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Policy Brief

Evidence-based HPV vaccination policy in Canada

Rethinking how to achieve cervical cancer elimination goals by 2040

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About Bucci-Hepworth Health Services Inc.
Bucci-Hepworth Health Services Inc. is an award winning team of senior level consultants with more than twenty years of experience in intelligence management, environmental health, public health, and inter-health systems policy and programs at all levels of development, implementation, and evaluation. To learn more about us, visit bhhealthservices.com

About this policy brief
This policy brief aims to synthesize the best available evidence to support the needs of policymakers and health system leaders. Rather than advocating for a specific position, it presents a clear overview of current knowledge surrounding HPV vaccination policy as a strategic tool for eliminating cervical cancer in Canada. Additionally, it offers key messages to inform future evidence-based health policy and enhance consideration of effective public health strategies.

By contributing fresh insights and innovative approaches, this brief adds to the evolving body of knowledge shaping Canada's action plan to eliminate cervical cancer. It emphasizes the importance of ensuring that all stakeholders have access to emerging evidence and novel solutions that can drive progress toward this critical public health goal.

Methodology
The World Health Organization (WHO) defines health policy as the 'decisions, plans, and actions (inactions) undertaken to achieve specific health care goals within a society or undertaken by a set of institutions and organisations, at national, state and local level, to advance the public's health.'[1] The context(s), actor(s), content and process(es) by which health policy is made is often very complex.

Despite the complexity of health policy making, it is consequential that new primary and systematic evidence inform health policy. This policy brief presents a review of the literature performed in 2024 to understand what is known about the following policy areas identified as new components of Canada's comprehensive cervical cancer elimination strategy: 1) one dose HPV vaccination; and 2) immunization information systems and registry data completeness.

All articles published since 2007 were considered in this review. The expanded version of the health policy triangle (HPT) framework by Walt and Gilson is used to present the findings of the literature review in a systematic way.[2]

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[1] World Health Organisation (WHO) 2020. Health policy; O'Brien GL, Sinnott SJ, Walshe V, Mulcahy M, Byrne S. Health policy triangle framework: Narrative review of the recent literature. Health Policy Open. 2020;6(1):100016.
[2] Walt G, Shiffman J, Schneider H, Murray SF, Brugha R, Gilson L 'Doing' health policy analysis: methodological and conceptual reflections and challenges. Health Policy and Planning. 2008;23(5);308–317.

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Policy Communication Highlights

- Canada has pledged to eliminate cervical cancer through a national action plan that adheres to the World Health Organization's (WHO) global call to eliminate the disease worldwide by 2040 (CPAC, 2020).
- Part of the national action plan is to raise awareness about HPV vaccination publicly funded through a gender-neutral program delivered in school clinics. The vaccine provided is an
- effective 9-valent product, which is proven to provide almost 100% protection. The vaccine is offered as early as nine years of age and up to fifteen years of age depending on the province or territory.
- Individuals may also be vaccinated or finish an incomplete series up to age 26 or 27 years depending on the jurisdiction. Individuals at high risk of HPV infection are recommended for vaccination and anyone who wants to receive the vaccine but missed the school program can be vaccinated by a health care provider.
- The National Advisory Committee on Immunization (NACI) – the national expert body that provides guidance on uses of approved vaccines in Canada - updated its recommendations on the usage of the 9-valent HPV vaccine to increase the age of eligibility and reduce the number of vaccine doses to one for improving vaccination initiation in children.
- There is a significant effort and urgency to shift HPV vaccination policy towards a one-dose approach. A one-dose HPV vaccination policy has the potential to yield health benefits and is proven good value for money. However, there are key issues associated with this policy that warrant further discussion.
    - The one-dose HPV vaccination policy is currently an off-label recommendation. Off-label usage of vaccines is not uncommon practice but may be a policy challenge for province and territory implementation.
    - While international studies have demonstrated the potential for a one-dose HPV vaccination policy to reduce the prevalence of cervical cancer, it is associated with lower efficacy and durability.
    - The are several limitations associated with the international studies on one-dose HPV vaccination, including population samples restricted to healthy, young females in small observational cohorts.
    - The exclusion of males from the studies leaves many questions unanswered about the impact of a one-dose schedule on other HPV-related cancers on the rise in Canada and globally, including head and neck cancers.
    - A one-dose policy implemented on the global scale has not resolved the issue of uptake. Many HPV vaccine uptake barriers in Canada are rooted in issues related to equity, socio-economical determinants of health and vaccine acceptability. A one-dose HPV vaccination policy alone may be insufficient as a strategy to improve HPV vaccine uptake in Canada.
    - Under reporting and immunization data accuracy are recurrent problems that burden provinces and territories. Without quality data, the task of understanding the drivers of HPV vaccine uptake is incumbered. Effective immunization information systems to collect missing HPV vaccination information should be a policy priority, particularly in the context of a one-dose HPV vaccination policy.

