Signal49
RESEARCH

Healthy Aging and Building Economic Resilience

The Value of Shingles Vaccination

IMPACT PAPER | May 12, 2026
Formerly operating as The Conference Board of Canada

Contents

Key findings

- Shingles negatively affects healthy aging, a process that is increasingly important to Canadian prosperity and growth. Having shingles reduces productivity, caregiving capacity, and social participation, with both direct and indirect economic consequences.
- If 80 per cent of adults aged 50 and older were vaccinated for shingles, the cost-benefit analysis shows that Canada could save an estimated $816 million in healthcare costs and accrue $4.2 billion in health gains and $1.5 billion in productivity gains.
- Public investment in shingles vaccination delivers a national return on investment of 1.69. This means that every dollar invested generates $1.69 in benefits for healthcare systems and society through better health and sustained economic participation. Vaccination prevents productivity losses from absenteeism, presenteeism, caregiving disruption, and long-term complications, thereby preserving workforce participation, volunteering, and caregiving contributions.
- Shingles prevention delivers integrated value for patients, providers, healthcare systems, and society. Patients who have experienced shingles described how prevention through vaccination could help others protect their independence, daily functioning, and mental wellbeing by avoiding painful and disruptive symptoms and the long-term complications associated with shingles. Providers, academics, and system leaders emphasized that vaccination reduces avoidable acute and follow-up care, supports chronic disease management, and supports proactive, preventive practice.
- Despite strong National Advisory Committee on Immunization (NACI) recommendations for those aged 50 and older to be vaccinated, cost, limited awareness, inconsistent insurance coverage, and uneven public programming among provinces and territories continue to limit uptake to only 39 per cent of eligible Canadians.

Productivity and healthy aging

Canada is facing a pivotal moment where economic uncertainty, demographic pressures, and rising chronic disease prevalence intersect to challenge the country's future prosperity.

Canada's economic growth is lagging. Among Organisation for Economic Co-operation and Development (OECD) countries, Canada ranks last for long-term per capita economic (GDP) growth (a simple proxy for a country's living standards) and second to last for level of labour productivity.[1] Weak productivity growth is a challenge for Canada's economic prosperity and social wellbeing.

> **"At home, our longstanding weak productivity is straining government finances, making life less affordable for Canadian families, and threatening to undermine the sustainability of vital social programs on which Canadians rely."[2]**
> **The Right Honourable Mark Carney**, Prime Minister of Canada

Per capita GDP growth depends on at least three key drivers: availability and use of tools and technologies; institutions and governance; and human capital. Critically, the health of Canadians is a key pillar underpinning human capital.

One of the challenges to the prosperity of Canada's economy is that our population is aging, with nearly two in five adults now aged 50 and older[3] and the share of older adults growing rapidly.[4] Older Canadians are contributing longer through work, caregiving, and volunteering, yet preventable illnesses like shingles continue to weaken their health and independence, putting strain on Canada's healthcare systems, and reducing economic productivity.

In this work, we examine the value of a cohesive publicly funded vaccination program in Canada through a lens that tightly links workforce and non-labour participation, health system sustainability, and quality of life. This work is not only timely, but important for decision-makers who are challenged with bolstering Canada's economic resilience and addressing the wellbeing of an aging population.

We designed a multi-method approach to build a comprehensive picture of the value of shingles vaccination across Canada and provide recommendations for realizing value from increased vaccination rates. We brought together evidence from the literature, analysis of 19 narratives from older adults with lived experience, insights from conversations with five leaders in pharmacy, family practice, geriatrics, policy, and system change. We also looked at a new economic analysis conducted by Evaluate, an economic and social policy consultancy, which shows the return on investment from publicly funded vaccination for shingles across Canada.

1 Signal49 Research, "Economic Prosperity – January 2025."
2 Prime Minister of Canada, "Mandate letter."
3 Statistics Canada, "Population estimates on July 1."
4 Statistics Canada, "Projected population, by projection scenario."

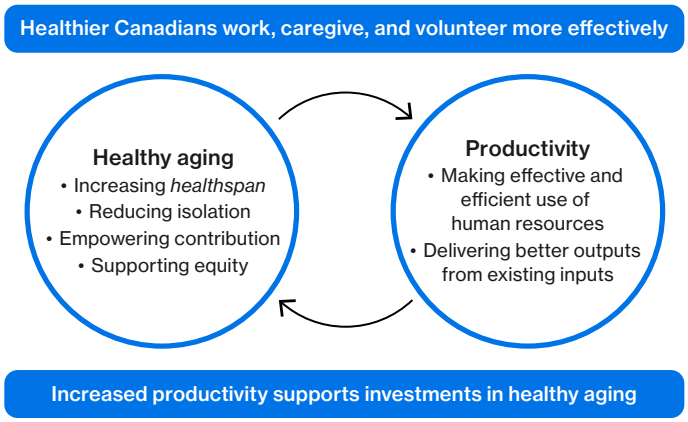
Economic and social imperative of healthy aging

Healthy aging to support Canada's economy

The average retirement age in Canada is 65.3 years, four years older than two decades ago.[5] Today, a 65-year-old can expect to live another 19 to 22 years.[6] People are working longer and living more years in retirement, which has created a shift in individual, health system, and societal needs.

The aging of a population does not have to mean a loss in productivity. Extending the healthspan (how long one lives in good health) of older adults means they may choose to stay in the workforce longer, offering experience, leadership, and stability.[7] (See "Older adult contributions.") Further, Signal49 Research highlights that older Canadians contribute disproportionately through unpaid work like caregiving and volunteering,[8] roles that carry immense social and economic value.[9] (See Exhibit 1.) When older adults are in good health, they can work longer, remain independent, and continue to be active in their communities.[10]

Exhibit 1
Caregiving and volunteering carry immense social and economic value



Source: Signal49 Research.

Older adult contributions

Canadians 55 years and older make up about 20 per cent of the labour force.[11] This number is expected to increase to 25 per cent over the next 10 years.[12]

Almost 25 per cent of Canadians 65 years and older provide care or help to family members or friends with a long-term condition, a mental or physical disability, or problems related to aging.[13]

Over 33 per cent of Canadians 50 years and older volunteer, contributing about 360 hours every year towards formal and informal volunteer work.[14]

11 Statistics Canada, "Labour force characteristics."
12 Martel, "The Labour Force in Canada and its Regions."
13 Arriagada, "The experiences and needs of older caregivers."
14 Hahmann, "Volunteering counts."

5 Statistics Canada, "Retirement age by class of worker."
6 Statistics Canada, "Health-adjusted life expectancy in Canada."
7 Morissette and others, "Employment by choice and necessity."
8 Conference Board of Canada, The, *Social and Economic Value of Better Heart Health*.
9 Wray and others, "Canada's Care Economy"; and Employment and Social Development Canada, "Promoting the labour force participation of older Canadians."
10 Gianfredi and others, "Aging, longevity, and healthy aging."

Healthy aging requires coordinated action

In Canada, there is a patchwork of healthy aging approaches among provinces,[15] territories,[16] and municipalities,[17] each reinforcing the United Nations Decade of Healthy Ageing (2021–2030),[18] yet Canada lacks a national unified approach like peer OECD countries such as Sweden, Japan, and Italy. The national aging strategies of these countries are comprehensive, emphasizing health promotion, social participation, and integrated care.[19] Policies are coordinated across ministries and sectors, with universal program access and minimal regional disparities in implementation. Preventive health measures, particularly vaccination, are important components of these strategies.

Preventive health measures lay the path for healthy aging

A common theme throughout many of the international strategies is that healthy aging requires creating the conditions to delay, reduce, or prevent the onset of illness and functional decline. In short, it is not only about managing illness later in life. Preventive health is often the more effective and person-centred way to support healthy aging because it delays disease, preserves functional ability, and addresses the social and behavioural factors that treatment alone cannot fully address.[20] Studies on smoking cessation and tobacco control, HIV risk-reduction and prevention, healthy eating, physical activity, and vaccination all show that even when preventive interventions require upfront investment, net value is derived from reduced acute care, primary care, and long-term care needs along with increased longevity and quality of life.[21]

Vaccination programs are a cornerstone of preventive health and a key driver of healthy aging.[22] Vaccination helps protect people across their lifespan, not only from infectious diseases but also from worsening of some chronic conditions.[23] By preventing illness, such as influenza, pneumococcal disease, and shingles, and the potential exacerbation of some chronic conditions, vaccination helps individuals live longer and healthier lives.[24]

A 2024 study by IQVIA found that a 20 per cent increase in uptake of six adult vaccines (shingles, respiratory syncytial virus, pneumococcal disease, human papillomavirus, COVID-19, and influenza) could translate to $1 billion in productivity gains and avert $424 million in healthcare costs in Canada.[25] The study showed that for every dollar invested in adult vaccination in Canada, more than three times the value is returned in health and economic benefits.[26] The findings are similar to those of other studies conducted in Australia and New Zealand for three adult vaccination programs (shingles, influenza, and respiratory syncytial virus), where returns on investment (ROI) ranged from 1.9 to 5.7 times the cost required to fund them.[27] A 2024 report from the Office of Health Economics (OHE) in the United Kingdom found that the cost-benefit ratio across 10 countries and

15 Government of British Columbia, *Age Forward*; Government of Alberta, *A collective approach*; Government of Ontario, *Aging with Confidence*; Gouvernement du Québec, *Pride in Aging*; Government of New Brunswick, *We are all in this together*; Government of Nova Scotia, *Shift*; Government of Prince Edward Island, *Promoting Wellness, Preserving Health*; and Government of Newfoundland and Labrador, *Seniors' Health and Well-Being Plan*.

16 Government of Nunavut, *Aging with Dignity*; Government of Northwest Territories, *Government of the Northwest Territories Seniors' Strategic Framework*; and Government of Yukon, *Yukon Aging in Place Action Plan*.

17 City of Calgary, "Age-Friendly Calgary"; Ball, *Town of Midland Age-Friendly Community Plan*; and District of Squamish, *Age Friendly Community Plan*.

18 United Nations, "UN Decade of Healthy Ageing."

19 Osamu, "Measures to Address Japan's Aging Society"; and Barbabella and others, "Active Ageing in Italy."

20 Gianfredi and others, "Aging, longevity, and healthy aging."

21 Public Health Agency of Canada, "Investing In Prevention."

22 Gianfredi and others, "Aging, longevity, and healthy aging."

23 Rodrigues and others, "Impact of Vaccines."

24 Schaffner and others, "Keeping Our Adult Patients Healthy and Active."

25 IQVIA Canada, *The Unmet Value of Vaccines in Canada*.

26 IQVIA Canada.

27 Cullen and others, *The economic value of adult vaccination*; and GSK New Zealand, *Prevention Pays*.

four vaccination programs (pneumococcal disease, shingles, respiratory syncytial virus, and influenza) was up to 19, which is equivalent to billions of dollars in benefits to society.[28] These studies use different approaches to evaluating the benefits and costs associated with vaccinations, which contributes to the range of findings, but they all found that adult vaccinations are cost-effective.

