and aNICS, the two largest and most prominent surveys assessing shingles vaccination, provide valuable insights into uptake rates and associated factors, important limitations remain. Notably, both surveys exclude individuals living in institutional care settings, such as long-term care homes, despite these populations being at an elevated risk for vaccine-preventable diseases.[2,122] The aNICS survey represents the first and only national survey to report shingles vaccination data for the territories. However, small sample sizes have resulted in numerous suppressed estimates. Similar limitations have been observed for estimates among adults aged 80 years and older who participated in the survey.[2]

One risk of relying on self-reported vaccination status is that some individuals may not recall vaccinations they received many years earlier.[122] This is especially relevant for shingles vaccination, which is recommended as a one-time series and

may therefore be more difficult for some respondents to recall accurately. Furthermore, despite multiple surveys, there has not been an in-depth shingles-related vaccine survey conducted over multiple years to enable a comprehensive assessment of vaccination trends over time.

Immunization registries, also known as immunization information systems, are electronic systems used in Canada to keep note of administered vaccines and vaccination histories. A comprehensive immunization registry would provide various benefits, including timely recording of vaccination information, identifying individuals who require certain vaccines, allowing public health officials to assess immunization uptake and enabling planning and evaluation of various immunization initiatives.[170] Not only is there no national immunization registry, but it has been found that at the provincial/territorial level, there are varying immunization information systems with different reporting capabilities, features and data collection systems. This impacts the ability to compare immunization uptake rates across jurisdictions and, potentially, to develop accurate national uptake estimates.[171]

Another monitoring mechanism at the national level includes Canada's vaccination coverage goals and vaccine-preventable disease reduction targets. These are benchmarks developed based on best practices and international standards that are aspired to be met. The most recent coverage goals did not include the shingles vaccine.[172] This impedes federal and provincial/territorial efforts to work in unison to improve shingles vaccine uptake rates.

Evidence-Based Recommendations

Based on the NIA's examination of the current evidence and Canadian vaccination policies, more work is needed to improve Canada's approach to shingles prevention. The following recommendations provide evidence-informed policy and practice approaches that can be used by PHAC, and provincial and territorial health authorities and organizations, to better support vaccination efforts. This would improve prevention efforts, reduce negative health outcomes and costs related to shingles across Canada.

1. Promote a Life-Course Vaccination Schedule that Includes Older Adults

The concept of a life-course vaccination schedule aims to advance the importance of immunization across all age groups, beyond just children.[173] Despite the Canadian Immunization Guide providing a recommended immunization schedule for all age groups,[174] provincial and territorial immunization schedules vary, especially with regards to older adults.[175] Therefore, embedding shingles vaccination within provincial, territorial and other immunization schedules remains essential to achieving more consistent and equitable access across all Canadian jurisdictions.

2. Improve the Surveillance of Shingles Cases Across Canada and the Implications of Shingles on Canadian Health Care Systems

The monitoring of shingles cases and their associated complications needs to be implemented comprehensively at the national and provincial/territorial levels. Nationally, shingles is not a reportable illness and there is no surveillance program in place for it, unlike other vaccine-preventable diseases (e.g., measles/rubella, pneumococcal disease).[3,176] Provincially, administrative data has been used to generate case estimates.[3]

Canada needs to implement a thorough disease surveillance system, which has been highlighted as a recommended action in both the WHO's Global Vaccine Action Plan and its Immunization Agenda 2030.[177,178] Disease surveillance plays an important role within the health system by monitoring the impact of vaccination programs and shifts in disease epidemiology.[177] In a study of six countries (Australia, Brazil, France, Japan, England and the United States) that have implemented a life-course approach to vaccination, all but Japan have developed, or were developing, electronic databases to collect and share infectious disease and immunization data.[179]

3. Improve Reporting and Monitoring of Shingles Vaccination Rates

Like shingles case surveillance, there should also be improvements for reporting shingles vaccination rates at both the provincial/territorial and national levels. National shingles vaccination rates have only been obtainable through self-reported surveys.[2,122–124,126] Certain surveys (e.g., CHSS, aNICS) have provided in-depth analysis across factors and jurisdictions. There are, however, various limitations, including the exclusion of individuals living in institutional care settings, incomplete territorial data, potential recall bias and the absence of longitudinal monitoring.[2,122]

Addressing these gaps requires strengthening and harmonizing immunization information systems across provinces and territories. This is especially important because of the various benefits immunization information systems could provide at both the individual and system levels, including the timely recording of vaccination information, identifying individuals who require certain vaccines and allowing public health officials to assess immunization uptake.[170]

In addition, surveillance systems should be complemented by the establishment of a national shingles vaccination coverage goal, similar to those in place for influenza and pneumococcal vaccines.[172] Such a target would enhance accountability and support coordinated action to improve shingles vaccine uptake among Canadians.