1. Introduction: The Threat of Cervical Cancer

Cervical cancer is a significant threat to women's health. It is primarily caused by infection with carcinogenetic types of human papillomavirus (HPV) and is the fourth leading cancer in women worldwide (Tan et al., 2018). Of more than one hundred identified HPV types, twelve (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59) are classified by the International Agency for Cancer Research (IARC) as agents of cervical cancer and another eight (26, 53, 66, 67, 68, 70, 73 and 82) as probable causes (Egli-Gany et al., 2019). Approximately 660 000 cases of cancer each year are attributed to HPV infections (Aranda et al., 2017; Kreimer et al., 2024). Cervical cancer-related deaths are approximately 350 000 every year worldwide (Kreimer et al., 2024).

In Canada, 1,300 women are diagnosed per year with cervical cancer and approximately 400 will die (CPAC, 2020). The disease leaves an everlasting impact on survivors and their families. (CPAC, 2020; FMWC, 2024). The most susceptible populations include women that became sexually active at a very young age; are older; have many sexual partners; smoke; have a weakened immune system; use oral contraceptives long-term; have had multiple full-term pregnancies, have low-income economic status, have a family history of cervical cancer, and are Indigenous. The broad public health impact of cervical cancer cannot be understated (HPV Global Action, 2025).

Burden of Disease

A meta-analysis of sixty-one (61) countries found HPV types 16 and 18 were the cause of 70% of all invasive cervical cancer (Smith et al., 2007). It generally takes 5 to 10 years for HPV-infected cervical cells to develop into precancerous lesions (CIN). The transition from CIN to advanced cervical cancer can take anywhere from 10 to 20 years (NCI, 2025). CIN is categorized into three grades: CIN1, CIN2, and CIN3. CIN2 and 3 are high-grade precursors most associated with the development of cervical cancer. However, with early detection, treatment options (cryosurgery, laser surgery, hysterectomy) can have positive outcomes.

However, quality of life (QoL) for many survivors can decline following treatment for precursors and cancer. Many patient-reported studies have found experiences to include high levels of psychosocial disorders such as distress and depression that impact patients long-term (Conway et al., 2020). Physical discomforts are also widely reported following hospitalization in addition to financial burdens, which can include drug costs, caregiving costs and loss of productivity (Greimer et al., 2009).

Cervical Cancer Elimination Plan

Canada has pledged to eliminate cervical cancer through a national action plan that adheres to the World Health Organization's (WHO) global call to eliminate the disease worldwide by 2040 (CPAC, 2020). The national action plan has three main priorities: 1) to improve HPV vaccination rates; 2) to implement HPV primary screening; and 3) to improve follow-up of abnormal screening results.