In Canada, decision-making around funding and delivering publicly funded vaccination programs is complex, involving multiple levels of government, regional delivery units, and divisions, as well as other interested parties.[29] This has resulted in a patchwork of programs across the country and mixed vaccination coverage among older adults, often below national targets.[30]

Canada's National Immunization Strategy (NIS) for adults helps federal, provincial, and territorial governments and interested parties work together to improve vaccination programs across the country. However, organizations such as CanAge and the National Institute on Ageing have raised concerns that the implementation of the NIS has stalled and its priorities do not adequately address issues facing older adults, including setting an immunization target for shingles.[31]

A national healthy aging strategy would support the NIS principle of embedding a healthy aging approach within the NIS. It would ensure that efforts to improve healthspan are incorporated and better actioned in each of the NIS's objectives, including setting evidence-based goals for vaccination coverage, identifying and understanding determinants of under-immunization, supporting timely and equitable access to vaccination, and developing, implementing, and investing in evidence-based interventions to improve coverage.

Shingles provides a practical entry point for advancing adult vaccination within healthy aging and national immunization strategies. Though shingles is common among older adults and imposes avoidable health and system costs, it has a well-established and available prevention tool. Examining shingles vaccination makes it possible to demonstrate how prevention can translate healthy aging principles into action, delivering benefits for individuals, healthcare systems, and the economy through increased coverage.

Shingles among older adults

Shingles is a vaccine-preventable illness that will impact about one in every three Canadians over their lifetime, with an estimated 130,000 new cases each year.[32] It is caused by the reactivation of the dormant varicella zoster virus, which many individuals contract as children in the form of chickenpox.[33] Shingles typically appears as blister-like rashes on sections of the skin, which are usually accompanied by tingling and burning pain.[34] Although shingles can occur at any age, its incidence is known to increase with age, with two-thirds of all shingles cases occurring in those over the age of 50.[35] Older adults are more vulnerable to experiencing shingles due to the natural age-related decline in immunity that occurs as we get older.[36]

Several chronic conditions have been associated with increased risk of shingles, including asthma, diabetes, and chronic obstructive pulmonary disease.[37] Almost half of Canadian adults have a chronic disease, and the prevalence of most chronic diseases increases with age.[38] Underlying chronic conditions make people more susceptible to shingles. As well, shingles is associated with an increased risk of stroke and heart attack. It may also negatively impact glycaemic control among people with diabetes, accelerate the

28 El Banhawi and others, *The Socioeconomic Value of Adult Immunisation Programmes*.

29 IQVIA Canada, *Understanding Current Immunization Funding*.

30 Public Health Agency of Canada, "Adult National Immunization Coverage Survey."

31 Arulnamby and others, *The Overlooked Issue of Shingles Infections*; and CanAge, *Adult Vaccination*.

32 Public Health Agency of Canada, "Herpes zoster (shingles) vaccine."

33 Kimberlin and others, "Varicella–Zoster Vaccine for the Prevention of Herpes Zoster."

34 Public Health Agency of Canada, "Herpes zoster (shingles) vaccine"; Sollie and others, "Patient-reported quality of life"; and U.S. Centers for Disease Control and Prevention, "Shingles Symptoms and Complications."

35 Public Health Agency of Canada, "Herpes zoster (shingles) vaccine."

36 Arvin, "Aging, Immunity, and the Varicella-Zoster Virus"; and Marra and others, "Risk Factors for Herpes Zoster Infection."

37 Muñoz-Quiles and others, "Risk and impact of herpes zoster"; Yang and others, "Risk of herpes zoster"; and Mortimer and others, "Global herpes zoster burden."

38 Statistics Canada, "Health outcomes."

progression of chronic kidney disease, and increase the risk of developing end-stage renal disease.[39] Given this bi-directional relationship, preventing shingles is important to consider in chronic disease management.

Unlike the initial infection from chickenpox, shingles tends to be more severe and last longer.[40] For some patients, chronic complications follow the acute phase of shingles. The most common complication is prolonged nerve pain called postherpetic neuralgia (PHN), which can last months to years. PHN occurs in five per cent to 30 per cent of people who experience shingles, depending on age of onset and other contributing factors, and has a significant impact on quality of life.[41]

Shingles vaccination: Preventing burden on Canadians

Shingles is preventable. Vaccination significantly reduces the risk of shingles and reduces its severity and duration if it does occur.[42]

Strong recommendations, yet low uptake

Canada's expert advisory body on vaccines, the National Advisory Committee on Immunization (NACI), strongly recommends that the recombinant zoster vaccine (i.e., shingles vaccine) be offered to adults 50 years and older without contraindications,[43] as well as those 18 years of age and older who are or will be immunocompromised.[44]

Despite these recommendations being in place for several years, only 39 per cent of Canadians 50 years and older have been vaccinated against shingles.[45] Uptake is highest among those with higher incomes, higher education levels, regular access to primary care, and prior influenza vaccination.[46] Health equity is also an issue, with immigrants, racialized communities, and residents of rural and small population areas less likely to have received the shingles vaccine.[47]

Persistent barriers

Shingles vaccination is available in primary care settings, public health clinics, pharmacies, and some community clinics. It is delivered by physicians, nurses, and pharmacists.

39 Yang and others, "Effect of herpes zoster vaccine"; Lu and others, "Stroke risk after varicella-zoster virus"; Minassian and others, "Acute Cardiovascular Events"; Erskine and others, "A systematic review and meta-analysis"; Muñoz-Quiles and others, "Risk and impact of herpes zoster"; and Lin and others, "Association between herpes zoster and end stage renal disease."

40 Welsby, "Chickenpox, chickenpox vaccination, and shingles."

41 Chen and others, "Antiviral treatment"; Public Health Agency of Canada, "Herpes zoster (shingles) vaccine"; Kawai and others, "Systematic review of incidence"; and Drolet and others, "The impact of herpes zoster."

42 Public Health Agency of Canada, "Herpes zoster (shingles) vaccine"; Lal and others, "Efficacy of an Adjuvanted Herpes Zoster"; Cunningham and others, "Efficacy of the Herpes Zoster"; and Strezova and others, "Final analysis of the ZOE-LTFU trial."

43 Public Health Agency of Canada, "Updated Recommendations."

44 Public Health Agency of Canada, "Summary of NACI statement of May 14, 2025."

45 Public Health Agency of Canada, "Adult National Immunization Coverage Survey."

46 Gilmour, "Factors associated with shingles."

47 Gilmour.

But barriers to shingles vaccination are long-standing and widespread. CanAge's *Adult Vaccination in Canada: Cross-Country Report Card 2022–2023* notes issues of funding, access, and awareness.[48] According to a Public Health Agency of Canada 2020–2021 survey, the top three reasons for not getting shingles vaccination among adults 50 years and older were cost (15 per cent), did not get around to it (15 per cent), and did not think it was necessary (28 per cent).[49] Also, one in five Canadians 65 years and older report they had not gotten vaccinated for shingles because their healthcare provider had not mentioned it.[50]

Moreover, inconsistent or the lack of public or private insurance coverage often prevents people from starting or completing the two-dose vaccination series for shingles.[51] Shingles vaccination is not publicly covered for most people in most provinces and territories. (See Table 1.) Even where public coverage exists, eligibility rules vary widely. Some provinces limit access by age, while others apply additional criteria. Inconsistencies create confusion among healthcare providers and the public, and lead to unequal access across the country, with people having to pay out-of-pocket. When governments do not fund vaccination, people may interpret a lack of support as a signal that vaccination is not important for their health and wellbeing.

Table 1
Shingles vaccination coverage for older adults (50 years and older) across provinces and territories and availability of public vaccination programs

Province/territory	Immunization coverage among adults 50 years and older (%)	Public funding status for older adults	Older adult age group covered through public funding	Year public coverage began
Canada	38.8	Not funded	N/A	N/A
First Nations and Inuit	–	Yes	60+	2021
Veterans	–	Yes	50+	–
British Columbia	32.9	Not funded	60+ First Nations elders	2023
Alberta	40.5	Not funded	N/A	N/A
Saskatchewan	40.1	Not funded	N/A	N/A
Manitoba	39.5	Not funded	N/A	N/A
Ontario	47.3	Yes	65–70	2016
Quebec	29.8	Yes	71+	2023
New Brunswick	25.2	Not funded	N/A	N/A
Prince Edward Island	47.6	Yes	50+	2022
Nova Scotia	36.4	Yes	65+	2025
Newfoundland and Labrador	30.8	Yes	50+	2025
Yukon	43.9	Yes	65–79	2021
Northwest Territories	56.8	Not funded	N/A	N/A
Nunavut	#	Not funded	N/A	N/A

Note: This table presents the public funding status for older adults (50+ years). However, some provinces and territories publicly fund the shingles vaccine for certain people aged 18 and older who are immunocompromised. At the time of this report, these include First Nations and Inuit through the Non-insured Health Benefits program (NIHB), and residents of Alberta, Saskatchewan, and Quebec.
Suppressed value due to high sampling variability or small sample size
– Not publicly available
N/A: Not applicable given no public funding program in that region
Sources: Signal49 Research; Public Health Agency of Canada ("Adult National Immunization Coverage Survey" and "Provincial and territorial routine vaccination programs"); Indigenous Services Canada; Veterans Affairs Canada; First Nations Health Authority; Government of Ontario ("Ontario Publicly Funded Shingles (Herpes Zoster) Immunization Program"); Gouvernement du Québec; La Presse Canadienne; Yarr; Government of Nova Scotia ("Nova Scotia Shingles Immunization Program"); Government of Newfoundland and Labrador ("Public Advisory"); and Government of Yukon ("Shingles vaccine program expanded").

48 CanAge, *Adult Vaccination in Canada*.

49 Public Health Agency of Canada, "Vaccine uptake in Canadian adults."

50 Gilmour, "Factors associated with shingles."

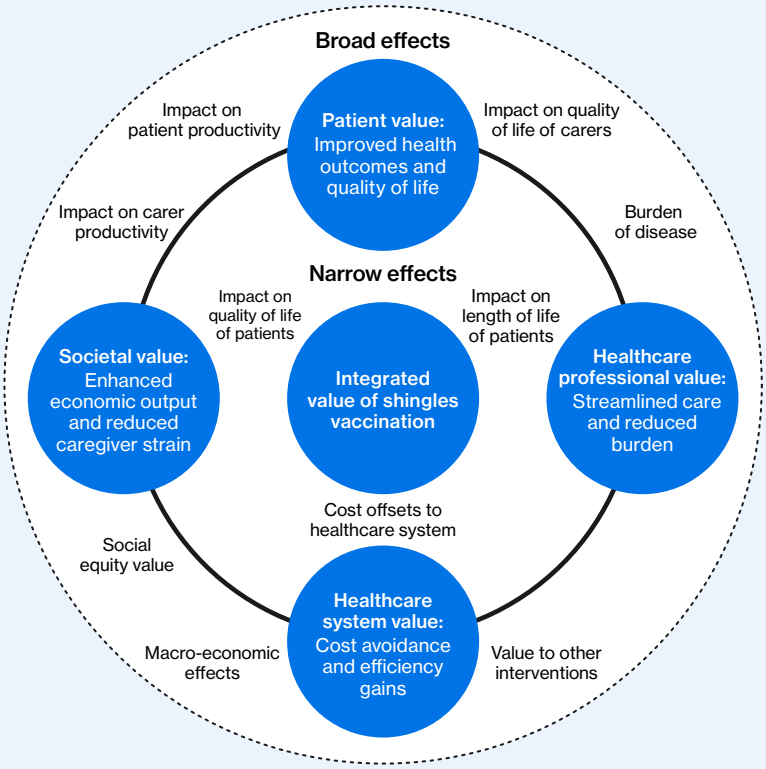
51 George and others, "Attitudes, barriers, and facilitators."

