

HPV IMMUNIZATION FOR THE PREVENTION OF CERVICAL CANCER



MARCH 2021

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Human Papillomavirus (HPV) and Cancer



Each year 3,800 new cancer cases in Canada are attributed to HPV; by 2042, this number will increase to 6,600.¹ HPV infection increases the risk of developing six different types of cancer. Cervical cancer is almost exclusively caused by HPV and HPV infection is also the cause of other anogenital cancers and oropharyngeal cancers.²

In 2020, it is estimated that 1,350 Canadian women will be diagnosed with cervical cancer, and 410 will die from the disease.³ Compounding this tragedy is the reality that cervical cancer is almost entirely preventable and, if detected and treated early, highly curable.⁴ While there are over 100 types of HPV, some strains have a higher risk of causing cells to become abnormal and precancerous.

To help reduce the burden of HPV-related cancers, Canada has set a target of achieving 90% HPV vaccination coverage of adolescents by 17 years of age, by 2025.⁵

HPV Immunization is one of three components of the *Action for the Elimination of Cervical Cancer in Canada, 2020–2030*. For more information about HPV primary screening and abnormal result follow-up please see the [cervical screening environmental scan \(2019–2020\)](#).



This resource is a component of the [Canadian Partnership Against Cancer's](#) broader efforts toward bringing greater equity and accessibility to cervical cancer prevention, screening, treatment and care. This tool amongst others provides a base of evidence to support addressing the priorities, targets and actions set out in the [Action Plan for the Elimination of Cervical Cancer in Canada \(2020–2030\)](#), which engages partners across the country in work to eliminate cervical cancer by 2040. The Action Plan and associated knowledge products, including this resource, advance a top priority of the [Canadian Strategy for Cancer Control 2019–2029 \(the Strategy\)](#), which is to decrease the risk of people getting cancer, including cervical cancer. The Strategy is a 10-year roadmap to improve equity in the cancer system and to deliver world-class cancer care to everyone in Canada, while focusing on a sustainable healthcare system for the future.



Background and Key Statistics

Upwards of 75% of people in Canada will have at least one HPV infection in their lifetime³, although many are unaware they have an infection. The likelihood of contracting an HPV infection is elevated due to multiple risk factors.

TABLE 1. RISK FACTORS FOR HPV⁶

Number of lifetime sex partners
Previous sexually transmitted infection
History of sexual abuse
Early age of first sexual intercourse
Tobacco or cannabis use
Immune suppression
Inconsistent condom use
Men who have sex with men (MSM)*

*MSM are 20x more likely than heterosexual men to develop anal cancer

While HPV infections are common, they are highly preventable through vaccination. If HPV is contracted, it may clear on its own without intervention with no sequelae. However, if the infection persists it may lead to cancer. The ComPARE study^a suggests that more than 5,300 cancer cases can be prevented by 2042 if more Canadian children are vaccinated against HPV.⁷ Consequently, it is critical that policies to reduce the rate of HPV infections are developed.

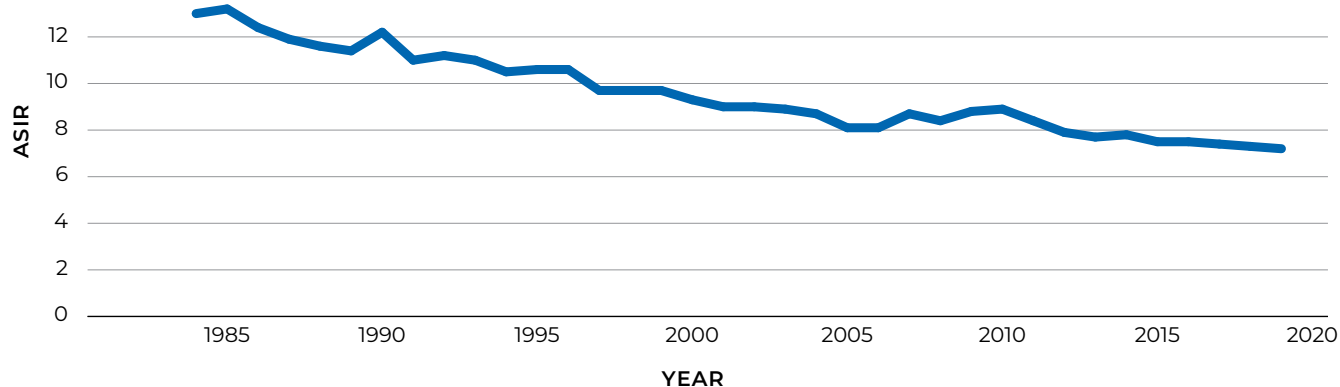
Policies that improve rates of vaccination have the potential to effectively reduce the rate of new HPV infections.

Since the introduction of population-based cervical screening, cervical cancer incidence has consistently declined in Canada (Figure 1).⁸ Until recently, the full impact of HPV immunization programs on cancer rates has been difficult to ascertain due to the long latency period between HPV infection and the development of cancer. Evidence suggesting immunization programs are contributing to less severe abnormalities among women in the vaccinated age group has been observed prominently.⁷ A recent study in Sweden has shown that HPV vaccination is associated with a substantially reduced risk of invasive cervical cancer at the population level.⁹



a The ComPARE study (Canadian Population Attributable Risk of Cancer) estimates the current and future burden of cancer due to modifiable lifestyle, environmental and infectious agent risk factors.

FIGURE 1. AGE-STANDARDIZED INCIDENCE RATES (ASIR) CERVICAL CANCER, FEMALES, CANADA (EXCLUDING QUEBEC), 1984–2019



Although the reduction in cervical cancer incidence is a public health achievement, cervical cancer remains a significant concern. Of those diagnosed with cervical cancer, the 5-year net survival is 72%¹⁰ (Table 2). The survival rate is highly impacted by the stage at which cervical cancer is diagnosed, with 5-year survival rates significantly reduced at later stages.

Unlike most cancers where incidence increases with age, a majority of cervical cancers are diagnosed in females under the age of 50, where the highest incidence appears among females aged 30–59

years (67%).¹¹ Incidence of cervical cancer is also highest among populations in rural or remote areas, those of low socio-economic status, and First Nations, Inuit and Métis people, largely due to barriers to accessing immunization programs, diagnostic and follow-up services.^{12,13,14,15}

TABLE 2. STAGE DEPENDENT 5-YEAR SURVIVAL OF CERVICAL CANCER¹⁰

Stage	5-year survival
1A	93%
1B	80%
2A	63%
2B	58%
3A	35%
3B	32%
4A	16%
4B	15%

International Context

Cervical cancer is the third most prominent cancer among women globally, and is estimated to cause the death of over 300,000 women annually.¹⁶ Moreover, it is the second most common cancer in women between the ages of 15–44.¹⁷ The vast majority of cases globally (85%) occur in less developed countries (Figure 2), where cervical cancer represents 12% of all female cancers. Given that cervical cancer is almost entirely preventable, in 2018, the World Health Organization (WHO) called upon countries around the world to eliminate cervical cancer by the end of the century, identifying a target of less than 4 instances of cervical cancer per 100,000.¹⁸

The *Action Plan for the Elimination of Cervical Cancer in Canada, 2020–2030* is Canada's response to the call to action by the WHO and aims to eliminate cervical cancer in Canada by 2040. At the same time, it advances a top priority of the *2019–2029 Canadian Strategy for Cancer Control*, meeting the needs of those whose risk of cervical cancer is greatest. The goal is ambitious—but achievable—requiring a shared commitment to collaborative action by partners across the country.