4. Adhere to Canada's Current NACI Statement for Shingles Vaccination

The NIA recommends that all Canadian jurisdictions follow the currently suggested vaccination schedule that NACI recommends. RZV is strongly recommended for all adults aged 50 years and older without contraindications, as well as immunocompromised adults aged 18 years and older.[1]

The NIA believes these are strong recommendations using the best available scientific knowledge. Various pieces of information have been considered for these recommendations, including shingles burden, vaccine characteristics and factors involved with vaccination programs (e.g., economics, feasibility and equity).[3,59]

Please refer to https://www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci.html for all current recommendations for Canadians.

5. Provide the Shingles Vaccine Free of Cost to all NACI-Recommended Populations Across Canadian Jurisdictions

It is important to target vaccine costs, as it impacts uptake, incidence of shingles, related health care use and equitable access to protection from shingles. National surveys consistently identify cost as one of the main reasons for non-vaccination against shingles among Canadian adults.[122–124] Evidence from Ontario prior to the introduction of public funding demonstrates that when the shingles vaccine was available only through private purchase mechanisms, individuals in lower-income groups experienced higher rates of shingles and PHN.[143] Further provincial evidence shows that private availability of the vaccine alone did not reduce overall shingles incidence or related health care use, such as ED visits and hospitalizations. In contrast, following the introduction of public funding, Ontario observed a 19% reduction in shingles incidence and a 38% reduction in shingles-related ED visits and hospitalizations.[56]

Currently, only 8 of the 13 provinces and territories provide public coverage for RZV, with only Prince Edward Island and Newfoundland and Labrador offering age-based coverage aligned with NACI's recommendation for adults aged 50 years and older. [1,9–16] Newfoundland and Labrador is also the only jurisdiction that provides coverage for both NACI-recommended populations (adults aged 50 years and older and immunocompromised adults aged 18 years and older).[1,14] Other programs, including those administered by the First Nations Health Authority, the Non-Insured Health Benefits program, Correctional Service Canada and Veterans Affairs Canada, help address gaps for specific population groups across Canada.[99,101–103]

These findings underscore the importance of removing cost as a barrier to shingles vaccination and highlight the need for expanded public coverage to ensure that all populations recommended by NACI have access to publicly-funded shingles vaccination across Canada.

6. Provide Clinician Education and Support for Pharmacists, Primary Care and Other Health Care Providers to Deliver Vaccinations

Evidence presented in this report indicates that many Canadians are not well informed about shingles, the risks associated with the disease and the importance of RZV. Research and survey findings demonstrate that perceptions of shingles risk and the perceived importance of vaccination influence shingles vaccination behaviour. In addition to public education efforts, education and support initiatives should also be directed toward health care providers, given their central role in shaping patient decision-making.

Health care provider recommendations have consistently been identified as a key facilitator of vaccination. Findings from the 2024 PHAC survey show that among Canadian adults who had not received at least one routine adult vaccine, most reported that they would be likely to receive vaccination following

a recommendation from their health care provider. Notably, shingles vaccination had the highest likelihood of uptake based on their health care provider's recommendation (75.1%).[2] This finding is further supported by a Quebec survey, which found that adults aged 50 years and older who were vaccinated against shingles were more likely to have been aware of the vaccine and to have received a recommendation from a health care provider.[154]

7. Recommend Administration of the Shingles Vaccine in Conjunction with Other Vaccines, Where Applicable, Including the Influenza and COVID-19 Vaccines to Improve Uptake and Compliance

NACI has noted that RZV may be administered at the same time as, or any time before or after, live or inactivated vaccines for other diseases. These include vaccines for COVID-19, influenza, RSV, pneumococcal and tetanus and diphtheria that are recommended for older adults.[1]

As the influenza vaccine is provided annually, its administration provides a good opportunity for health care professionals to ask about an older person's shingles vaccination status. The Canadian Immunization Guide also notes that to support completion of the two-dose series, the second dose may be considered to be given after 12 months rather than six months, to align with the next annual visit or next immunization of the influenza vaccine.[1]

8. Enhance Vaccine Provision Across and Within Canada's Provinces and Territories

There are multiple avenues to obtain and have RZV administered in Canada. RZV may be obtained from physician practices, travel clinics, public health clinics or pharmacies. Various professionals may be able to administer vaccines including physicians, nurses and pharmacists. However, depending on the province or territory, all these avenues may not be available or easily accessible.

Barriers are particularly evident with respect to pharmacist involvement. In certain territories, pharmacists are not authorized to administer RZV. In Manitoba, individuals must first obtain a prescription from a physician before pharmacists can administer privately funded RZV, and in Ontario, pharmacists are not permitted to administer publicly funded RZV.[9] In addition, across provinces and territories, not all locations routinely stock or administer vaccines. These access limitations can require individuals to navigate multiple locations to receive vaccination, creating additional logistical challenges.

Enhancing vaccine provision would improve the ease with which individuals can receive their recommended vaccinations. Vaccines should be made as widely available as possible within each jurisdiction by leveraging a variety of delivery locations and health care professionals to support timely, convenient and equitable access to shingles vaccination.

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