Preventing cervical cancer is feasible but efforts in Canada have fallen short to meet established objectives despite access to effective and safe vaccines that provide long lasting protection against high-risk HPV types known to cause cervical cancer. As a cost-effective and inclusive tool, HPV vaccines are the linchpin of the action plan whereby the objective is to achieve 90%

vaccination coverage in children prior to HPV exposure, and in populations where the risk of infection and the development of cervical cancer precursors remain higher.

HPV Vaccination Policy

In Canada, HPV vaccination is a publicly funded, gender-neutral program delivered in school-based clinics. It was originally introduced to females and later expanded to males at high risk of infection before expanding the program to include all children. The vaccine provided is an effective 9-valent product, which is proven to provide almost 100% protection (Tan et al., 2018). The vaccine is offered as early as nine years of age and up to fifteen years of age depending on the province or territory (see tables 1, 3 & 4).

Individuals may also be vaccinated or finish an incomplete series up to age 26 or 27 years depending on the jurisdiction. Individuals at high risk of HPV infection are recommended for vaccination and anyone who wants to receive the vaccine but missed the school program can be vaccinated by a health care provider (Canadian Immunization Guide). This is important not just for those who missed the school program but recognizing changing habits and exposures in the general population and being aware of the second peak of cervical cancer in older women.

HPV Vaccination Coverage

HPV vaccination coverage remains suboptimal and below national standards for achieving community immunity and a reduction in the circulation of HPV types that cause cervical cancer. Various policies have been adopted throughout the years to encourage uptake such as mandatory reporting and expanding vaccination services in primary care, but suboptimal coverage rates persist in several jurisdictions (Centre for Vaccine Preventable Diseases, 2021) (see table 2). HPV vaccination coverage also declined during the COVID-19 pandemic, which created a backlog of unvaccinated children. Some jurisdictions in Canada have experienced lowest vaccination coverage not seen since the start of the programs in 2007.

Socio-economic barriers also continue to contribute to low coverage rates. HPV vaccination series completion has been found to be the lowest among families with low income status, and students who leave school before diploma completion, despite the convenience of school clinics (Sinka, et al., 2014). Interactions with health care providers can be limited. Among non-completers, withdrawal of consent is a persistent problem. Perceived risk of HPV infection and the safety of vaccines remain barriers to uptake. A history of vaccination has been shown to be a predictor of HPV uptake (Smith et al., 2011).

Immunization Information Systems (IIS)

The identification of populations that are potentially at high risk of HPV infection because of missed vaccinations is an important strategy for public health authorities trying to improve coverage. Immunization information systems (IIS) are valuable tools that can be leveraged by public health to collect immunization data systematically; access and retrieve immunization data easily; analyze, report and facilitate the use of data for public health decision-making (see figure 1) (Pinyopotnpanash et al., 2019; Dancier et al., 2014).

However, under reporting and data accuracy are problems that burden provinces and territories that have an immunization information system. Collecting missing vaccination data is a problem

for any health system where interoperability between immunization registries and other information systems that hold vaccination data do not exist.[3] Existing systems used by Ministries of Health (MOH) often lack the coordination and effective interconnectedness, creating challenges in the analysis and interpretation of immunization data, particularly as it pertains to a specific population or community (Pinyopotnpanash et al., 2019). Record scatter is a significant barrier to accurate assessment of immunization "up to date" rates, especially in rural areas (Kempe et al., 2004).

2. Vaccination Policies, Programs and Strategies for Improved HPV Vaccine Uptake

Expanded Age Eligibility

The National Advisory Committee on Immunization (NACI) – the national expert body that provides guidance on uses of approved vaccines in Canada - revised its recommendations on the usage of the 9-valent HPV vaccine. NACI stated several objectives in its guidance revision. The primary objective is to encourage HPV vaccine uptake to meet the global commitment to eliminate cervical cancer. To achieve this goal, the committee put forward a rationale for expanding vaccination eligibility from 15 years of age to 20 years of age (NACI, 2024). The policy of expanding eligibility for public programs provides an additional strategy for overcoming socio-economic and inequality barriers.