Canada has set a target of achieving

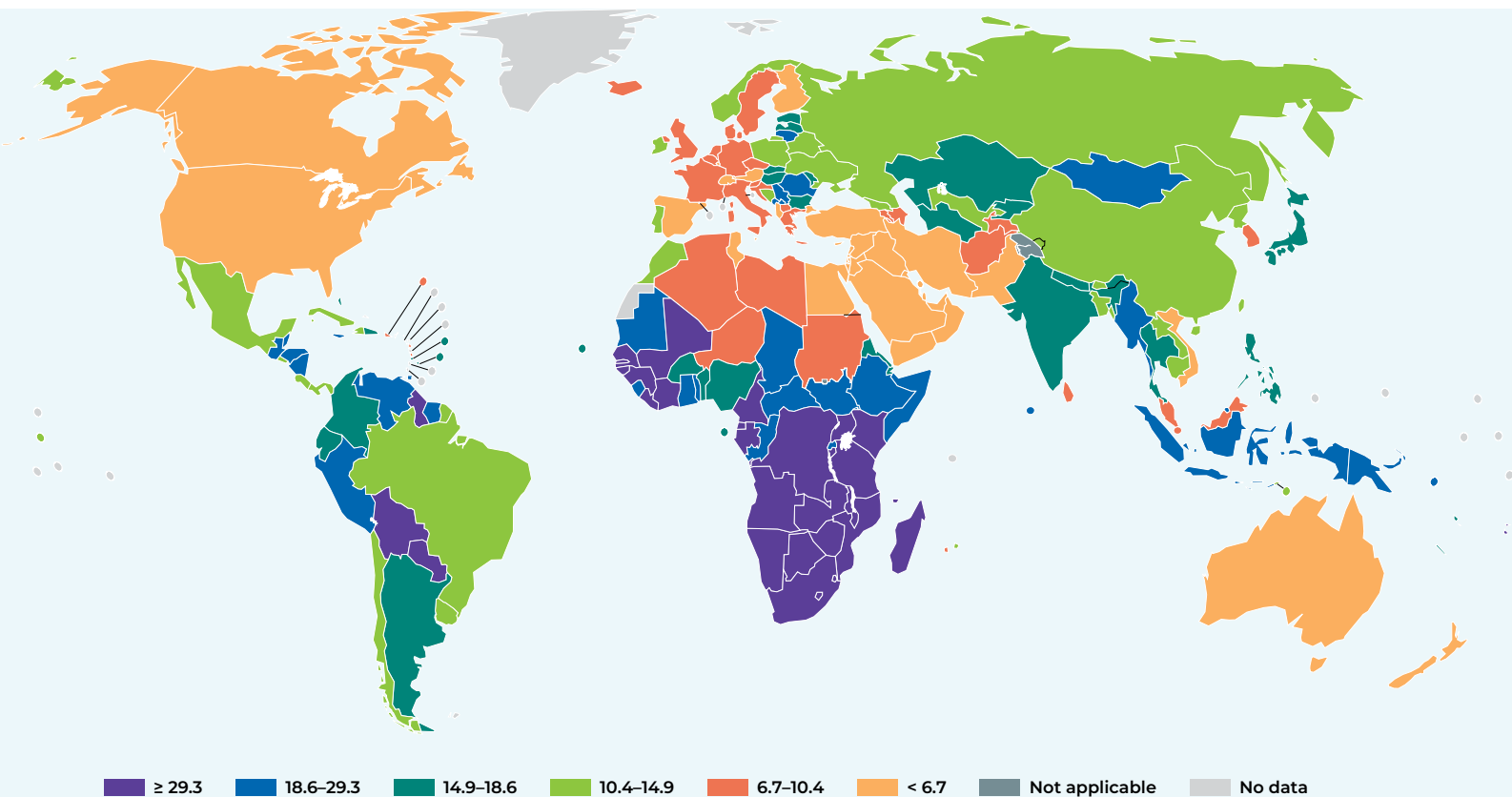
90%

HPV vaccination
coverage of adolescents
17 years of age by 2025

HPV Immunization Uptake Goals

As part of the National Immunization Strategy, the Government of Canada has set a goal of 90% vaccination coverage by 17 years of age for two or more doses of HPV vaccine by the year 2025.¹⁹ The *Action Plan for the Elimination of Cervical Cancer in Canada 2020–2030* sets out priorities, targets and actions for the next decade that will move Canada toward this goal and ultimately towards the elimination of cervical cancer.

FIGURE 2. AGE-STANDARDIZED INCIDENCE RATE OF CERVICAL CANCER BY COUNTRY (ESTIMATES FOR 2018)



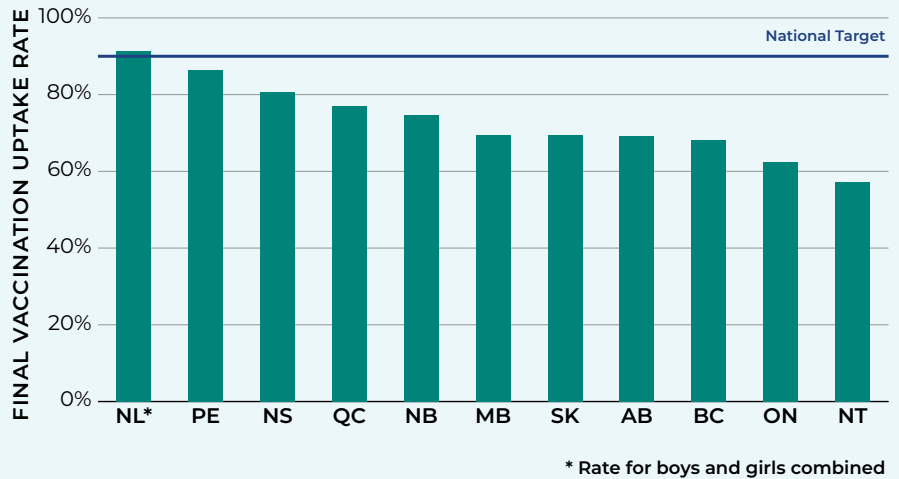
IARC Cervix uteri [Internet]. [Gco.iarc.fr](https://gco.iarc.fr). 2018 [cited 24 October 2020]. Available from: <https://gco.iarc.fr/today/data/factsheets/cancers/23-Cervix-uteri-fact-sheet.pdf>