Impacts on patients, healthcare systems, and society

The impacts of shingles are both direct (e.g., on patient quality of life and health system costs), and indirect (e.g., societal economic benefits and health and health system effects).[52] To visualize the link between the impacts of shingles and the value or benefits of preventing shingles through increased vaccination coverage, we designed a value framework. (See Exhibit 2.) We based our value framework on the Value-Based Healthcare Benefits Framework[53] and the OHE Vaccine Value Framework,[54] which separately did not fully convey the approach we used in this work:

The Value-Based Healthcare Benefits Framework is general and not specific for vaccinations, but does address integrated value, value to patients, value to health systems and providers, and value to society; the OHE Vaccine Value Framework includes the broad and narrow effects of adult vaccinations, as well as components not relevant for shingles, and does not show the integrated value. Combined, the two frameworks portray the important concepts underpinning our findings.

Exhibit 2
Framework shows the link between the impacts of shingles and associated value of prevention



Note: The value framework for shingles vaccination was based on modifying and combining the OHE Vaccine Value Framework and the Value-Based Healthcare Benefits Framework.
Sources: Signal49 Research; Bell and others; NEJM Catalyst.

52 Bell and others, "Towards a Broader Assessment of Value."
53 NEJM Catalyst, "What Is Value-Based Healthcare?"
54 Bell and others, "Towards a Broader Assessment of Value."

Patient

Effects on individual experiences and quality of life

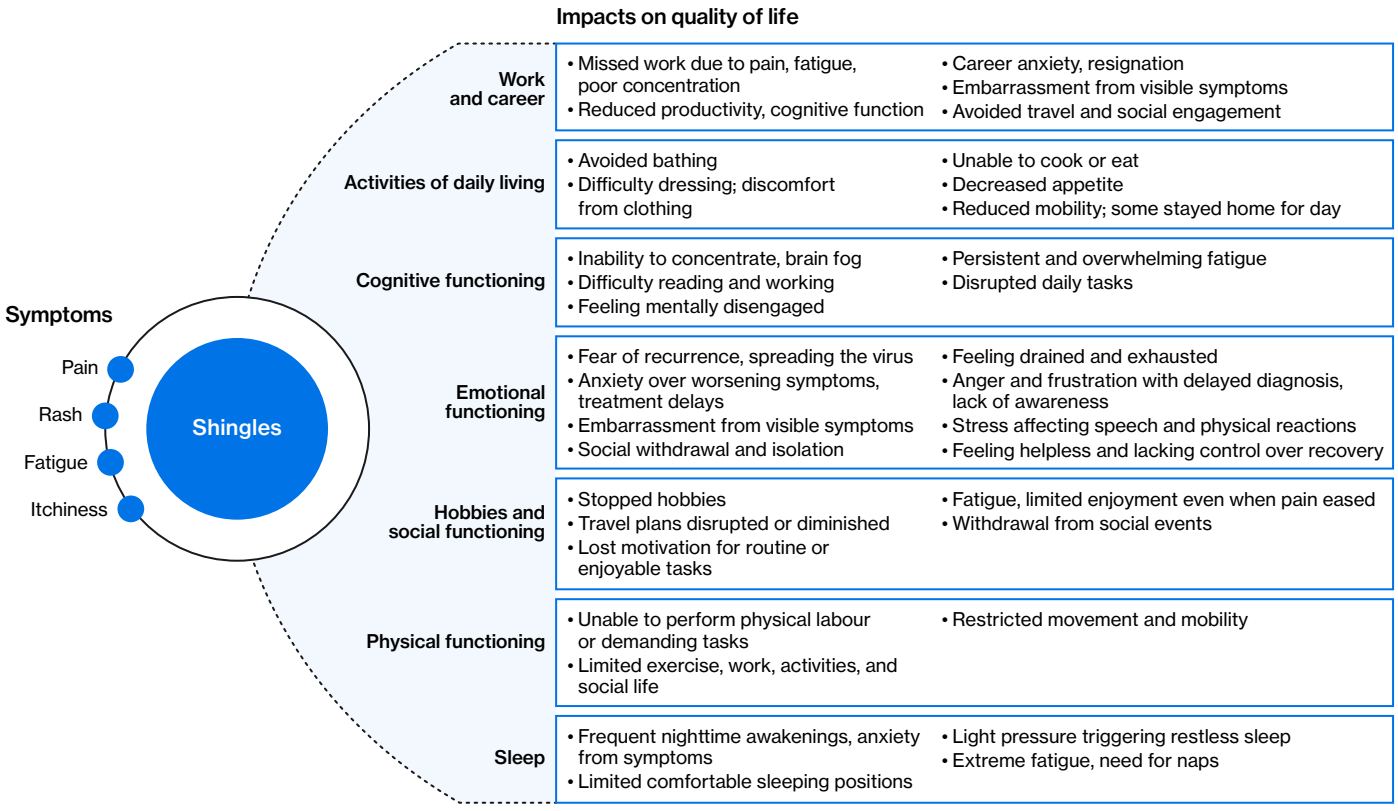
While the acute phase of a shingles episode and its associated symptoms (pain, rash, fatigue, itchiness) usually resolves in three to five weeks,[55] shingles diminishes quality of life during this period.[56]

GSK Canada engaged a third party to talk to individuals between 51 and 83 years of age about their personal experiences with shingles. Some interesting narratives resulted from that work, which we have summarized below to provide context to our preceding discussion.

The narratives included descriptions about how shingles and its symptoms had affected their work, daily living activities, cognitive and emotional functioning, hobbies and social lives, physical functioning, and sleep. (See Exhibit 3.) The following two narratives give these findings a voice. (See "Helen's experiences with shingles" and "Steven's experiences with shingles.") We changed the names and used stock photographs; we also obtained their consent to share their personal experiences.

Exhibit 3

Older adults report impacts of symptoms on quality of life



Source: Signal49 Research.

55 Silva, "How Long Does Shingles Last?"

56 Sollie and others, "Patient-reported quality of life"; Lukas and others, "The impact of herpes zoster"; and Weinke and others, "Impact of herpes zoster."

Helen's experience with shingles

In her 80s, Helen was living an active life enjoying aqua-fitness, curling, yoga, and painting, but at 83, she was unexpectedly sidelined by shingles. Helen developed a painful rash on her face, neck, and scalp that disrupted her sleep and caused her to retreat from her daily routine for 10 days. She described the fatigue as "overwhelming."

Steven's experience with shingles

Steven, a healthcare worker, experienced shingles at 56 years of age during a particularly stressful time. His symptoms began at the start of a long weekend, so he wasn't able to see his doctor until the following Tuesday. He had to leave early from his second job as a restaurant server to make it to the appointment. Steven took two weeks off to recover. This time off was noteworthy for someone who rarely missed work and prided himself on his resilience. The experience shifted his perception of the risk of shingles and who it affects.

Value of vaccination to patients is bigger than relieving symptoms

From the patient perspective, the value of preventing shingles includes reducing physical and emotional pain, safeguarding function, and mitigating disruption to everyday life. This is supported by individuals' personal narratives as well as the literature on the impacts of shingles for patients.

Preventing shingles helps those at risk avoid the burning, stabbing, and electric-shock-like pain, as well as itchiness, sleep disruption, and lasting nerve pain that can occur.[57] Furthermore, anxiety, fear, frustration, and isolation is reduced when the risk of recurrence and visible symptoms are minimized.[58]

Reducing the risk of these impacts helps older adults maintain independence, continue physical activities, and avoid disruptions to daily routines like bathing, dressing, and cooking. Cognitive functioning is protected and the risk of impaired concentration and brain fog experienced by those with shingles is reduced.[59]

Preventing shingles helps people avoid missing work, volunteering, or caregiving; cancelling travel; and withdrawing from hobbies and social events. It saves people from needing to go to their primary care doctor or hospital for diagnosis and treatment, and reduces healthcare costs and burden on caregivers.[60]

Healthcare systems

Health system burden and resource use

The resource utilization and associated costs to healthcare systems for shingles include those related to treatments (e.g., medications), primary care and emergency department visits, and hospitalizations. Having complications from shingles, particularly PHN, introduces additional medications among older adults, leading to the use of multiple medications (i.e., polypharmacy) and increased risk of emergency department visits and hospitalizations.[61] For those with comorbidities, having shingles may also mean additional specialist consultations resulting from its

57 Van Oorschot and others, "A Cross-Sectional Concept Elicitation Study."
58 Van Oorschot and others.
59 Van Oorschot and others.
60 Arulnamby and others, *The Overlooked Issue of Shingles Infections*; and Public Health Agency of Canada, "Herpes zoster (shingles) vaccine."
61 Doumat and others, "The effect of polypharmacy."

impact on underlying conditions, as well as increased use of health system resources to manage their chronic conditions.[62] In Canada, it is estimated that there are 2,000 hospitalizations related to shingles and PHN every year.[63]

Over 15 years ago, the total annual cost of shingles to Canada's healthcare systems was estimated to be between $67 and $82 million.[64] In Ontario, one study from 2017 estimated that the total cost of shingles and PHN in the 2011–2012 fiscal year was $2 million.[65] In British Columbia, another study estimated that the total annual cost of shingles-associated healthcare between 1997 and 2012 was $5.5 million.[66] Given that the population of Canadians aged 50 years and older has grown since 2011 by over 3.7 million to over 15.7 million,[67] these estimated costs have likely risen, and will continue to rise as the number of Canadians over the age of 50 years increases.

Healthcare system value

The economic analysis conducted by Evaluate shows that vaccinating 80 per cent of those aged 50 years and older today would accrue over $816 million (net present value) in savings to healthcare systems over the lifespan of this cohort.[68] Ninety-five per cent of these savings are from costs averted from primary care provider and hospital visits ($774 million), with the remaining five per cent from drug costs ($41 million).[69]

Societal

Productivity loss and societal costs

The broad economic impacts of shingles stem from lost wages and decreased productivity.[70] Shingles impairs people's ability to contribute productively during the illness, whether it is at work, caregiving, or volunteering. Its pain and discomfort lead to absenteeism and reduced effectiveness (presenteeism), with greater pain and longer duration causing greater productivity loss.[71] A Canadian study from 2012 found that people who experience shingles lose an average of 57.5 productive hours and those with PHN lose an average of 159.1 hours from absenteeism and presenteeism in the first six months of experiencing the viral infection.[72] Complications from shingles such as stroke or heart attack further compound the impact on productivity.[73] Although incidence rates for shingles is lower among those under the age of 65 years than those above, the societal impacts are greater in the 50 years and older cohort due to increased costs of lost productivity from the workplace.

Economic value

As part of this project, we were able to analyze and integrate an economic evaluation using a novel model that Evaluate developed using proprietary GSK data. Evaluate has conducted similar evaluations in New Zealand and Australia.[74] For Canada, Evaluate conducted a cost-benefit analysis estimating national and provincial/territorial health impacts, health system cost savings, and wider economic benefits such as preserved productivity, informal caregiving and volunteering contributions, and income tax effects.