One-Dose HPV Vaccination

Additionally, NACI revised the number of doses in the HPV vaccine schedule from two doses to one for children 9 to 20 years of age (NACI, 2024). A two-dose schedule may be considered on an individual basis in discussion with a health care provider for people 21 to 26 years of age. The programmatic policy change to a one-dose schedule aligns with the World Health Organization (WHO) SAGE recommendations from 2022, which cites new evidence on the efficacy and effectiveness of a one-dose schedule. This policy shift was originally aimed at reducing barriers to HPV vaccination primarily in low-middle income countries (LMICs) where girls and women are predisposed to additional comorbidities and risk factors such as malnutrition. The intent of the policy is to minimize loss to follow-up by requiring fewer doses; and reduce vaccine cost (WHO, 2022). With regards to increasing vaccination coverage, as of August 2024 nearly 64 countries worldwide have adopted a one-dose HPV vaccine schedule.

While issues affecting low uptake of the HPV vaccine in LMICs differ from high-income counties (HICs), a one-dose HPV vaccination schedule has shown that it provides ample protection against high-risk HPV 16 & 18 (Schiller et al., 2015; Sankaranarayanan et al., 2018). Protection has been reported in several studies with consistent findings (Kreimer et al., 2018). Several longitudinal immunobridging[4] and safety studies have also showed trial participants

[3] A national initiative to standardize vaccination coverage reports has been initiated by the Public Health Agency of Canada. The Standardized Reporting on Immunization system (STARVAX) is a new surveillance system for vaccination coverage. It collects registry immunization information and produces reports. As of October 2024, 5 provinces and 1 territory (Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Yukon) have submitted reports to STARVAX. More information at: https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage.html

[4] Immunobridging is a scientific approach to infer vaccine effectiveness through comparison of immune response marker(s) elicited by a vaccine under different sets of conditions (US Food and Drug Administration.

mounting a robust immune response with one dose (Malvi et al., 2024; Waheed et al., 2023). Long lasting immune response has also been detected beyond 20 years post vaccination (Baisley et al., 2022; Porras et al., 2022). These results apply to the bivalent vaccine, which is known to have stronger antibody response in women.

While it is true that inactivated recombinant HPV vaccines have shown to be more effective with fewer doses than their predecessors, the studies that influenced the SAGE and later NACI policy shift had several limitations (Gilca et al., 2018). Firstly, immune titers[5] remained high and stable with a one-dose vaccination schedule, however, they were noticeably four to five-fold lower than participants who received two or three doses. Nevertheless, the findings showed immune titers to be higher than natural HPV infection.

Other limitations identified include small sample size in several studies which included only females, and lack of randomization to a reduced-dosing schedule (Basu et al., 2022). The exclusion of males from these studies is significant. HPV-associated head and neck cancers, particularly oropharyngeal cancer, have been increasing in Canada and globally (PHAC, 2024). Health Canada now recognizes these cancers as preventable through vaccination with the 9-valent vaccine (PHAC, 2024).

Additionally, the immunobridging studies are useful but have not been conclusive (Kreimer et al., 2018; Porras et al., 2022; Watson-Jones et al., 2022). There are no study results for immunocompromised persons. Lastly, vaccine effectiveness against high-grade cervical cancer lesions requires further research. It has been observed by several studies that one-dose of HPV vaccine is associated with lower effectiveness against high-grade lesions (Johnson Jones et al., 2020; Kim et al., 2016). Alternatively, a more recent study has found that receiving one or two doses of HPV vaccines prior to age 17, especially for those initiating before age 15, has comparable effectiveness against high-grade cervical lesions with those who received three doses (Wu et al., 2025).