HPV Immunization Uptake for Girls

All provinces and territories have a school-based HPV immunization program for girls. HPV vaccination is offered on a 2 or 3 dose schedule. Immunization uptake data is available for different school years across jurisdictions. The provincial/territorial immunization final dose uptake rate based on the most recent data ranges from 57.1–91.3% (Figure 3).²⁰

FIGURE 3. PROVINCIAL AND TERRITORIAL FINAL DOSE UPTAKE RATES FOR HPV IMMUNIZATION FOR GIRLS (MOST RECENT AVAILABLE DATA 2015–2019)



HPV Immunization

Vaccination is recommended for all children and youth before they become sexually active and are exposed to HPV. Boys are vaccinated to decrease the transmission of HPV in the population as well as to protect them from other cancers, including anal, penile and head and neck cancers. There are currently three HPV vaccines available in Canada to prevent HPV infection and its associated diseases (Table 3). Each vaccine protects against HPV types 16 and 18, which are considered high-risk as they are associated with 70% of all cervical cancers. The 9-valent vaccine protects against seven additional high-risk HPV types (6, 11, 31, 33, 45, 52, 58), which covers an additional 20% of cervical cancers.⁶

TABLE 3. HPV VACCINES IN CANADA^{21,22,23}

Vaccine	Target	Authorized use in Canada
Bivalent vaccine (Cervarix)	HPV types 16, 18	Females 9–45 years of age
Quadrivalent HPV vaccine (Gardasil)	HPV types 6, 11, 16, 18	Females 9–45 years of age Males 9–26 years of age
Nonavalent vaccine (Gardasil 9)	HPV types 6, 11, 16, 18, 31, 33, 45, 52, 58	Females 9–45 years of age Males 9–45 years of age

Since 2017, HPV vaccination has been available in publicly funded school-based immunization programs in all provinces and territories and are administered starting as early as grade 4, but more commonly in grades 6 or 7. HPV vaccination is recommended by the National Advisory Committee on Immunization (NACI) for all individuals between ages 9 and 26.

TABLE 4. PROVINCIAL AND TERRITORIAL HPV IMMUNIZATION RATES FOR GIRLS

Jurisdiction	School year of most recent available data	Total size of eligible cohort (girls only)	Immunization uptake (Girls only)		
			1st dose	2nd dose	3rd dose
YT	–	–	–	–	Two-dose schedule
NT	2015–2016	–	74.7%	64.4%	57.1%
NU	Data not available				
BC	2017–2018	NA	74.9%	66.9%	Two-dose schedule
AB	2017–2018	25,368	78.3%	–	68.2%
SK	2018–2019	5,593	76.5%	69.1%	Two-dose schedule
MB [^]	2017	–	–	–	69.4% Two-dose schedule
ON	2017–2018	73,156	74.4%	62.4%	Two-dose schedule
QC	2017–2018	44,760	82.7%	77.0%	Two-dose schedule
NB	2017–2018	3,627	81.1%	74.8%	Two-dose schedule
NS	2015–2016	5,014	89.4%	80.8%	Two-dose schedule
PE	2017–2018	777	90.1%	86.4%	Two-dose schedule
NL [*]	2017–2018	2,791	–	91.3%	Two-dose schedule

[^] Data reported up to age 17, including 2-dose and 3-dose recipients

^{*} Rate for boys and girls combined

HPV Immunization Uptake for Boys

All provinces and territories have extended school-based HPV immunization programs to include boys. HPV vaccination is offered on a 2 or 3 dose schedule. Immunization uptake data is available for different school years across jurisdictions. The immunization final dose uptake rate based on available data ranges from 57.5–91.3% (Figure 4).²³

FIGURE 4. PROVINCIAL AND TERRITORIAL FINAL DOSE UPTAKE RATES FOR HPV IMMUNIZATION FOR BOYS (2017–2018)

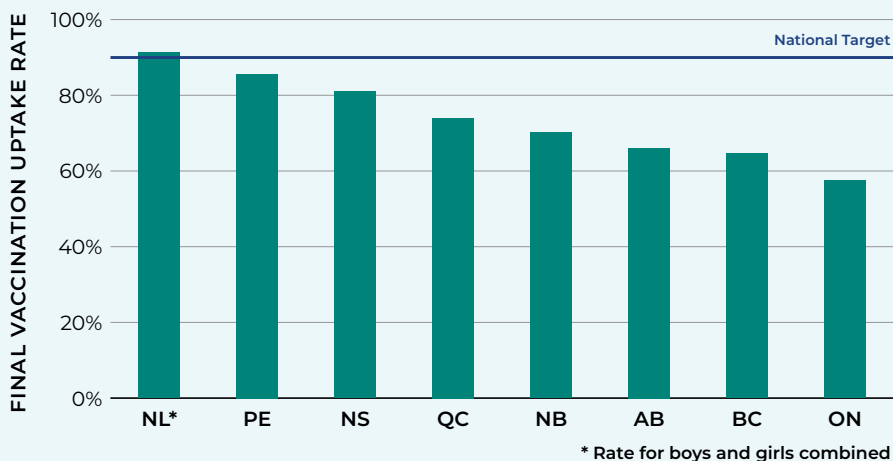


TABLE 5. PROVINCIAL AND TERRITORIAL HPV IMMUNIZATION RATES FOR BOYS

Jurisdiction	School year of most recent available data	Total size of eligible cohort (Boys only)	Immunization uptake (Boys only)		
			1st dose	2nd dose	3rd dose
YT			Data not available		
NT			Data not available		
NU			Data not available		
BC	2017–2018	NA	73.7%	64.6%	Two-dose schedule
AB	2017–2018	26,356	78.5%	–	66.1%
SK			Data not available		
MB			Data not available		
ON	2017–2018	77,328	70.3%	57.5%	Two-dose schedule
QC	2017–2018	46,870	80%	74.0%	Two-dose schedule
NB	2017–2018	3,696	76.6%	70.2%	Two-dose schedule
NS	2015–2016	5,239	89.4%	81.0%	Two-dose schedule
PE	2017–2018	818	89.4%	85.6%	Two-dose schedule
NL*	2017–2018	2,700	–	91.3%	Two-dose schedule