62 Muñoz-Quiles and others, "Risk and impact of herpes zoster."
63 Public Health Agency of Canada, "Herpes zoster (shingles) vaccine."
64 Arulnamby and others, *The Overlooked Issue of Shingles Infections*.
65 Friesen and others, "Cost of shingles."
66 Marra and others, "Increasing Incidence Associated with Herpes Zoster Infection."
67 Statistics Canada, "Population estimates on July 1."
68 GSK Canada, Data on file: 2025N569260_00.
69 GSK Canada, Data on file: 2025N569260_00.
70 Panatto and others, "Evaluation of the economic burden of herpes zoster."
71 Rampakakis and others, "Association between work time loss and quality of life"; Gater and others, "The humanistic, economic and societal burden"; and Drolet and others, "Employment related productivity loss."
72 Drolet and others, "The impact of herpes zoster."
73 Park and others, "Productivity Loss and Medical Costs Associated With Type 2 Diabetes"; Luo and others, "Labor Income Losses Associated With Heart Disease."
74 Cullen and others, *The economic value of adult vaccination*; and GSK New Zealand, *Prevention Pays*.

The model considered the vaccine's costs, the cost to administer the vaccine, and any adverse events from vaccination. (See Appendix A, Methodology.)

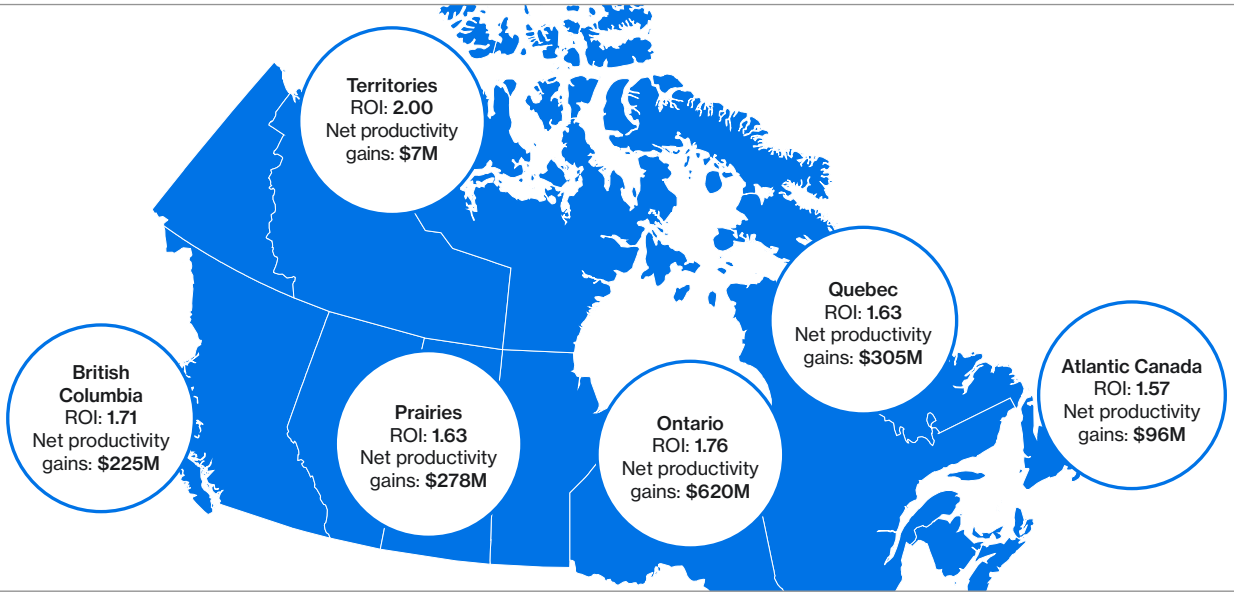
The results show that the economic benefits gained from a publicly funded shingles vaccination program exceeds the dollar amount required to be invested in a public program (i.e., a positive return on investment (ROI)).[75] The findings presented in this report are based on a model that assumes that 80 per cent of the population receives the first dose of the shingles vaccine, as this is a nationally established goal for other adult vaccines, including pneumococcal and influenza,[76] and 70 per cent receives the second dose.

The national ROI value is 1.69 for shingles vaccination in Canada among the cohort aged 50 years and older, and ranges from 1.43 to 2.00 across regions.[77] (See Exhibit 4.) This means that for every dollar invested by the government to provide publicly available vaccination for shingles, there is a corresponding benefit of $1.69 through health and productivity benefits. The scale of this value is similar to workplace mental health programs, which report an ROI of 1.62,[78] and exceeds Canadian public cardiovascular research investments at 1.21.[79]

Positive ROIs were found across all Canadian regions and for both programs targeting Canadians aged 50 years and older as well as those targeting people aged 65 years and older. (See Table 2.)

Exhibit 4

Net productivity gains and returns on investment across Canada for Canadians 50 years and older



Notes: Findings are based on a model that assumes 80 per cent coverage for first dose of shingles vaccine and 70 per cent compliance for second dose. Return on investment is the ratio of the societal benefit of the vaccination strategy (including health system savings and productivity gains) plus the individual benefit of vaccination represented by the net value of health gains, divided by the sum of the healthcare system cost of vaccination plus productivity loss from vaccination (e.g., time spent off work to be vaccinated).
Net productivity gains refers to the difference between the vaccination cohort and non-vaccination cohort in the sum of the cost of any time spent off work due to shingles, opportunity or replacement cost of any reduction in the number of hours of informal care or volunteering due to shingles, as well as the cost of time spent off work or missed opportunity for caregiving/volunteering in order to be vaccinated or due to adverse events.
Sources: Signal49 Research; GSK Canada, Data on file: 2025N569260_00.

75 GSK Canada, Data on file: 2025N569260_00.
76 Public Health Agency of Canada, "Vaccination Coverage Goals."
77 GSK Canada, Data on file: 2025N569260_00.
78 Chapman and others, *The ROI in workplace mental health programs*.
79 de Oliveira and others, "Estimating the payoffs from cardiovascular disease research."

Table 2
Cost-effectiveness ratios and return-on-investment ratios for shingles vaccination among Canadians 50+ and 65+, by region

Region	Age	Healthcare system costs of vaccination ($ millions)	Healthcare system savings ($ millions)	Value of health gains ($ millions)	Net Productivity gains ($ millions)	Return on investment
Canada	**50+**	**3798**	**816**	**4212**	**1503**	**1.69**
	65+	**1920**	**379**	**2149**	**418**	**1.53**
British Columbia	50+	540	111	603	225	1.71
	65+	279	53	315	67	1.55
Alberta, Manitoba, Saskatchewan	50+	663	135	688	278	1.63
	65+	330	61	345	78	1.46
Ontario	50+	1423	299	1635	620	1.76
	65+	705	134	818	168	1.58
Quebec	50+	898	190	988	305	1.63
	65+	473	91	522	88	1.48
New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador	50+	284	54	302	96	1.57
	65+	149	26	159	29	1.43
Yukon, Northwest Territories, Nunavut	50+	9	2	9	7	2.00
	65+	3	1	4	2	1.76

Notes: The Markov model compares a vaccination cohort (assumes 80 per cent shingles coverage for first dose and 70 per cent compliance for second dose) to a non-vaccination cohort. The model follows cohorts for their lifespan, uses a 1.5 per cent discount rate to costs and benefits, and provides outputs in net present value. Healthcare system costs of vaccination includes cost of the vaccine and cost to administer the vaccine by healthcare providers to all persons in the vaccinated cohort, and healthcare system costs associated with adverse events (e.g., physician visits).
Healthcare system savings is the sum of the difference in health system costs to the public payer for physician visits, hospital visits and hospitalizations associated with shingles, as well as costs to the private payer (i.e., out-of-pocket expenses and private health insurance) for medications for shingles.
Value of health gains refers to the sum of difference in morbidity (quality adjusted life years) and mortality (years of life lived) values between the vaccination and non-vaccination cohorts, multiplied by the assumed willingness-to-pay threshold of $50,000.
Net productivity gains refers to the difference between the vaccination cohort and non-vaccination cohort in the sum of the cost of any time spent off work due to shingles, opportunity or replacement cost of any reduction in the number of hours of informal care or volunteering due to shingles, as well as the cost of time spent off work or missed opportunity for caregiving/volunteering in order to be vaccinated or due to adverse events.
Return on investment is the ratio of the societal benefit of the vaccination strategy (including health system savings and productivity gains) plus the individual benefit of vaccination represented by the net value of health gains, divided by the sum of the healthcare system cost of vaccination plus productivity loss from vaccination (e.g., time spent off work to be vaccinated).
Sources: Signal49 Research; GSK Canada, Data on file: 2025N569260_00.

Within the ROI calculation for the cohort aged 50 years and older, it was estimated that vaccinating 80 per cent of the adult population would initially cost Canada's healthcare systems $3.798 billion (net present value). This would then accrue health system, economic, and societal benefits over the lifespan of those vaccinated: $816 million in health system savings; $1.503 billion in net productivity gains (including $1.253 billion gained in labour plus $424 million in volunteering and caregiving contributions minus $175 million in productivity losses associated with time away to get vaccinated); and $4.212 billion in decreased morbidity and mortality associated with shingles.[80]

Among Canadians 50 years and older, 28 per cent of the net productivity gain from shingles vaccination was attributed to volunteering and caregiving (ranging from 22 per cent to 34 per cent across regions). This increased to 47 per cent (ranging from 35 per cent to 57 per cent across regions) among those 65 years and older.[81]

The Evaluate analysis found that when 80 per cent of adults 50 years and older are vaccinated, governments (the main investor in vaccination) could also expect to receive $307 million in additional taxes as a result of increased productivity (i.e., the amount of federal and provincial/territorial income taxes due to continued employment).[82] This is an indirect consequence of increased wage-earning activity among those who are vaccinated for shingles.

Realizing value

This analysis indicates that there is great potential value to individuals, healthcare systems, and society in increasing access to publicly funded vaccination programs across Canada. From October to December 2025, we met with five leaders (in pharmacy, family practice, geriatrics, government policy, and healthcare system change) who play a role in implementing a vaccine program to discuss ongoing barriers and current opportunities to increase vaccination rates to help prevent shingles. We asked them questions to glean their perspectives on the shingles vaccination landscape in Canada, as well as other issues related to adult vaccination that we had identified in the literature,[83] such as limitations in vaccine delivery scope and models, and barriers to access resulting from coverage gaps.

These conversations helped to validate the main themes we had identified in the literature relating to the roles of public decision-makers, healthcare professionals, and employers of older adults.

Public sector decision-makers supporting system efficiency

Decision-makers may overlook or fail to consider the broader value of vaccination in reducing hospitalizations and long-lasting health complications.[84] System leaders told us that when health systems and policy-makers are required to make a fast decision with limited data available, short-term cost pressures tend to overshadow the long-term benefits of shingles prevention for patients and healthcare systems. Approaches such as multi-criteria decision analysis and societal perspective frameworks offer an opportunity to incorporate long-term system benefits into provincial and territorial planning and investment decisions, where not already occurring.

80 GSK Canada, Data on file: 2025N569260_00.
81 GSK Canada, Data on file: 2025N569260_00.
82 GSK Canada, Data on file: 2025N569260_00.
83 de Gomensoro and others, "Challenges in adult vaccination"; and GSK, *Ensuring equitable access*.
84 Bell and others, "Towards a Broader Assessment of Value in Vaccines."

Leaders also highlighted that limited real-time, consistently collected data on shingles incidence makes it harder to measure and communicate the full impact of vaccination. Canada does not have a surveillance system for shingles cases, so the reported burden is based on provincial/territorial datasets, which use different methods and definitions to capture healthcare encounters for shingles, do not capture untreated cases managed outside of the emergency department or hospital, and are not available for all provinces or at the local or regional levels.[85] Improved data on shingles incidence and outcomes would place all interested parties in the shingles vaccination system in a better position to align practice and policy decisions with solid evidence.