Catch-Up Vaccination

In addition to a new one-dose national policy, catch-up programs have instituted in various jurisdictions as a strategy for increasing HPV vaccine uptake, but identifying children for vaccination based on status has been a challenge. It has also been a challenge to identify young adults at high risk who should receive the vaccine. Health authorities have used reminder letters to encourage catch-up doses, but non-mandatory reporting and fragmented and incomplete immunization record keeping systems has posed challenges (Public Health Ontario, 2022).

Extending Dosage Intervals

Extending dosage intervals beyond twelve months is another policy that may assist with HPV vaccine uptake without compromising immunogenicity (Collins-Fairclough et al., 2021). HPV 16 and 18 antibody levels may persist up to 24 months or longer from a single dose of the 9-valent vaccine and can be an alternative policy option.

Immunobridging to evaluate vaccines. 2021. Available at: https://cdn.who.int/media/docs/default-source/blue-print/doran-fink_4_immunobridging_vrconsultation_6.12.2021.pdf)

[5] Immune titers are tests to detect and measure the number of antibodies present in a blood sample.

3. Cost-Effectiveness of HPV Vaccination Policies

Mathematical models and survey data have demonstrated that up to age 18, catch-up programs can be very cost-effective in anticipating the benefits of the intervention (Tan et al., 2018). Alternatively, a one-dose schedule is also cost-effective as protection conferred makes a second dose not cost-effective in many settings (Barnabas et al., 2023; Single dose HPV evaluation Consortium, 2024; Drolet et al., 2024). The policy shift towards a one-dose vaccination program can encourage alternative uses of a second dose such as the vaccination of populations at higher risk of cervical cancer. A one-dose vaccination program may also have public health benefit if in the instance that vaccine supply is constrained; then a one-dose policy has public health impact. Alternative dosing intervals may have similar impact but there is insufficient evidence to support this position at this time.

4. Discussion

There is a significant effort and urgency to shift HPV vaccination policy towards a one-dose approach. A one-dose HPV vaccination policy has the potential to yield health benefits and is proven good value for money. However, there are key issues associated with this policy that warrant further discussion.

A one-dose HPV vaccination policy could reduce program costs, ease administration, enable delivery of multi-cohort vaccination and increase HPV program adoption in populations with limited access to healthcare and a high burden of cervical cancer (Gilca et al., 2019). This is particularly true in countries with HPV vaccine uptake challenges.

In HICs such as Canada, it may be more of a challenge for governments to accept such a policy change as vaccine uptake issues vary substantially. Firstly, the one-dose HPV vaccination policy is currently an off-label recommendation. Off-label usage of vaccines is not uncommon practice but may be a policy challenge for province and territory implementation. Secondly, many HPV vaccine uptake barriers in Canada are rooted in issues related to equity, socio-economic determinants of health and vaccine acceptability. Vaccination policy alone may be insufficient as a strategy to improve HPV vaccine uptake in Canada.

From a public health standpoint, the benefits of a one-dose HPV vaccination policy are thought to outweigh the potential risk of a lower level of protection should vaccine efficacy wane over time. Addressing cervical cancer endpoints such as high-grade CIN2 and CIN3 precursors may be a challenge with a one-dose policy as few studies have shown impact. While a one-dose HPV vaccination policy may reduce the prevalence of cervical cancer, it is associated with lower efficacy and durability. Additionally, little is known about the risk of HPV infection resurgence. This is further complicated by the exclusion of males[6] from one-dose studies, which leaves many questions about the impact of a one-dose schedule on other HPV-related cancers such as head and neck cancers currently on the rise in Canada and globally. Further research into monitoring

[6] Hariri et al., 2017 published in the American Journal of Epidemiology studied the impact of one-dose, two-dose and three-dose schedules on genital warts among American females. Findings from this study showed that vaccine effectiveness was not significant among vaccinees receiving one-dose and 2-dose HPV vaccination compared with unvaccinated study participants.

the effectiveness and duration of a one-dose vaccination schedule in clinical trials and real-world settings is required (NACI, 2024) (see table 5).