* Rate for boys and girls combined

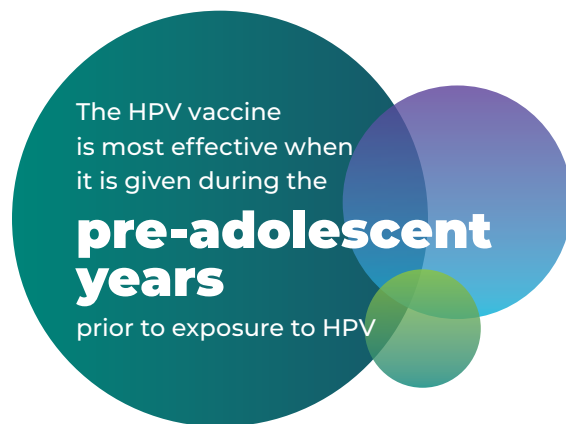
Disparities in HPV Immunization Rates and Incidence of Cervical Cancer

Efforts to improve immunization rates, particularly among underimmunized populations, are limited by a lack of standardized data. At the federal level, the Public Health Agency of Canada (PHAC) relies on immunization data collected through a survey distributed to parents every two years, and is reported only as the percentage of females up to date at age 17 by province. Most provinces and territories have an immunization registry that includes data on HPV immunization, but differences in data reporting prevent direct comparisons across jurisdictions. Little data has been collected on the rates of HPV immunization by demographic or socioeconomic data, or on the barriers to vaccination. Data on HPV immunization rates among First Nations, Inuit and Métis are also not readily available.



HPV Immunization Policy Scan

In order to achieve the 90% vaccine coverage goal, the Action Plan calls for implementing communications and education strategies to increase awareness and acceptability of the HPV vaccine, increasing vaccination uptake in school-based programs and improving measurement and reporting of vaccination coverage data to identify inequities and inform program improvements.



HPV vaccinations are offered through school-based immunization programs and catch-up programs. In addition, individuals who do not qualify for these programs are also able to privately purchase the HPV vaccine. The HPV vaccine is most effective when it is given during the pre-adolescent years, prior to exposure to HPV.^{20,24}

School-Based Immunization Programs

Publicly funded, school-based HPV immunization programs provide an equitable and effective means to reach young people and are in place in all

Canadian provinces and territories. The vaccine is recommended by PHAC but remains voluntary. These school-based programs were implemented in 2007 for girls, and by 2017 had been extended to boys.²⁵ School-based immunization schedules for the HPV vaccine are administered starting in grades 4–7 (Table 6).

As of 2020, with the exception of Quebec, all provinces and territories exclusively use the nonavalent Gardasil 9 vaccine for school-based immunization programs. In Quebec, Gardasil 9 is used for the first dose and Cervarix is used in the second dose.

TABLE 6. SCHOOL-BASED IMMUNIZATION

Jurisdiction	Date of Implementation of Immunization Program for Girls	Date of Implementation of Immunization Program for Boys	School Grade of Immunization
YT	2009	2017	Grade 6
NT	2009	2017	Grade 4–6
NU	2013	2017	Grade 6
BC	2008	2017	Grade 6
AB	2008	2014	Grade 6
SK	2008	2017	Grade 6
MB	2008	2016	Grade 6
ON	2007	2016	Grade 7
QC	2008	2016	Grade 4
NB	2008	2017	Grade 7
NS	2007	2015	Grade 7
PE	2007	2013	Grade 6
NL	2007	2017	Grade 6

The National Advisory Committee on Immunization (NACI) recommends different approaches to immunization, including different dose schedules, based on the characteristics of the target population (e.g., gender, age, immunocompromised status).^{20,26}

TABLE 7. NACI RECOMMENDATIONS FOR THE HPV IMMUNIZATION SCHEDULE²⁶

Recommended Groups	Recommended Immunization Schedule
Healthy (immunocompetent, non-HIV infected) Females 9–14 years of age (and healthy females ≥15 years of age in whom the first dose was administered between 9–14 years of age)	2- or 3-dose schedule
Healthy (immunocompetent, non-HIV infected) Females ≥15 years of age	3-dose schedule
Healthy (immunocompetent, non-HIV infected) Males 9–14 years of age (and healthy males ≥15 years of age in whom the first dose was administered between 9–14 years of age)	2- or 3-dose schedule
Healthy (immunocompetent, non-HIV infected) Males ≥15 years of age	3-dose schedule
Immunocompromised individuals and immunocompetent HIV-infected individuals	3-dose schedule



School-Based Immunizations During COVID-19

Preliminary data indicate that vaccination uptake for diphtheria, tetanus and pertussis (DTP3), a marker for vaccination coverage, has suffered a significant drop during the first four months of 2020 due to the COVID-19 pandemic.²⁷ The WHO and UNICEF (United Nations International Children’s Emergency Fund) warn of a similar drop in HPV vaccination coverage, which may bear significant consequences on the healthcare system as it may increase the likelihood of vaccine-preventable disease (VPD) outbreaks.²⁸

In the spring of 2020, the COVID-19 pandemic caused school immunization programs to be cancelled, causing students to miss doses of the HPV vaccine.²⁹ In May 2020, NACI recommended that students initiate or complete their

vaccinations when school-based immunization programs restart.³⁰ NACI has also recommended that eligibility criteria include those who have missed their immunizations due to COVID-19.

For example, when schools reopened in Ontario in the fall of 2020, many school boards shifted the administration of vaccines from school-based immunization programs to community immunization clinics. Immunizations at these clinics are available free of charge for children who missed the school-based immunization program or those who are due for routine or mandatory immunizations²⁹, however eligibility may vary depending on the jurisdiction and school board.



Adults who might benefit from immunization must purposefully seek out vaccination or have it **recommended by a healthcare provider.**

Catch-Up HPV Immunization Programs

Given the relatively recent introduction of HPV vaccines in Canada in 2007, catch-up programs offer an opportunity for immunization to those who did not receive vaccination through school-based programs or were in school prior to immunization programs being offered. Catch-up programs targeted towards the 18–26 age group are especially important. As many school boards require parental/guardian consent, it is likely that some in this age group may not have received the vaccine given the absence of parental consent, or simply because they were not in school when it was offered. These individuals may now wish to make their own decision regarding HPV vaccination³¹ – at an age (over 18) where there is no ambiguity in regards to consent. Although HPV vaccination is recommended for adolescents *before* sexual activity begins, research has shown that the vaccination of young women in catch-up programs is effective for improving herd immunity.³²

Despite availability of catch-up programs, vaccination uptake in these targeted populations may be challenging. Low uptake in catch-up

programs was observed in the Netherlands due to several factors including lack of information and a lack of trust in the government.³³ Unlike students in schools, who are part of a publicly-funded organized immunization program, adults who might benefit from immunization must purposefully seek out vaccination or have it recommended by a healthcare provider, and may be required to pay out-of-pocket for the vaccine.³⁴ In addition to publicly funded catch-up immunization programs, interventions to increase uptake amongst adults include tailoring education and counselling for young adults to understand their current and future risks of HPV, and to identify the steps they can take to mitigate those risks.³⁵

All provinces and territories have established continuous catch-up programs for individuals who have missed the school-based immunization programs in some form. These catchup vaccinations are publicly-funded under the provincial/territorial health plan, but eligibility varies based on age or gender (Table 8).