Leaders stressed that pharmacy-based and publicly funded vaccine delivery are not currently well integrated, and therefore provide multiple competing and fragmented systems.[86] This complex combination of systems creates inherent tensions in vaccine delivery at a time when pharmacy and primary care systems across Canada are looking to more closely align around patient-centred approaches to care delivery. Better integration of pharmacy-based and publicly funded delivery models for vaccines would couple vaccine delivery with broader system-level changes in pharmacy scope of practice, primary care reform, and efficiency in care delivery.

Empowering healthcare professionals

Healthcare professionals are central to vaccine delivery, yet their role differs across provinces and territories. System leaders noted that greater consistency in scope and reimbursement for prescribing and administering shingles vaccination between public and private systems would improve access and equitable uptake.[87] It was noted that pharmacists receive different reimbursement approaches depending upon who the payer for the shingles vaccine is. Also, some pharmacists may only be able to provide the shingles vaccine if paid through private insurance or "out of pocket." These types of challenges affect decisions made by both pharmacists and patients on stocking, providing, or opting to take the vaccine.

Leaders also pointed to the value of a national adult immunization schedule, stronger data on adult vaccine coverage, and integrated systems that allow providers to track vaccinations across the life course and inform point-of-care interactions, particularly for comorbidity and chronic disease management.

Barriers for shingles vaccination among adults includes not receiving a recommendation from their healthcare provider or hearing inconsistent messaging about the importance, cost, or eligibility for vaccinations.[88] Leaders highlighted that clear and coordinated public health messaging, paired with trusted recommendations from physicians and pharmacists, are needed to strengthen public awareness, confidence, and participation in shingles vaccination programs. Implementing these approaches for shingles would provide spillover benefits to other adult vaccination programs by providing the framework for effective messaging to the public.

A role for employers

As shingles causes employees to miss work or not be able to function to their full capacity (absenteeism and presenteeism),[89] employers have a vested interest in supporting shingles vaccination. Employers can boost uptake by including shingles vaccination in extended workplace health benefits for eligible workers,[90] especially as more older adults stay in, or return to, the workforce. Given the gaps between public and private coverage for shingles vaccination, leaders also noted that employers could support insurers and public health programs to ensure better alignment so that their employees do not fall between the cracks of different systems and employers would not have to deal with the economic consequences of a sicker workforce.

85 Martins and others, "Impact of a Publicly Funded Herpes Zoster Immunization Program"; and Letellier and others, "Herpes Zoster Burden in Canadian Provinces."

86 Public Health Agency of Canada, *Realizing the Future of Vaccination for Public Health*.

87 Fonseca and others, "Time for harmonization"; and Isenor and others, "Impact of pharmacists as immunizers."

88 MacDougall and others, "The challenge of vaccinating adults."

89 Drolet and others, "Employment related productivity loss"; and Singhal and others, "Work and productivity loss."

90 Rolfe, "Employers urged to consider workplace vaccine clinics."

Actionable insights

1. **Integrate shingles vaccination into national and provincial healthy aging strategies to address productivity risks across Canada.** Accountabilities for adult vaccination and healthy aging are distributed across federal and provincial bodies with distinct roles and levers. At the federal level, PHAC stewards the National Immunization Strategy (NIS), while NACI provides clinical guidance that informs the evidence base for adult immunization decisions. The National Seniors Council (NSC), which advised on adult vaccination elements of the NIS and now holds an expanded mandate on seniors' health and wellness, links federal immunization objectives with broader healthy aging priorities. Taken together, this creates an alignment point in which shingles vaccination can be situated as an exemplar of adult vaccination that supports healthy aging. This national alignment then informs provincial healthy aging strategies, where provinces and territories determine local implementation.
2. **Include shingles vaccination as part of chronic disease management.** Chronic disease management guidelines developed by disease-specific bodies (e.g., Canadian Society of Nephrology, Canadian Thoracic Society, Canadian Cardiovascular Society) can consider the role of shingles vaccination and include evidence-informed vaccine recommendations for implicated patient populations.

3. **Include shingles within the National Immunization Strategy as an exemplar of adult vaccination tools.** This measure could address regional and national coverage goals, expand universal public funding, align eligibility across provinces and territories, and ensure access to vaccination through pharmacies.
4. **Strengthen healthcare providers with delivery and data systems for shingles vaccination.** PHAC, in partnership with provinces and territories, could equip healthcare providers with integrated immunization tools, consistent adult vaccination schedules, and shared data and surveillance systems, building on the National Immunization Strategy and pan-Canadian registry efforts. Provincial ministries of health would work with primary care organizations, pharmacies, nurse practitioners, and health information partners to implement these tools, and thus support proactive provider recommendations for older adults, reduce avoidable downstream care, and embed shingles vaccination into routine preventive care to reduce strain on health systems.
5. **Invest in public awareness and employer engagement to increase vaccination uptake.** Federal, provincial, and territorial public health agencies, supported by aging and patient organizations, could lead coordinated public education efforts to address awareness gaps and misconceptions about shingles risk, while equipping healthcare providers with clear, consistent messaging to support patient conversations. Employers, benefits providers, and workplace health partners could reinforce uptake of shingles vaccination by including it in workplace health communications and benefits coverage, with targeted outreach to older workers and caregivers.

Appendix A

Methodology

Our goal with this project was to describe the direct and indirect value of shingles vaccination for older adults across Canada from economic, social, and health perspectives.

We conducted evidence scans of publicly available literature and reports, synthesized narratives from people with lived experience, integrated findings from a novel economic evaluation method, and validated our findings through conversations with health system leaders. This work afforded us a deeper understanding of the value of shingles vaccination, from which we were able to identify actionable insights for addressing shingles in Canada.

Evidence scan

We conducted purposive literature and document reviews of publicly available sources to establish the context for, and components of, the value of vaccinating older adults. We identified both academic and grey literature related to adult vaccination, limiting our search to English content from the last 10 years from within and outside of Canada, with a focus on the economic, health system, and public/patient impacts of vaccination. We identified 174 sources, of which 110 sources were included in this report. We used the findings from our literature review in the report narrative and discussion. Our findings also helped to inform our approach for synthesizing the patient narratives and for conducting the expert validation conversations.

Patient narrative synthesis

We synthesized existing transcripts from market-research conversations conducted by ThinkrBelle Inc. (a Canadian healthcare consulting company) on behalf of GSK Canada with people who had previously experienced shingles. ThinkrBelle obtained informed consent prior to collecting the narratives, which were developed for use in GSK market research. There was explicit consent for additional analysis. ThinkrBelle explored participants' awareness of shingles before diagnosis, how they learned they had shingles, and their experience with the illness. They asked consenting participants how their perceptions changed after the diagnosis, whether they had been vaccinated since, what motivated them to share their story, what they wanted others to know about shingles, and how the condition affected their daily lives and families.

ThinkrBelle provided Signal49 Research with anonymized transcripts of the personal narratives. Our goal in synthesizing these transcripts was to describe the impact of shingles and the value of shingles prevention from the patient perspective. We used transcripts from 19 conversations with individuals who had experienced shingles after the age of 50. We used NVivo 14 to code the anonymized transcripts (166 pages; 92,547 words).

We performed deductive coding on the transcripts using 19 pre-determined codes derived from the five symptom and 11 quality-of-life domains included in the conceptual model developed by Van Oorschot and colleagues,[1] as well as the three domains of value (capability, comfort, and calm) included in the strategic value-based health care framework developed by Teisberg, Wallace, and O'Hara.[2] Through this exercise we were able to connect the symptoms and quality-of-life domains to their impacts on the value domains. We synthesized these findings to describe the value that preventing shingles would have for patients.

For two of the anonymized transcripts, we drafted short narratives to include in the report, following confirmation that ThinkrBelle had obtained informed consent for this use from the respective participants. We then reached out to these individuals to confirm their approval and consent to use their stories. To protect their privacy, we have changed their names and have used stock photographs.

Economic evaluation

As part of this project, Evaluate, an Australian economic and social policy consulting company, performed an economic evaluation funded by GSK Canada. Evaluate developed a model to conduct cost-effectiveness and cost-benefit analyses on the value of shingles vaccination using GSK proprietary data. Signal49 Research supported Evaluate by providing Canadian-specific contextual information, data, and expertise, when needed.

For further information about the model and evaluation, please contact GSK Canada and reference the data on file: 2025N569260_00.

Model: Static multi-cohort Markov model (1.5 per cent discount rate on costs and benefits) whereby age- and sex-specific cohorts would flow through four different health states during their lifespan: uninfected or living with dormant varicella zoster virus; experiences the reactivation of varicella zoster virus (i.e., has shingles) but without the PHN complication; experiences reactivation of varicella zoster virus and PHN; and dies.

Scenarios: Vaccination strategy scenario (80 per cent vaccine coverage for dose 1; 70 per cent compliance for dose 2) compared to no vaccination scenario.

Populations: Canadians aged 50 years and older (base-case) and 65 years and older.

Study period: Lifespan of study cohorts.

Perspective: Societal.

1 Van Oorschot and others, "A Cross-Sectional Concept Elicitation Study."

2 Teisberg and others, "Defining and Implementing Value-Based Health Care."

Included direct and indirect costs:

- Vaccine-related healthcare system costs: Vaccine cost, cost of administering vaccine by healthcare provider, healthcare system costs associated with adverse events (e.g., physician visits).
- Vaccine-related productivity losses: Time off work to be vaccinated, time off work due to adverse events, reduced ability to offer informal care or volunteer due to adverse events.
- Vaccine-related utility losses associated with adverse events: Excess mortality due to adverse events (years of life lost, calculated as a whole year of life lost), excess morbidity due to adverse events (quality adjusted life years).
- Disease-related healthcare system costs: Physician visits, hospital visits, hospitalizations, drug costs.
- Disease-related productivity losses: Time off work due to shingles, reduced ability to offer informal care or volunteer due to adverse events.
- Disease-related utility losses associated with the shingles: Excess mortality due to shingles (years of life lost), excess morbidity due to shingles (quality adjusted life years).

Sensitivity analysis: Evaluate conducted a series of sensitivity analyses to validate the conclusions of the model. These included looking at how the ROI varied by age and sex as well as the impact of different factors within the model on the ROIs. The ROI was less than 1.5 in fewer than 25 per cent of cases. The factors with the largest impact on ROI were vaccine effectiveness, proportion of patients who experience PHN, and productivity costs associated with shingles. The factors with the smallest impact were adverse events and volunteer hours.

Health system leader validation conversations

To understand what is needed to realize the value of shingles vaccination, we organized one-hour expert validation conversations from October to December 2025 with academic and system-level leaders who have experience in pharmacy, family practice, geriatrics, policy and government, and system change. Potential leaders were identified with input from members of this project's Research Advisory Board. During the health system leader validation conversations, we asked the following open-ended questions to facilitate discussion:

- Which interested parties are most influential in driving vaccine uptake?
- What are the major challenges and opportunities for individuals in getting vaccinated?
- What are the major challenges and opportunities for the system to deliver vaccinations and vaccination programs?
- What could be leveraged or changed to implement shingles vaccination more effectively for older adults?

Discussion questions and prompts were developed based on challenges with adult vaccination described in the literature,[3] including limitations in vaccine delivery scope and models, as well as barriers and opportunities for increasing access related to private and public coverage.