Furthermore, reduction to a one-dose policy on the global scale has not resolved the issue of uptake. The WHO reports that global vaccination coverage increased only by 7% after a one-dose policy change (WHO, 2024). More pointed examples where uptake is a challenge are China and India – two countries with the largest cervical cancer burden in the world – that have yet to introduce HPV vaccination into their routine childhood schedule, and they are not expected to initially use a single-dose schedule (Kreimer et al., 2024).

There may be supplementary benefit with leveraging scientific research and data infrastructures to improve HPV vaccine coverage in Canada. Unlike most LMICs, Canada's provinces and territories have invested in research databases that can be used to extract information on populations more susceptible to cervical cancer. Even with limited resources, this knowledge can be analyzed locally to better plan HPV vaccination clinics and education initiatives to address issues associated with equity, socio-economical determinants of health and vaccine acceptability.

Moving immunization information systems beyond record keeping can also provide invaluable and cost-efficient support to HPV vaccination programs. For example, short to medium term solutions that may yield immediate returns include mandating the reporting of vaccines, consolidating immunization records into registries from the perspective of individualized practices; interpreting immunization data, so health care providers can discuss prevention with patients. Optimizing point of care with female patients such as cervical cancer screening visits to discuss HPV vaccination is an opportunity for every health care provider to do better counseling about what vaccines their children need too, and to provide access to decision-aids and links to community services where HPV vaccines are delivered should access to a school clinic be missed (Krist et al., 2011).

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Tables and Graphs

Table 1. HPV School Vaccination Programs in Canada as of February 2025

Province/Territory	Population	Number of Doses	Vaccine Provided
British Columbia	Grade 6	2	9vHPV
Alberta	Grade 6	2	9vHPV
Saskatchewan	Grade 6	2	9vHPV
Manitoba	Grade 6	2	9vHPV
Ontario	Grade 7	2	9vHPV
Quebec	Grade 4	1	9vHPV
New Brunswick	Grade 7	2	9vHPV
Nova Scotia	Grade 7	2	9vHPV
Prince Edward Island	Grade 6	2	9vHPV
Newfoundland and Labrador	Grade 6	2	9vHPV
Nunavut	Grade 6	2	9vHPV
Northwest Territories	Grade 4	2	9vHPV
Yukon	Grade 6	2	9vHPV

Table 2. HPV Childhood Immunization Coverage Rates for All Children*

Province/Territory	School Grade	Most Recent Coverage Year	Coverage Rate
British Columbia	Grade 6	2023	56%
Alberta	Grade 6	2023	60.8%
Saskatchewan	Grade 6	2022	73.6%
Manitoba	Grade 6	2023	58.7%
Ontario	Grade 7	2024	52.3%
Quebec	Grade 4	2024	81%
New Brunswick	Grade 7	2024	68%
Nova Scotia	Grade 7	2022	80.6%
Prince Edward Island	Grade 6	2023	80.8%
Newfoundland and Labrador	Grade 6	2021	76.1%
Nunavut	Grade 6	2019	57%
Northwest Territories	Grade 4	2021	55%
Yukon	Grade 6	2022	65.5%

*Based on publicly available reports of HPV coverage rates.

Table 3. Other Publicly Funded HPV Vaccination Programs in Canada

Province or Territory	Catch-Up Program	High Risk Program: People with HIV	High Risk Program: MSM, Transgender	High Risk Program: Immunocompromised
British Columbia	Until age 18	9-26 years of age	19-26 years of age	No program
Alberta	Until age 26	No program	No program	9-45 years of age
Saskatchewan	Until age 26	9 to 26 years of age	No program	9-26 years of age
Manitoba	Female birth 1997 birth cohort; male 2002 birth cohort	Females 9-45 years of age Males 9-26 years of age	9-26 years of age	Females 9-45 years of age Males 9-26 years of age
Ontario	Until end of grade 12	No program	9-26 years of age	No program
Quebec	Until age 20	21-45 years of age	26 years of age and under	21-45 years of age
New Brunswick	Until age 26	No program	No program	No program
Nova Scotia	Until age 18	45 years of age and under	45 years of age and under	No program
Prince Edward Island	Female 2007 and later birth cohort; male 2012 and later birth cohort	No age limit	No age limit	No program
Newfoundland and Labrador	No program	No program	No program	No program
Yukon	Until age 26	9-45 years of age	No program	9-26 years of age
Northwest Territories	Until age 26	No program	No program	No program
Nunavut	Until age 26	No program	No program	No program