TABLE 8. PROVINCIAL AND TERRITORIAL HPV IMMUNIZATION CATCH-UP PROGRAMS

Jurisdiction	Eligibility
<u>NU</u>	All individuals between the ages of 9–18
<u>NT</u>	All individuals between the ages of 9–26
<u>YT</u>	All individuals between the ages of 9–26
<u>BC</u>	All individuals between the ages of 9–26, if the vaccine series was started before age 19 and completed before age 26
<u>AB</u>	All individuals between the ages of 9–26
<u>SK</u>	Females born since January 1, 1996 and males born since January 1, 2006 until 27 years old.
<u>MB</u>	Females born on or after January 1, 1997 and Males born on or after January 1, 2002
<u>ON</u>	All individuals who failed to begin or complete the vaccine series in grade 7, before end of grade 12.
<u>QC</u>	Females between the ages of 9–17. Males in secondary 3, when their immunization status is updated.
<u>NB</u>	Females born in or after 1995 and males born in or after 2005.
<u>NS</u>	All individuals who failed to complete the vaccine series in grade 7 up to and including age 18.
<u>PE</u>	All individuals who failed to complete the vaccine series in grade 6 (females since 2007, males since 2012).
<u>NL</u>	Females up to age 26.

In addition to catch-up programs for children who have not completed the HPV vaccine series under the school-based immunization programs, four provinces (BC, ON, QC, and MB) have extended the eligibility criteria for the HPV vaccine to high-risk groups (Table 9). Many of these provinces include vaccinations for men who have sex with men (MSM), a population for which vaccination is important given that they may not be impacted by the reduction of HPV transmission through the vaccination of females.³⁶

TABLE 9. HPV VACCINATION CATCH-UP PROGRAMS FOR HIGH RISK GROUPS BY JURISDICTION

Jurisdiction	High-Risk Group
<u>BC</u>	<p>HIV positive individuals 9 to 26 years of age</p> <hr/> <p>Transgender individuals 9 to 26 years of age</p> <hr/> <p>Men 9 to 26 years of age who:</p> <ul style="list-style-type: none"> • Have sex with other men • Are not yet sexually active but are questioning their sexual orientation • Are street-involved <hr/> <p>Boys 9 to 18 years of age in the care of the Ministry of Children and Family Development (MCFD)</p> <hr/> <p>Boys and men of any age who are in youth custody services centres</p>
<u>MB</u>	<p>Immunocompetent HIV-infected males 9 to 26 years of age and females 9 to 45 years of age</p> <hr/> <p>Males who are 18 years of age and younger who are, or who have ever been, incarcerated.</p> <hr/> <p>Individuals who are, or who have previously been diagnosed with recurrent respiratory papillomatosis (RRP)</p> <hr/> <p>Males 9 to 26 years of age and females 9 to 45 years of age who:</p> <ul style="list-style-type: none"> • Have congenital or acquired immune deficiencies • Are victims of sexual assault <hr/> <p>Patients under the care of a haematologist or oncologist from CancerCare Manitoba</p> <hr/> <p>Males 9 to 26 years of age who:</p> <ul style="list-style-type: none"> • Identify as gay or bisexual • Are men who have sex with men (MSM) <hr/> <p>Transgender males and transgender females 9 to 26 years of age</p> <hr/> <p>Females 9 to 45 years of age who have certain newly diagnosed high-grade abnormal cervical/pap smear results.</p> <hr/> <p>Patients currently under the care of a haematologist or oncologist from CancerCare Manitoba (CCMB) who have the following conditions and have been provided a CCMB directed Immunization Schedule:</p> <ul style="list-style-type: none"> • Malignant neoplasms (solid tissue and haematological) including leukemia and lymphoma, or clonal blood disorder, and who will receive or have completed immunosuppressive therapy including chemotherapy or radiation therapy, or • Hypo- or asplenic (Sickle Cell Disease, etc.)
<u>ON</u>	<p>Men who have sex with men (MSM) who are 9 to 26 years of age</p>
<u>QC</u>	<p>Boys:</p> <ul style="list-style-type: none"> • Aged 9 to 14 who are at risk of exposure to HPV • Aged 9–17 who attend rehabilitation centres for youth in difficulty, who are under the care of youth protection services or who are homeless <hr/> <p>People aged 26 or under who:</p> <ul style="list-style-type: none"> • Have a weakened immune system • Are infected with HIV <hr/> <p>Men aged 26 or under who have or plan to have sex with men</p>

This table reflects language used in original source.

As of 2017, all provinces/territories offer HPV vaccines to girls and boys through school-based programs.

For individuals who did not receive the vaccination through a school-based program or do not meet the eligibility criteria to receive the vaccine free of charge as part of a catch-up program, many provinces and territories allow the vaccine to be privately purchased (Table 10). Some individuals in Canada may also receive partial or full coverage for the HPV vaccine via private health insurance plans, although access will vary by jurisdiction, insurance provider and individual plans.

TABLE 10. PRIVATE PURCHASE OF HPV VACCINES^b

Jurisdiction	Cost
<u>NU</u>	Unpublished publicly
<u>YT</u>	3 dose series: \$333 total
<u>BC</u>	Gardasil 9: \$180 per dose Additional vaccine administration fee may apply
<u>AB</u>	Unpublished publicly
<u>SK</u>	3 dose series: \$223 per dose
<u>ON</u>	3 dose series: \$300 – \$550 total