The conversations were recorded and transcribed in Microsoft Teams, generating 73 pages, 24,611 words, or two hours and 15 minutes of material.

Transcripts were not coded. However, we used a hybrid thematic analysis approach to deductively (based on the barriers and opportunities identified in the literature) and inductively synthesize key themes around value.

3 de Gomensoro and others, "Challenges in adult vaccination"; GSK, *Ensuring equitable access*.

Appendix B

Bibliography

Arriagada, Paula. "The experiences and needs of older caregivers in Canada." Statistics Canada, November 24, 2020. https://www150.statcan.gc.ca/n1/pub/75-006-x/2020001/article/00007-eng.htm.

Arulnamby, A., J. Dunning, and S. K. Sinha. *The Overlooked Issue of Shingles Infections in Older Canadians, and How to Address It.* National Institute on Ageing, Toronto Metropolitan University, 2026. https://www.copdcanada.info/wp-content/uploads/go-x/u/f2f5b5ed-012d-4802-b25c-a6b98e92c93e/NIA-2026-Report-on-Shingles.pdf.

Arvin, Ann. "Aging, Immunity, and the Varicella-Zoster Virus." *The New England Journal of Medicine* 352, no. 22 (2005): 2266–67. https://doi.org/10.1056/NEJMp058091.

Ball, Jodi. *Town of Midland Age-Friendly Community Plan.* Town of Midland, 2020. https://www.midland.ca/media/wd4he10w/midland-age-friendly-community-plan-december-2020.pdf.

Barbabella, Francesco, Eralba Cela, Marco Socci, Davide Lucantoni, Marina Zannella, and Andrea Principi. "Active Ageing in Italy: A Systematic Review of National and Regional Policies." *International Journal of Environmental Research and Public Health* 19, no. 1 (2022): 600. https://doi.org/10.3390/ijerph19010600.

Bell, Eleanor, Margherita Neri, and Lotte Steuten. "Towards a Broader Assessment of Value in Vaccines: The BRAVE Way Forward." *Applied Health Economics and Health Policy* 20 (2022): 105–17. https://doi.org/10.1007/s40258-021-00683-z.

CanAge. *Adult Vaccination in Canada: Cross-Country Report Card 2022-2023.* CanAge, 2023. https://canage.ca/wp-content/uploads/2023/09/Adult-Vaccination-in-Canada-EN-2022-2023-CanAge.pdf.

Chapman, Sarah, Ariel Kangasniemi, Laura Maxwell, and Marie Sereneo. *The ROI in workplace mental health programs: Good for people, good for business.* Deloitte Development LLC, 2019. https://www.deloitte.com/us/en/insights/topics/talent/workplace-mental-health-programs-worker-productivity.html.

Chen, Ning, Qifu Li, Jie Yang, Muke Zhou, Dong Zhou, and Li He. "Antiviral treatment for preventing postherpetic neuralgia." *Cochrane Database of Systematic Reviews* 2014, no. 2 (2014): CD006866. https://doi.org/10.1002/14651858.CD006866.pub3.

City of Calgary. "Age-Friendly Calgary." City of Calgary, n.d. https://www.calgary.ca/content/www/en/home/social-services/seniors/age-friendly-strategy.html.

Conference Board of Canada, The (CBoC). *Social and Economic Value of Better Heart Health: Measuring Labour Market Participation, Volunteering, and Caregiving.* CBoC, February 21, 2024. https://www.signal49.ca/product/social-and-economic-value-of-better-heart-health/.

Cullen, David, Alastair Furnival, and Catherine McGovern. *The economic value of adult vaccination in Australia.* GSK Australia, October 2024. https://au.gsk.com/media/gdfpcfog/the-economic-value-of-adult-vaccination-in-australia-october-2024-final.pdf.

Cunningham, Anthony L., Himal Lal, Martina Kovac, Roman Chlibek, Shinn-Jang Hwang, Javier Díez-Domingo, Olivier Godeaux, and others. "Efficacy of the Herpes Zoster Subunit Vaccine in Adults 70 Years of Age or Older." *The New England Journal of Medicine* 375, no. 11 (2016): 1019–32. https://doi.org/10.1056/NEJMoa1603800.

de Gomensoro, Eduardo, Giuseppe Del Giudice, and T. Mark Doherty. "Challenges in adult vaccination." *Annals of Medicine* 50, no. 3 (2018): 181–92. https://doi.org/10.1080/07853890.2017.1417632.

de Oliveira, Claire, Hai V. Nguyen, Harindra C. Wijeysundera, William W. L. Wong, Gloria Woo, Paul Grootendorst, Peter P. Liu, and others. "Estimating the payoffs from cardiovascular disease research in Canada: an economic analysis." *CMAJ Open* 1, no. 2 (July 25, 2013): E83–90. https://doi.org/10.9778/cmajo.20130003.

District of Squamish. *Age Friendly Community Plan.* District of Squamish, 2025. https://squamish.ca/assets/Master-Plans/Age-Friendly-Community-Plan.pdf.

Doumat, George, Darine Daher, Mira Itani, Lina Abdouni, Khalil El Asmar, and Georges Assaf. "The effect of polypharmacy on healthcare services utilization in older adults with comorbidities: a retrospective cohort study." *BMC Primary Care* 24, no. 120 (May 26, 2023). https://doi.org/10.1186/s12875-023-02070-0.

Drolet, Mélanie, Marc Brisson, Kenneth E. Schmader, Myron J. Levin, Robert Johnson, Michael N. Oxman, David Patrick, Caty Blanchette, and James A. Mansi. "The impact of herpes zoster and postherpetic neuralgia on health-related quality of life: a prospective study." *CMAJ* 182, no. 16 (November 9, 2010): 1731–36. https://www.cmaj.ca/content/182/16/1731.

Drolet, Mélanie, Myron J. Levin, Kenneth E. Schmader, Robert Johnson, Michael N. Oxman, David Patrick, Simon Olivier Fournier, James A. Mansi, and Marc Brisson. "Employment related productivity loss associated with herpes zoster and postherpetic neuralgia: A 6-month prospective study." *Vaccine* 30, no. 12 (March 9, 2012): 2047–50. https://doi.org/10.1016/j.vaccine.2012.01.045.

El Banhawi, Hania, Sulayman Chowdhury, Margherita Neri, Sian Besley, Eleanor Bell, Simon Brassel, and Lotte Steuten. *The Socio-Economic Value of Adult Immunisation Programmes.* OHE Contract Research Report: Office of Health Economics, 2024. https://www.ohe.org/publications/the-socio-economic-value-of-adult-immunisation-programmes/.

Employment and Social Development Canada. “Promoting the labour force participation of older Canadians - Promising initiatives.” Government of Canada, last modified August 27, 2024. https://www.canada.ca/en/employment-social-development/corporate/seniors-forum-federal-provincial-territorial/labour-force-participation.html.

Erskine, Nathaniel, Hoang Tran, Leonard Levin, Christine Ulbricht, Joyce Fingeroth, Catarina Kiefe, Robert J. Goldberg, and Sonal Singh. “A systematic review and meta-analysis on herpes zoster and the risk of cardiac and cerebrovascular events.” *PLoS ONE* 12, no. 7 (July 27, 2017): e0181565. https://doi.org/10.1371/journal.pone.0181565.

First Nations Health Authority. “Recent Changes to Coverage of Shingrix® Vaccine and FreeStyle® Libre 2 Glucose Monitor.” First Nations Health Authority, September 1, 2023. https://www.fnha.ca:443/benefits/health-benefits-news/recent-changes-to-coverage-of-shingrix-vaccine-and-freestyle-libre-2-glucose-monitor.

Fonseca, Joseph, Jane Pearson Sharpe, Sherilyn K. D. Houle, and Nancy M. Waite. “Time for harmonization: Pharmacists as immunizers across Canadian jurisdictions.” *Canadian Pharmacists Journal* 152, no. 6 (October 20, 2019): 395–400. https://doi.org/10.1177/1715163519879179.

Friesen, Kevin J., Dan Chateau, Jamie Falk, Silvia Alessi-Severini, and Shawn Bugden. “Cost of shingles: population based burden of disease analysis of herpes zoster and postherpetic neuralgia.” *BMC Infectious Diseases* 17, no. 69 (January 13, 2017). https://doi.org/10.1186/s12879-017-2185-3.

Gater, Adam, Mathieu Uhart, Rachael McCool, and Emmanuelle Préaud. “The humanistic, economic and societal burden of herpes zoster in Europe: a critical review.” *BMC Public Health* 15, no. 193 (February 27, 2015). https://doi.org/10.1186/s12889-015-1514-y.

George, Sydney, Jessica Regan, Amnah Awan, Meaghan O’Connor, April Foster, Kimberly Raymond, Iris Gorfinkel, and Shelly A. McNeil. “Attitudes, barriers, and facilitators to adherent completion of the recombinant zoster vaccine regimen in Canada: Qualitative interviews with healthcare providers and patients.” *Human Vaccines & Immunotherapeutics* 20, no. 1 (March 19, 2024): 2317595. https://doi.org/10.1080/21645515.2024.2317595.

Gianfredi, Vincenza, Daniele Nucci, Flavia Pennisi, Stefania Maggi, Nicola Veronese, and Pinar Soysal. “Aging, longevity, and healthy aging: the public health approach.” *Aging Clinical and Experimental Research* 37, no. 125 (April 17, 2025). https://doi.org/10.1007/s40520-025-03021-8.

Gilmour, Heather. “Factors associated with shingles and pneumococcal vaccination among older Canadians.” *Health Reports*, Statistics Canada, January 17, 2024. https://www.doi.org/10.25318/82-003-x202400100002-eng.

Gouvernement du Québec. *Pride in Aging - Government Action Plan 2024-2029.* Gouvernement du Québec, last modified August 8, 2024. https://publications.msss.gouv.qc.ca/msss/document-003734/.

—. “Shingles vaccination.” Gouvernement du Québec, last modified February 2, 2026. https://www.quebec.ca/en/health/advice-and-prevention/vaccination/shingles-vaccination-program.

Government of Alberta. *A collective approach: Alberta’s strategy for preventing and addressing elder abuse 2022-2027.* Government of Alberta, July, 2022. https://open.alberta.ca/dataset/08be6f06-fb26-48f0-9c3d-a8c25ebb080a/resource/91537f0b-edcf-4bff-86a3-3026767ba5f7/download/sh-alberta-strategy-preventing-addressing-elder-abuse-20222027.pdf.

Government of British Columbia, Ministry of Health. *Age Forward: British Columbia’s 50+ Health Strategy and 3-Year Action Plan.* Government of British Columbia, September 18, 2024. https://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/public-health/age-forward-strategy/age_forward_bc_50_health_strategy_and_action_plan_-_digital_version_-_final.pdf.

Government of New Brunswick. *We are all in this together: An Aging Strategy for New Brunswick.* Province of New Brunswick, January 2017. https://www2.gnb.ca/content/dam/gnb/Departments/sd-ds/pdf/Seniors/AnAgingStrategyForNB.pdf.

Government of Newfoundland and Labrador. *Seniors’ Health and Well-Being Plan for Newfoundland and Labrador.* Government of Newfoundland and Labrador, July 24, 2024. https://wellbeingnl.ca/wp-content/uploads/2024/07/24150-Seniors-Health-and-Well-Being-Plan-July-29-v2-1.pdf.