Notes:
Alberta immunocompromised program includes individuals who underwent a solid organ transplant, stem cell transplant or chimeric antigen receptor (CAR) T-cell therapy.
Saskatchewan immunocompromised program includes individuals with acquired compliment deficiency, congenital immunodeficiency, or immunocompromised due to disease or treatment
Manitoba MSM, Transgender program includes males who identify as gay or bisexual and trans men and trans women. Immunocompromised program includes individuals who have congenital immune deficiencies, acquired immune deficiencies or CAR T-cell therapy and patients who have malignant neoplasms or are hypo- or asplenia under the care of a haematologist or oncologist. It also includes males ≥18 years of age who have ever been incarcerated; individuals with recurrent respiratory papillomatosis; females 9 to 45 years of age who have a newly diagnosed high-grade abnormal cervical/Pap smear result; females 9 to 45 years of age and males 9 to 26 years of age who are victims of sexual assault.
Prince Edward Island program includes males 18 to 26 years of age who have unprotected sex with multiple partners or a history of genital warts and females 18 to 45 years of age who have unprotected sex with multiple partners, a history of genital warts, or an abnormal Pap test.

Adapted from the Ontario Immunization Advisory Committee (OIAC). Recommendations for an Expanded Human Papillomavirus Immunization Program. April 2025. Available at: https://www.publichealthontario.ca/-/media/Documents/H/25/oiac-report-expanded-human-papillomavirus-immunization-program-recommendations.pdf?rev=62e46248cd884d159acee863824e6e17&sc_lang=en&hash=1CE1763DA46D6B634627D0C6C22AC675