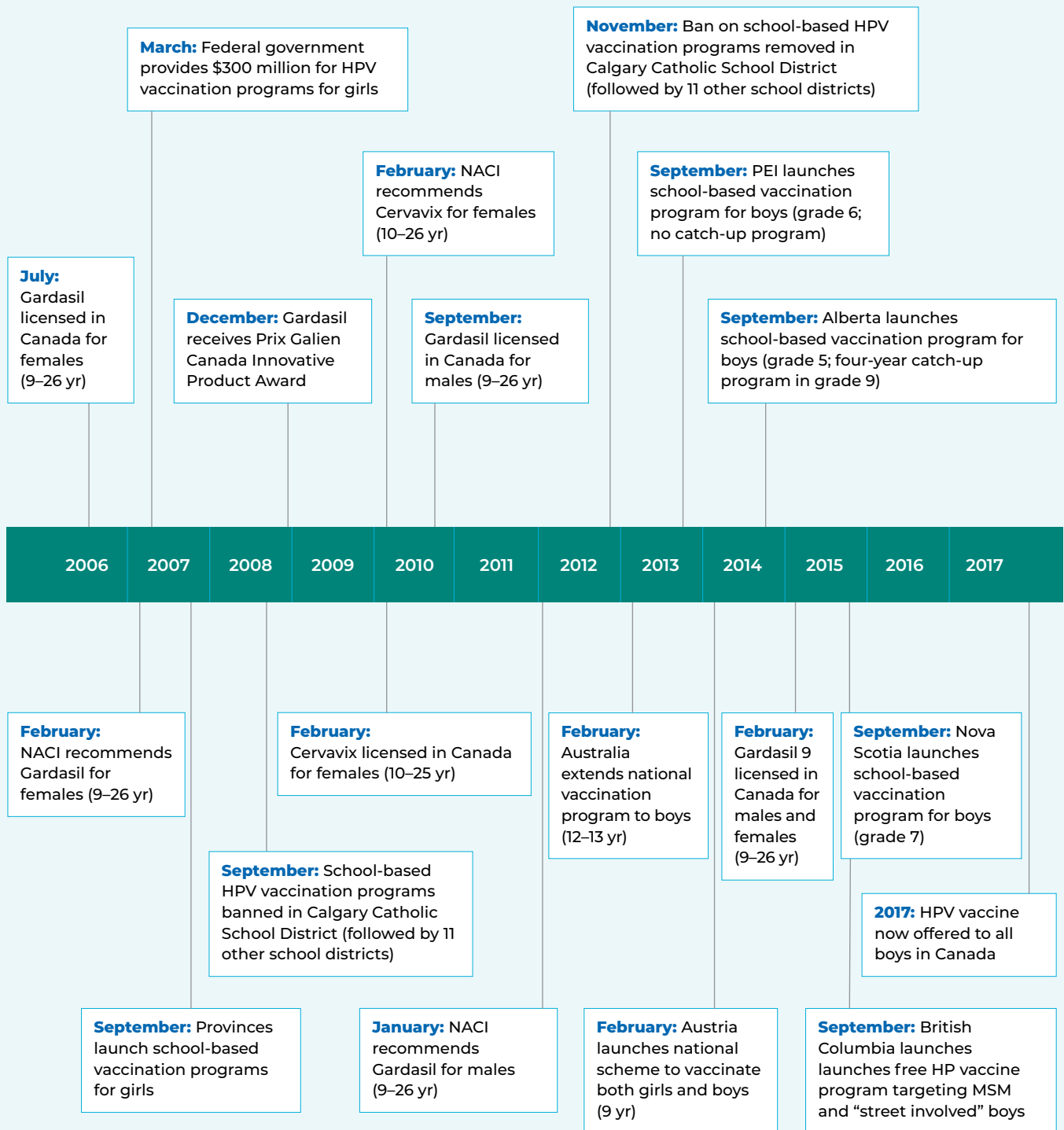
Policy Changes to Date

The HPV immunization landscape has changed significantly in the last 15 years (Figure 5). In 2006, Gardasil (HPV4 vaccine) was approved for use in Canada to prevent HPV types 6, 11, 16 and 18 and their related cancers (and other diseases, such as genital warts). This was followed in 2010 by the approval of Cervarix™ (HPV2 vaccine), that prevented cervical cancers caused by HPV types 16 and 18.³⁷ In 2015, a nonavalent vaccine (HPV9), Gardasil9 was approved. This vaccine protects against HPV types 81, 33, 45, 52 and 58.³⁸

In addition to the development of vaccines, there have been important policy changes pertaining to how and to whom the vaccine has been offered. HPV vaccinations were only initially offered by provinces/territories to girls, but all provinces/territories eventually expanded recommendations to boys (Table 4). As of 2017, all provinces/territories offer HPV vaccines to girls and boys through school-based programs. This extended offering increases the likelihood of herd immunity, particularly given the disparity in uptake between and within jurisdictions.³⁹ Additionally, HPV immunization programs evolved to being offered on a 2-dose schedule (although a 3-dose schedule is still recommended for some individuals – Table 5). A 2-dose schedule not only reduces the cost of administering the vaccine, it also increases the likelihood that a child will receive the full dose required for protection, among other advantages.³⁷

^b Provinces/territories were not included if specific information regarding private purchase was unavailable.

FIGURE 5. HPV VACCINATION TIMELINE



Adapted from Shapiro G, Perez S, Rosberger Z. Including males in Canadian human papillomavirus vaccination programs: a policy analysis. Canadian Medical Association Journal. 2016;188(12):881-886.

Education

An important part of cervical cancer prevention is education, particularly regarding benefits of vaccination. In large part, education about the risk of cervical cancer and HPV primarily occurs in schools, through public education campaigns and in the home.

A cursory and unsystematic review of school board documentation (e.g., newsletters, meeting notes) suggests that Public and Catholic school boards approach HPV vaccination differently in Canada. For example, one school board emphasizes that sexual activity is only permitted within the confines of marriage⁴⁰ – suggesting abstinence until marriage followed by a monogamous relationship. Hopes that their child would adhere to the dictum of abstinence outside of a monogamous marriage may be a reason for parents and guardians to exempt their children from receiving the HPV vaccine. However, studies have shown that sexual activity does not increase in young people after HPV vaccination.^{41,42} Moreover, HPV infections can be contracted through non-sexual behaviour, such as, from mother-to-child at birth.⁴³

Outside of the school environment, education around HPV immunization falls largely to local/regional public health units/authorities, ministries of health,

and non-governmental organization. One study found that the women in their research group did not identify HPV as a risk factor for cervical cancer, and that they had inadequate information about the HPV vaccine, which they also considered to be unsafe.⁴⁴ A recent study of university-aged students in Canada found that educational campaigns had a positive impact on vaccination rates.⁴⁵ Presently, it appears that there are few groups aiming to educate the public about HPV vaccination in any Canadian jurisdiction, left primarily to federal, provincial/territorial and regional health agencies, and organizations such as the Society of Obstetricians and Gynecologists of Canada, Immunize Canada and the Canadian Cancer Society.⁴⁶ Widespread misinformation about vaccination through social media, however, thwarts the efforts of these, and other, organizations to control the HPV narrative.⁴⁷

To ascertain how the public is being educated about HPV vaccination, the websites of school boards from 31 jurisdictions were scanned to identify any recent public communications about HPV vaccination. While not a systematic review, this review indicates there is inconsistent messaging to students and their families in Canada^c.

School Board Communication

Many public school boards promote vaccination as the best way to protect children (Vancouver Public School Board, Surrey Public School Board). While the voluntary nature of the HPV vaccine is noted, public boards often emphasize that the vaccine is recommended (Toronto Public School Board, Brandon Public School District) and that it is most effective if administered prior to the commencement of sexual activity (Anglophone West School District).