—. “Public Advisory: Shingles Vaccine Now Available for Eligible Residents.” News release, June 2, 2025. https://www.gov.nl.ca/releases/2025/health/0602n07/.

Government of Northwest Territories. *Government of the Northwest Territories Seniors’ Strategic Framework.* Government of Northwest Territories, August 2023. https://www.hss.gov.nt.ca/sites/hss/files/resources/gnwt-seniors-strategic-framework.pdf.

Government of Nova Scotia, Department of Seniors. *Shift: Nova Scotia’s Action Plan for an Aging Population.* Province of Nova Scotia, 2017. https://novascotia.ca/shift/shift-action-plan.pdf.

—. “Nova Scotia Shingles Immunization Program: Information for Health Care Professionals.” Government of Nova Scotia, May 2025.

Government of Nunavut. *Aging with Dignity: Elders and Seniors Strategy.* Government of Nunavut, 2024. https://assembly.nu.ca/sites/default/files/2024-03/EIA%20Elder%20Strategy%20EN%20FINAL_print.pdf.

Government of Ontario. *Aging with Confidence: Ontario’s Action Plan for Seniors.* Government of Ontario, November 2017. https://files.ontario.ca/ontarios_seniors_strategy_2017.pdf.

Government of Ontario, Ministry of Health. “Ontario Publicly Funded Shingles (Herpes Zoster) Immunization Program: Shingrix Vaccine Information for Patients.” Government of Ontario, last modified February 15, 2024. https://www.ontario.ca/files/2024-03/moh-shingrix-patient-fact-sheet-en-2024-02-15_0.pdf.

Government of Prince Edward Island. *Promoting Wellness, Preserving Health: A Provincial Action Plan for Seniors, Near Seniors, and Caregivers Living on Prince Edward Island.*

Government of Prince Edward Island, 2018. https://www.princeedwardisland.ca/sites/default/files/publications/dhw_promoting_wellness_preserving_health_action_plan.pdf.

Government of Yukon. *Yukon Aging in Place Action Plan.* Government of Yukon, September 17, 2020. https://yukon.ca/sites/default/files/hss/hss-imgs/yg_-_hss_-_aging_in_place_action_plan_-_large-print_-_en_fnl_online.pdf.

—. "Shingles vaccine program expanded." News release, December 20, 2021. https://open.yukon.ca/information/9a5f1a39-3ef6-4bd8-a118-5c507fda8df9/resource/e36559e0-48fc-42ca-85c8-916a21c71f35/download/21-489.html.

GSK. *Ensuring equitable access to adult vaccines across Canada. Position Paper.* GSK, April 2023.

GSK New Zealand. *Prevention Pays: The Economic Value of Adult Vaccination.* GSK New Zealand, May 2025. https://www.gsk.com/media/cahdc43t/economic-value-of-adult-vaccination-in-new-zealand.pdf.

Hahmann, Tara. "Volunteering counts: Formal and informal contributions of Canadians in 2018." Statistics Canada, April 23, 2021. https://www150.statcan.gc.ca/n1/pub/75-006-x/2021001/article/00002-eng.htm.

Indigenous Services Canada. "Non-Insured Health Benefits program updates." Government of Canada, last modified April 22, 2026. https://www.sac-isc.gc.ca/eng/1578079214611/1578079236012.

IQVIA Canada. *Understanding Current Immunization Funding, Decision-Making, and Gaps in Vaccine Access and Coverage in Canada. Final Report.* BIOTECanada, May 2023. https://www.biotech.ca/wp-content/uploads/2023/06/BIOTECanada_Vaccine-Funding-and-Access-Gap_Final-Report_May-2023.pdf.

—. *The Unmet Value of Vaccines in Canada. Final Report.* Adult Vaccines Alliance, October 8, 2024. https://static1.squarespace.com/static/64a5d9ad28fcd800b6d17d4a/t/6716cf23a1822100f5c8b425/1757513774637/Adult+Vaccine+Alliance+-+The+Unmet+Value+of+Vaccines+in+Canada+-+Oct+2024+-+English.pdf.

Isenor, J. E., N. T. Edwards, T. A. Alia, K. L. Slayter, D. M. MacDougall, S. A. McNeil, and S. K. Bowles. "Impact of pharmacists as immunizers on vaccination rates: A systematic review and meta-analysis." *Vaccine* 34, no. 47 (November 2016): 5708–23. https://doi.org/10.1016/j.vaccine.2016.08.085.

Kawai, Kosuke, Berhanu G. Gebremeskel, and Camilo J. Acosta. "Systematic review of incidence and complications of herpes zoster: towards a global perspective." *BMJ Open* 4, no. 6 (2014): e004833. https://doi.org/10.1136/bmjopen-2014-004833.

Kimberlin, David W., and Richard J. Whitley. "Varicella–Zoster Vaccine for the Prevention of Herpes Zoster." *The New England Journal of Medicine* 356, no. 13 (March 29, 2007): 1338–43. https://doi.org/10.1056/NEJMct066061.

La Presse Canadienne. "Quebec expands offer of free shingles vaccine to those 75 and older." *The Gazette*, April 29, 2024. https://montrealgazette.com/news/quebec/quebec-expands-offer-of-free-shingles-vaccine-to-those-75-and-older.

Lal, Himal, Anthony L. Cunningham, Olivier Godeaux, Roman Chlibek, Javier Diez-Domingo, Shinn-Jang Hwang, Myron J. Levin, and others. "Efficacy of an Adjuvanted Herpes Zoster Subunit Vaccine in Older Adults." *The New England Journal of Medicine* 372, no. 22 (May 28, 2015): 2087–96. https://doi.org/10.1056/NEJMoa1501184.

Letellier, Marie-Claude, Rachid Amini, Vladimir Gilca, Gisele Trudeau, and Chantal Sauvageau. "Herpes Zoster Burden in Canadian Provinces: A Narrative Review and Comparison with Quebec Provincial Data." *Canadian Journal of Infectious Diseases & Medical Microbiology* (October 21, 2018): 3285327. https://doi.org/10.1155/2018/3285327.

Lin, S. Y., J. H. Liu, H. C. Yeh, C. L. Lin, I. J. Tsai, P. C. Chen, F. C. Sung, and others. "Association between herpes zoster and end stage renal disease entrance in chronic kidney disease patients: a population-based cohort study." *European Journal of Clinical Microbiology & Infectious Diseases* 33 (May 17, 2014): 1809–15. https://doi.org/10.1007/s10096-014-2143-6.

Lu, Ping, Lingyun Cui, and Xinghu Zhang. "Stroke risk after varicella-zoster virus infection: a systematic review and meta-analysis." *Journal of NeuroVirology* 29 (May 23, 2023): 449–59. https://doi.org/10.1007/s13365-023-01144-0.

Lukas, Kati, Alexander Edte, and Isabelle Bertrand. "The impact of herpes zoster and post-herpetic neuralgia on quality of life: patient-reported outcomes in six European countries." *Journal of Public Health* 20 (2012): 441–51. https://doi.org/10.1007/s10389-011-0481-8.

Luo, Feijun, Grace Chapel, Zhiqiu Ye, Sandra L. Jackson, and Kakoli Roy. "Labor Income Losses Associated With Heart Disease and Stroke From the 2019 Panel Study of Income Dynamics." *JAMA Network Open* 6, no. 3 (2023): e232658. https://doi.org/10.1001/jamanetworkopen.2023.2658.

MacDougall, D. M., B. A. Halperin, D. MacKinnon-Cameron, S. A. McNeil, J. M. Langley, and S. A. Halperin. "The challenge of vaccinating adults: attitudes and beliefs of the Canadian public and healthcare providers." *BMJ Open* 5, no. 9 (2015): e009062. https://doi.org/10.1136/bmjopen-2015-009062.

Marra, Fawziah, Kamalpreet Parhar, Bill Huang, and Nirma Vadlamudi. "Risk Factors for Herpes Zoster Infection: A Meta-Analysis." *Open Forum Infectious Diseases* 7, no. 1 (2020): ofaa005. https://doi.org/10.1093/ofid/ofaa005.

Marra, Fawziah, Mei Chong, and Mehdi Najafzadeh. "Increasing Incidence Associated with Herpes Zoster Infection in British Columbia, Canada." *BMC Infectious Diseases* 16, no. 1 (January 2020): ofaa005. https://doi.org/10.1186/s12879-016-1898-z.

Martel, Laurent. "The labour force in Canada and its regions: Projections to 2036." *Insights on Canadian Society*, Statistics Canada, March 20, 2019. https://www150.statcan.gc.ca/n1/pub/75-006-x/2019001/article/00004-eng.htm.

Martins, Diana, Daniel McCormack, Mina Tadrous, Tara Gomes, Jeffrey C Kwong, Muhammad M. Mamdani, Sarah A. Buchan, and others. “Impact of a Publicly Funded Herpes Zoster Immunization Program on the Burden of Disease in Ontario, Canada: A Population-based Study.” *Clinical Infectious Diseases* 72, no. 2 (January 15, 2021): 279–84. https://doi.org/10.1093/cid/ciaa014.

Minassian, Caroline, Sara L. Thomas, Liam Smeeth, Ian Douglas, Ruth Brauer, and Sinéad M. Langan. “Acute Cardiovascular Events after Herpes Zoster: A Self-Controlled Case Series Analysis in Vaccinated and Unvaccinated Older Residents of the United States.” *PLoS Medicine* 12, no. 12 (December 15, 2015): e1001919. https://doi.org/10.1371/journal.pmed.1001919.

Morissette, René, and Feng Hou. “Employment by choice and necessity among Canadian-born and immigrant seniors.” *Economic and Social Reports*, April 24, 2024. https://www150.statcan.gc.ca/n1/pub/36-28-0001/2024004/article/00002-eng.htm.

Mortimer, Kevin J., Alvaro A. Cruz, Ingrid T. Sepúlveda-Pachón, Anamaria Jorga, Hilde Vroling, and Charles Williams. “Global herpes zoster burden in adults with asthma: a systematic review and meta-analysis.” *European Respiratory Journal* 64, no. 2 (2024): 2400462. https://doi.org/10.1183/13993003.00462-2024.

Muñoz-Quiles, Cintia, Mónica López-Lacort, F. Javier Ampudia-Blasco, and Javier Díez-Domingo. “Risk and impact of herpes zoster on patients with diabetes: A population-based study, 2009–2014.” *Human Vaccines & Immunotherapeutics* 13, no. 11 (November 22, 2017): 2606–11. https://doi.org/10.1080/21645515.2017.1368600.

NEJM Catalyst. “What Is Value-Based Healthcare?” *NEJM Catalyst* (January 1, 2017). https://catalyst.nejm.org/doi/full/10.1056/CAT.17.0558.

Osamu, Sawaji. “Measures to Address Japan’s Aging Society.” Government of Japan, February 2021. https://www.gov-online.go.jp/eng/publicity/book/hlj/html/202102/202102_09_en.html.

Panatto, Donatella, Nicola Luigi Bragazzi, Emanuela Rizzitelli, Paolo Bonanni, Sara Boccalini, Giancarlo Icardi, Roberto Gasperini, and Daniela Amicizia. “Evaluation of the economic burden of herpes zoster (HZ) infection: A systematic literature review.” *Human Vaccines & Immunotherapeutics* 11, no. 1 (2014): 245–62. https://doi.org/10.4161/hv.36160.