Table 4. NACI Recommended HPV Vaccination Schedule with 9vHPV

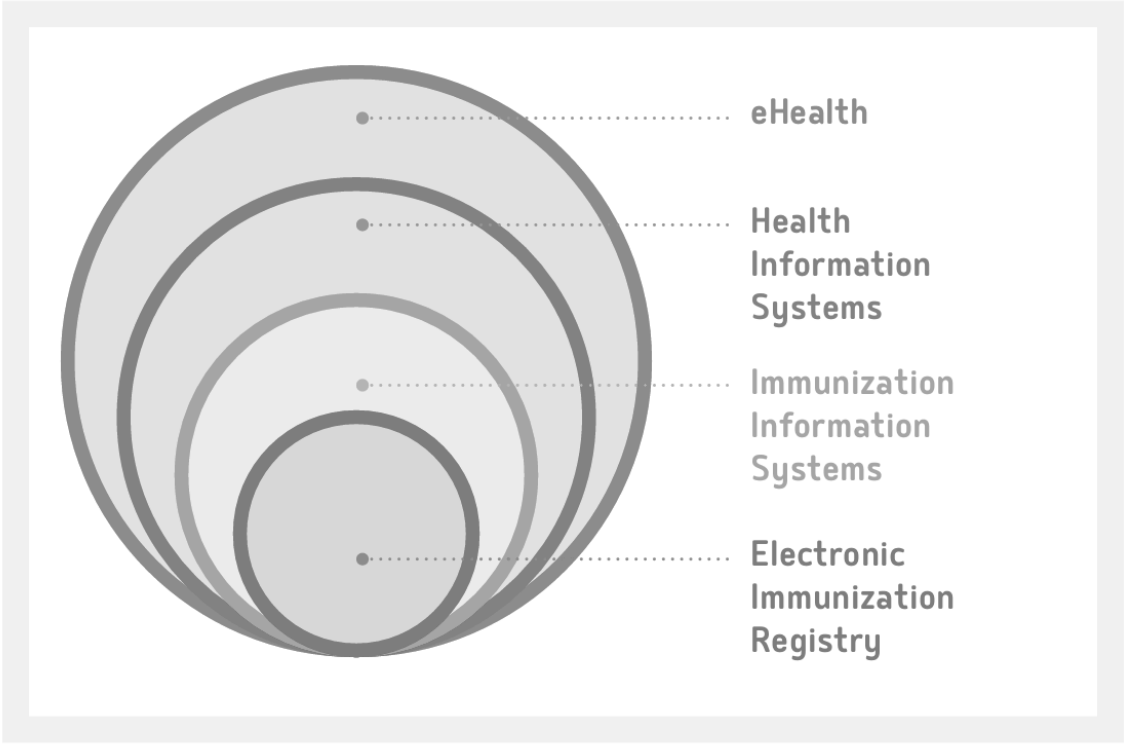
Recommended immunization schedule with 9vHPV vaccine, by group	
Individuals 9 to 20 years of age	1-dose schedule. A 2-dose schedule may be considered on an individual basis
Individuals 21 to 26 years of age	2-dose schedule
Individuals 27 years of age and older	2-dose schedule
Individuals who are immunocompromised and/or living with HIV, regardless of age	3-dose schedule
This table outlines recommendations specific to HPV immunization schedules. For detailed guidance on which populations are recommended to receive HPV vaccine, please refer to Recommendations for use and Vaccination of specific populations. Recommended schedule is based on age at initiation of vaccination. 9vHPV vaccine should be used as it provides protection against the greatest number of HPV types and associated diseases. For a 2-dose schedule, the doses should be administered at least 24 weeks apart (6 months). When a 3-dose schedule is recommended for individuals who are immunocompromised and/or living with HIV, they should be administered at months 0, 2, and 6. For guidance on minimum intervals between doses, refer to Minimum intervals between doses of HPV vaccines.	

Adapted from the Public Health Agency of Canada (PHAC):
https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-9-human-papillomavirus-vaccine.html#p4c8a2

Table 5. Studies with One-Dose HPV Vaccination

Trial Name/Country	Study Type	Study Start	Vaccine	Age Group(s)
CVT/ Costa Rica	Observational	2004	2vHPV	18-25
IARC/ India	Observational	2009	4vHPV	10-18
KEN SHE/ Kenya	Randomized controlled trial	2018	2vHPV/ 9vHPV	15-20
DoRIS/ Tanzania	Randomized controlled trial	2017	2vHPV/ 9vHPV	9-14
IVI IMPACT/ Thailand	Observational	2018	2vHPV	8th grade
Cohort study/ Mongolia	Observational	2012	4vHPV	11-17
HANDS/ Gambia	Randomized controlled trial	2019	9vHPV	4-8; 9-14; 15-26
PRIMAVERA/ Costa Rica	Randomized controlled trial	2019	2vHPV/ 4vHPV	9-14; 18-25
ESCUDDO/ Costa Rica	Randomized controlled trial	2017	2vHPV/ 9vHPV	12-16; 16-22
PRISMA/ Costa Rica	Randomized controlled trial	2022	2vHPV/ 9vHPV	18-30
HOPE/ South Africa	Observational	2019	2vHPV	10th grade;17-18

Image 1. Immunization Information Systems (IIS)



Source: Pan American Health Organization (PAHO). Electronic Immunization Registry: Practical Considerations for Planning, Development, Implementation and Evaluation. Washington, D.C.: PAHO; 2017. https://iris.paho.org/handle/10665.2/34865

Image 2. Immunization Information Systems (IIS) in Canada