In Catholic School Boards, the voluntary nature of the HPV vaccine is often emphasized (Hamilton-Wentworth Catholic School Board) and often it is reinforced that abstinence is being promoted (Hamilton-Wentworth Catholic School Board). The Toronto Catholic School Board went further, quoting the Canadian Catholic Bioethics Institute's

position that the HPV vaccine is an "inappropriate and unnecessary response to preventing girls from contracting this sexually transmitted virus."⁴⁸ Some Catholic boards informed parents that in the event that a vaccine-preventable outbreak occurs that their child may be excluded if they are not vaccinated against HPV (Calgary Catholic School Board). Other Catholic boards have communicated mixed messages about the potential for HPV vaccination to increase risky behaviours (Regina Catholic School Division), while others debated whether it was their responsibility to promote vaccinations (Yellowknife Catholic School Board).

A commonality among school boards, whether public or Catholic, was to emphasize the need for parental/guardian consent.

^c This inquiry included only those school boards that align with 31 municipalities included in scope of Prevention Policies Directory



Opportunities to Increase Immunization Uptake

While there have been advancements in HPV vaccination, there are potential policy changes that could help improve immunization rates.

Affordability

To increase uptake of HPV vaccine, it is imperative that the vaccine is available to those who did not have access to school-based programs or who did not receive the vaccination due to a lack of parent/guardian consent. It is also important for those that are not eligible for or do not have access to a catch-up program. To increase uptake, vaccines should be publicly funded for people living in Canada.⁴⁹

Acceptability

Consideration also needs to be given to the experience of the recipient. Little is known about how the delivery of the vaccination impacts uptake and, perhaps more importantly, willingness of children to receive subsequent doses of the vaccine. There are reports of schools where a comfortable environment is not provided for the administration of the vaccine, often requiring students to receive it in front of their peers in open settings leading to an uncomfortable experience for some children. Even slight discomforts in setting can have a negative impact. Consider that a fifth of students report that fear of needles or concerns about pain are a reason for refusing immunizations.⁵⁰ Creating positive immunization experiences for children is important to increase vaccination uptake rates. Immunization should be conducted in comfortable, private, and culturally appropriate spaces.

In addition to the setting in which children receive immunizations, the attitudes of nurses and teachers are also prominent factors that contribute to a child's vaccination experience. Some studies suggest additional training to be beneficial allow nurses to address students' needs during the immunization process.⁵⁰

Alternative Dose Schedules

In the future, if evidence becomes available and following NACI recommendations, there is an opportunity to increase the rate of HPV immunization coverage through the adoption of a 1 dose schedule. Emerging evidence suggests that switching from a 2 dose HPV immunization schedule to a 1 dose schedule may provide individuals with equivalent protection against HPV infection and associated diseases.⁵¹ A change to a 1 dose schedule may be especially important in jurisdictions where there are limited resources. This approach could also facilitate more widespread vaccination implementation, as it would require only one visit to remote or hard to reach locations. Further, it would allow for a larger catch-up program, when a 2nd dose would be administered only on an as needed basis.



Policies and Programs for Underserved Populations

One of the tragedies of cervical cancer is the disproportionate impact it has on some underserved populations. Any effort to reduce cervical cancer must take into account inequities that currently exist.

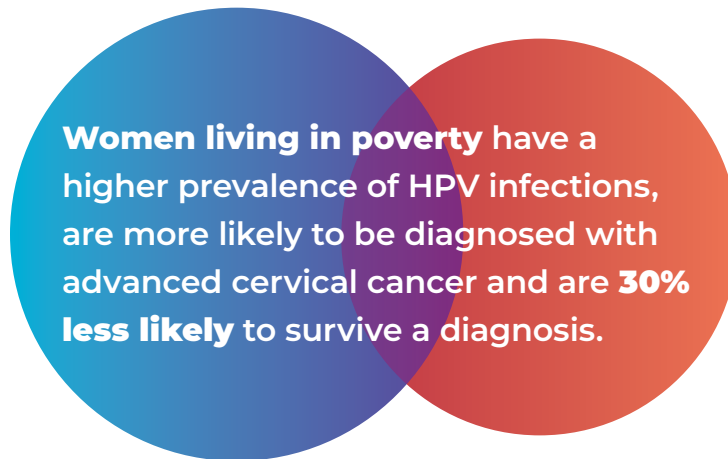
To this end, the *2019–2029 Canadian Strategy for Cancer Control*⁵² and the current *Action Plan for the Elimination of Cervical Cancer in Canada* explicitly address the inequities and barriers in accessing prevention and care that are experienced by rural and remote communities, people with low income, recent immigrants, First Nations, Inuit and Métis and other populations, such as LGBTQ2S+ individuals.

First Nations, Inuit and Métis

First Nations, Inuit and Métis continue to experience poorer cancer outcomes than non-Indigenous people in Canada due to inequities and barriers in accessing care, especially culturally appropriate care.^{13,15,53,54} Contributing to these inequities are historical trauma and abuse, colonization and ongoing systemic racism. These factors contribute to higher HPV infection rates and higher rates of invasive cancer among First Nations, Inuit and Métis compared to non-Indigenous people in Canada. Reports indicate that cervical cancer among First Nations and Inuit women in Alberta is 2.3 times higher than among non-First Nations and Inuit people.⁵⁵

There are examples of vaccination programs that are specific to First Nations, Inuit and Métis. For example, the Enhancing HPV Vaccination in First Nations Populations in Alberta (EHVINA) project focuses on increasing HPV vaccination among First Nations populations. This project has identified that ongoing dialogue and co-development of community-based strategies to increase HPV vaccination uptake have a positive impact on vaccination participation. Utilizing intergenerational educators within First Nations communities to complement written educational material has the potential to increase participation in school-based vaccination programs by First Nations youth.⁵⁵

School-based and catch-up immunization programs are administered by the provincial and territorial health authorities and are not included in the Non-Insured Health Benefits (NIHB) program. To increase HPV vaccination rates among First Nations, Inuit and Métis populations it is important that HPV immunization programs are developed in culturally appropriate ways. Immunization programs should build on the strengths of communities and should eliminate the specific barriers experienced by First Nations, Inuit and Métis which include geographic access challenges and fear and mistrust of health systems.



Immigrant and Refugee Populations

There are two primary opportunities to ensure adequate protection of immigrant and refugee populations against cervical cancer: ensuring they have access to vaccination and addressing misinformation related to HPV vaccination.

Children and adolescents who are new to Canada may already be vaccinated according to the recommendations of their home country, which may not be the same as Canadian recommendations. In instances where vaccination policies differ, children and adolescents would need to follow the catch-up program in their jurisdiction.⁵⁶ However, provincial, territorial and the federal government may need to create new or adapt existing programs to provide publicly funded vaccination to incoming immigrants and refugees, even if they may fall outside of the catch-up programs offered in the jurisdiction.