Park, Joohyun, Elizabeth Bigman, and Ping Zhang. “Productivity Loss and Medical Costs Associated With Type 2 Diabetes Among Employees Aged 18–64 Years With Large Employer-Sponsored Insurance.” *Diabetes Care* 45, no. 11 (2022): 2553–60. https://doi.org/10.2337/dc22-0445.

Prime Minister of Canada. “Mandate Letter.” Office of the Prime Minister, May 21, 2025. https://www.pm.gc.ca/en/mandate-letters/2025/05/21/mandate-letter.

Public Health Agency of Canada. “Investing In Prevention - The Economic Perspective” (archived). Government of Canada, last modified June 20, 2017. https://www.canada.ca/en/public-health/services/health-promotion/population-health/investing-prevention-economic-perspective-key-findings.html.

—. “Updated Recommendations on the Use of Herpes Zoster Vaccines.” Government of Canada, 2018. https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/healthy-living/updated-recommendations-use-herpes-zoster-vaccines-eng.pdf.

—. “Vaccine uptake in Canadian adults 2021.” Government of Canada, last modified July 21, 2022. https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/highlights-2020-2021-seasonal-influenza-survey/full-report.html.

—. “Vaccination Coverage Goals and Vaccine Preventable Disease Reduction Targets by 2025.” Government of Canada, last modified August 16, 2022. https://www.canada.ca/en/public-health/services/immunization-vaccine-priorities/national-immunization-strategy/vaccination-coverage-goals-vaccine-preventable-diseases-reduction-targets-2025.html.

—. “Adult National Immunization Coverage Survey (aNICS): 2023 results.” Government of Canada, last modified January 17, 2024. https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/adult-national-immunization-coverage-survey-2023-results.html.

—. *Realizing the Future of Vaccination for Public Health: The Chief Public Health Officer of Canada’s Report on the State of Public Health in Canada 2024.* Government of Canada, last modified October 24, 2024. https://www.canada.ca/en/public-health/corporate/publications/chief-public-health-officer-reports-state-public-health-canada/state-public-health-canada-2024/report.html.

—. “Summary of NACI statement of May 14, 2025: Updated Recommendations on Herpes Zoster Vaccination for Adults Who Are Immunocompromised.” Government of Canada, last modified June 10, 2025. https://www.canada.ca/en/public-health/services/publications/vaccines-immunization/national-advisory-committee-immunization-summary-updated-recommendations-herpes-zoster-vaccination-adults-immunocompromised.html.

—. “Herpes zoster (shingles) vaccine: Canadian Immunization Guide.” Government of Canada, last modified June 11, 2025. https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-8-herpes-zoster-(shingles)-vaccine.html.

—. “Provincial and territorial routine vaccination programs for healthy, previously immunized adults.” Government of Canada, last modified January 23, 2026. https://www.canada.ca/en/public-health/services/immunization-vaccines/routine-vaccination-healthy-previously-immunized-adult.html.

Rampakakis, Emmanouil, Melissa Stutz, Kosuke Kawai, Tsen-Fang Tsai, Hee Jin Cheong, Jittima Dhitavat, Alejandro Ortiz-Covarrubias, and others. “Association between work time loss and quality of life in patients with Herpes Zoster: a pooled analysis of the MASTER studies.” *Health and Quality of Life Outcomes* 15, no. 11 (January 18, 2017): 1526. https://doi.org/10.1186/s12955-017-0588-x.

Rodrigues, Charlene M. C., and Stanley A. Plotkin. “Impact of Vaccines; Health, Economic and Social Perspectives.” *Frontiers in Microbiology* 11 (July 2020): 1526. https://doi.org/10.3389/fmicb.2020.01526.

Rolfe, Kelsey. “Employers urged to consider workplace vaccine clinics in chronic disease management.” Benefits Canada, March 10, 2025. https://www.benefitscanada.com/events/conference-coverage/employers-urged-to-consider-workplace-vaccine-clinics-in-chronic-disease-management/.

Schaffner, William, Susan J. Rehm, and Thomas M. File Jr. “Keeping Our Adult Patients Healthy and Active: The Role of Vaccines across the Lifespan.” *The Physician and Sportsmedicine* 38, no. 4 (2010): 35–47. https://doi.org/10.3810/psm.2010.12.1823.

Signal49 Research. “Economic Prosperity—January 2025.” Signal49 Research, January 29, 2025. https://www.signal49.ca/product/economic-prosperity_jan2025/.

Silva, Sandra. “How Long Does Shingles Last? What to Expect.” *Healthline*, August 24, 2017. https://www.healthline.com/health/how-long-does-shingles-last.

Singhal, Puneet K., Charles Makin, James Pellissier, Lina Sy, Ron White, and Patricia Saddier. “Work and productivity loss related to herpes zoster.” *Journal of Medical Economics* 14, no. 5 (August 13, 2011): 639–45. https://doi.org/10.3111/13696998.2011.607482.

Sollie, Martin, Pernille Jepsen, and Jens A. Sørensen. “Patient-reported quality of life in patients suffering from acute herpes zoster—a systematic review with meta-analysis.” *British Journal of Pain* 16, no. 4 (2022): 404–19. https://doi.org/10.1177/20494637211073050.

Statistics Canada. “Health outcomes.” Government of Canada, last modified March 11, 2025. https://www150.statcan.gc.ca/n1/pub/82-570-x/2024001/section2-eng.htm#a3.

—. “Population estimates on July 1, by age and gender.” Table 17-10-0005-01. Government of Canada, September 24, 2025. https://doi.org/10.25318/1710000501-eng.

—. “Health-adjusted life expectancy in Canada: Recent trends at birth and age 65 years, 2019, 2020 and 2023.” *The Daily*, January 9, 2026. https://www150.statcan.gc.ca/n1/daily-quotidien/260109/dq260109b-eng.htm.

—. “Retirement age by class of worker, annual.” Table 14-10-0060-01. Government of Canada, January 9, 2026. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410006001.

—. “Labour force characteristics by gender and detailed age group, annual.” Table 14-10-0327-01. Government of Canada, January 9, 2026. https://doi.org/10.25318/1410032701-eng.

—. “Projected population, by projection scenario, age and sex, as of July 1 (x 1,000).” Table 17-10-0057-01. Government of Canada, January 27, 2026. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710005701.

Strezova, Ana, Javier Díez Domingo, Anthony L. Cunningham, Takashi Etof, Charles Andrewsg, Clovis Arnsh, Eun-Ju Chooi, and others. “Final analysis of the ZOE-LTFU trial to 11 years post-vaccination: efficacy of the adjuvanted recombinant zoster vaccine against herpes zoster and related complications.” *eClinicalMedicine* 83 (May 2025): 103241. https://doi.org/10.1016/j.eclinm.2025.103241.

Teisberg, Elizabeth, Scott Wallace, and Sarah O’Hara. “Defining and Implementing Value-Based Health Care: A Strategic Framework.” *Academic Medicine* 95, no. 5 (May 2020): 682–85. https://doi.org/10.1097/ACM.0000000000003122.

United Nations (UN). “UN Decade of Healthy Ageing: The Platform.” UN, n.d. https://www.decadeofhealthyageing.org.

U.S. Centers for Disease Control and Prevention (CDC). “Shingles Symptoms and Complications.” CDC, April 19, 2024. https://www.cdc.gov/shingles/signs-symptoms/index.html.

Van Oorschot, Desirée, Ashleigh McGirr, Philibert Goulet, Patricia Koochaki, Ramya Pratiwadi, Selam Shah, and Desmond Curran. “A Cross-Sectional Concept Elicitation Study to Understand the Impact of Herpes Zoster on Patients’ Health-Related Quality of Life.” *Infectious Diseases and Therapy* 11, no. 1 (2022): 501–16. https://doi.org/10.1007/s40121-021-00581-w.

Veterans Affairs Canada. “SHINGRIX SUSPENSION 50MCG/0.5ML.” Government of Canada, last modified June 3, 2025. https://www.veterans.gc.ca/en/node/188380.

Weinke, Thomas, Alexander Edte, Sonja Schmitt, and Kati Lukas. “Impact of herpes zoster and post-herpetic neuralgia on patients’ quality of life: a patient-reported outcomes survey.” *Journal of Public Health* 18, no. 4 (March 21, 2010): 367–74. https://doi.org/10.1007/s10389-010-0323-0.

Welsby, P. D. “Chickenpox, chickenpox vaccination, and shingles.” *Postgraduate Medical Journal* 82, no. 967 (May 2006): 351–52. https://doi.org/10.1136/pgmj.2005.038984.

Wray, Dana, Jane Badets, Norah Keating, and Janet Fast. “Canada’s Care Economy: A Conceptual Framework.” Government of Canada, November 29, 2023. https://www150.statcan.gc.ca/n1/pub/89-652-x/89-652-x2023002-eng.htm.

Yang, Quanhe, Mary G. George, Anping Chang, Xin Tong, Robert Merritt, and Yuling Hong. “Effect of herpes zoster vaccine and antiviral treatment on risk of ischemic stroke.” *Neurology* 95, no. 6 (August 11, 2020): e708–17. https://doi.org/10.1212/WNL.0000000000010028.

Yang, Ya-Wen, Yi-Hua Chen, Kuo-Hsien Wang, Chen-Yi Wang, and Hui-Wen Lin. “Risk of herpes zoster among patients with chronic obstructive pulmonary disease: a population-based study.” *CMAJ* 183, no. 5 (March 22, 2011): E275–80. https://www.cmaj.ca/content/183/5/e275.

Yarr, Kevin. “P.E.I. lowers age for free shingles vaccine.” *CBC News*, September 16, 2024. https://www.cbc.ca/lite/story/1.7324317.

Acknowledgements

This research was prepared with financial support from GSK Canada.

Many Signal49 Research colleagues helped bring this research to life. Eddy Nason, Director, MPhil, conceived this research project and provided overall project direction, framing, and critical review. Maaike de Vries, Senior Research Associate, PhD, was the lead researcher. Bambi Tinuoye, Research Analyst, MHIS, helped to execute the work. We thank Michael Burt, Vice-President, MA, and Leslie Twilley, Chief Research Officer, PhD, MBA, for reviewing and providing feedback on drafts of this report. This output was designed by the Design Services team at Signal49 Research.

Signal 49 Research carried out the expert validation conversations. We thank the five leaders who took the time to participate in these conversations.

ThinkrBelle provided anonymized transcripts of the personal narratives; Signal49 summarized the transcripts for use in this report. We thank the 19 individuals who shared their experience with shingles and the two individuals who contributed their stories for inclusion in this report.

Evaluate did the cost-benefit analysis. We thank the following individuals:

- **Alastair Furnival**, Partner, Evaluate
- **David Cullen**, Partner, Evaluate

We also wish to thank the following members of our Research Advisory Board who supported this research:

- **Ajit Johal**, Founder and Clinical Director, Immunize.io
- **Alastair Furnival**, Partner, Evaluate
- **Nancy Waite**, Professor, School of Pharmacy, University of Waterloo
- **Bryan Tennant**, Scientific Director—Canada, Medical Affairs, GSK

Healthy Aging and Building Economic Resilience: The Value of Shingles Vaccination
Signal49 Research

To cite this research: Research, Signal49. *Healthy Aging and Building Economic Resilience: The Value of Shingles Vaccination.* Ottawa: Signal49 Research, 2026.

Where knowledge inspires action

Signal49
RESEARCH

PUBLICATION P-02059-N1Z3V3
PRICE: Complimentary

signal49.ca