A major barrier for immigrant and refugee women to receive vaccination among this population is identified as lack of knowledge about HPV, cervical cancer and the availability as well as the benefits of the HPV vaccine.⁵⁷ Immigrant and refugee women typically perceive that their risk of contracting HPV is low. Targeted information may be required to increase awareness regarding the risk of HPV and its role in cervical cancer and the availability and benefits of the vaccine. To achieve this, it is important to address culturally specific concerns to increase HPV knowledge and vaccine uptake in this population.⁵⁸

Low Income and Minority Populations

Low income women and women identified as a member of a visible minority population are disproportionately affected by HPV and cervical cancer. High HPV vaccination rates in school-based programs does not necessarily mean there is equitable coverage among various socio-demographic populations. Similar to the populations discussed above, there may be challenges associated with access, information, cultural/religious beliefs, and systemic barriers to accessing care. To ensure that there is equitable uptake of HPV vaccinations, there must be ongoing monitoring of inequities even in jurisdictions with high vaccine uptake rates. In Ontario, data indicates that vaccination initiation is not influenced by neighbourhood income, but vaccination completion was lower among females in lower income neighbourhoods.⁵⁹ In Quebec, vaccination coverage was lower among socially deprived individuals, immigrants, visible minorities and/or English native speakers.⁵⁹ These provinces also have a large number of immigrants who could be too old to partake in school-based HPV immunization programs, thereby lowering vaccination coverage and lowering HPV herd immunity.⁵⁹

Research from the United States has shown that Black and Latina, low-income, urban and publicly insured adolescents initiate HPV vaccination at equivalent or higher rates than to their white, higher-income counterparts.⁶⁰ However, the former group is less likely to complete the HPV dose

series than white, suburban, privately insured, or affluent adolescents. In these cases, HPV vaccination recommendations by a healthcare provider increased the likelihood of vaccination up to 18-fold.⁶⁰ Additionally, 90% of females who were vaccinated reported provider recommendations. This highlights the importance of healthcare providers in recommending vaccination and the need to address systemic biases in healthcare provision: parents of Black and Latina girls reported lower rates of provider recommendation of HPV vaccination than the parents of white girls.⁶⁰ This disparity can in part be explained by differences in primary language, acculturation status, and cultural health beliefs, but it also speaks to inherent systemic biases in the healthcare system.⁶¹

Research also suggests that women living in poverty have a higher prevalence of HPV infections, are more likely to be diagnosed with advanced cervical cancer and are 30% less likely to survive a diagnosis of metastatic disease compared to those living above the poverty level. However, mothers with a high school education or less were often more willing to vaccinate their daughters than mothers with college degrees. Similar to girls, boys who live in poverty also initiate vaccination less often. An important opportunity to increase uptake is to specifically target this population, as vaccinating low-income and minority boys can help achieve herd immunity given that young adults tend to seek sexual partners from within their own communities.⁶⁰

Rural and Remote Populations

Rural and remote populations are subject to higher rates of cervical cancer and lower rates of HPV vaccination.⁶² Many of the challenges discussed above are relevant for these populations as well, including access to care, information, and systemic biases. It is important to understand the specific

challenges facing rural and remote populations if the mandate to eliminate cervical cancer is to be met. Offering a vaccine for free is not enough to achieve high HPV vaccine uptake. One study found that rural clinic-recruited women and rural college recruited women were less likely to return for subsequent doses of the vaccine.⁶³ The main barrier was convenience. Short distances and convenient locations to the clinic is a key factor for ensuring the completed dose series of the HPV vaccine.⁶⁴ This suggests that it might also be important to expand the range of healthcare professionals that are permitted to administer a vaccine – for example, pharmacists, who are the most accessible of healthcare professionals in Canada. Some jurisdictions have already expanded the scope of pharmacists' practice.^{64,65}

An American study found that coverage of the HPV vaccine is significantly lower among adolescents in suburban and mostly rural areas compared to teens in mostly urban areas. Males are especially less likely to be vaccinated in suburban areas. Among the factors associated with not receiving HPV vaccine was the lack of a recommendation from a healthcare provider.⁶⁶ Interventions to address these missed opportunities may be more appropriate in suburban areas, while addressing issues related to access of care may be effective in mostly rural areas. Adolescents in mostly rural areas are more likely to visit non-traditional vaccination facilities, therefore it is important to ensure that a wide variety of healthcare professionals are educated about the HPV vaccine.⁶⁶

Implementing population-specific strategies are imperative to increasing HPV vaccination rates. A mixed approach of improving parental/guardian HPV education, communication between healthcare providers and parents, and school-based approaches could be effective at reducing the vaccine disparities among remote, rural, suburban and urban areas.



Public Perceptions of HPV Immunization

An important factor to consider in cervical cancer prevention is the role of public perception, particularly as it relates to HPV vaccination. As the primary preventive tool against cervical cancer, ensuring that the public is adequately educated about HPV vaccination is critical. Lack of information about vaccine benefits is a barrier to HPV immunization uptake.



More than half (52%) of parents of two-year-old children are concerned about the side effects of vaccines on their children, even though the majority (97%) agree that vaccines help protect the health of their children.⁶⁷



Women who have not been vaccinated against HPV are more likely to express concerns about the safety of the vaccine (40% vs 26% of those who are vaccinated).⁶⁷



The top barrier to vaccination is the lack of healthcare provider recommendations according to 38% of Canadians. Indicating physician partnership, as well as empowering people to inquire about HPV vaccination, will be key in the strategy to increase uptake of HPV vaccination.³⁴

Health Literacy and Vaccine Hesitancy

Health literacy entails people's knowledge and competence to access, understand, and apply health information to make decisions concerning their health.⁶⁸ Sixty percent of adults in Canada do not possess the level of health literacy required to manage their own health and healthcare needs.⁶⁹

While health literacy of the public is highlighted as an important factor for healthy choices, it is not as straightforward concerning vaccine uptake.^{70,71,72}

The relationship between health literacy and immunization seems to be driven by risk perceptions and by the likelihood of becoming ill or suffering from complications in the short term.⁷⁰ Thus, an individual's high health literacy may only contribute to increased vaccine uptake if the health risks associated with HPV are accurately communicated to the public. Media, especially social media, tends to give mixed-

risk messages on vaccines' efficacy, contrary to the evidence.^{70,73} According to the literature, social media from all sources tends to fixate on anecdotal stories of vaccine harms versus benefits.^{70,73,74} Regarding HPV, exposure to stories of harms resulted in less likelihood in proceeding with the vaccine.⁷³ This is especially important as social media is the dominant channel for driving conversation around cervical cancer and the HPV vaccine, which would have a definite impact on the public response.^{70,73,74,75} Studies have shown that providing information and educating parents about vaccination can change attitudes.^{57,76,77,78}

Although health literacy and social media messages play a significant role in immunization uptake, there are many additional factors that contribute to people in Canada not receiving HPV vaccination (Figure 6 and Figure 7).

FIGURE 6. DECISION FACTORS TO NOT RECEIVE HPV VACCINATION

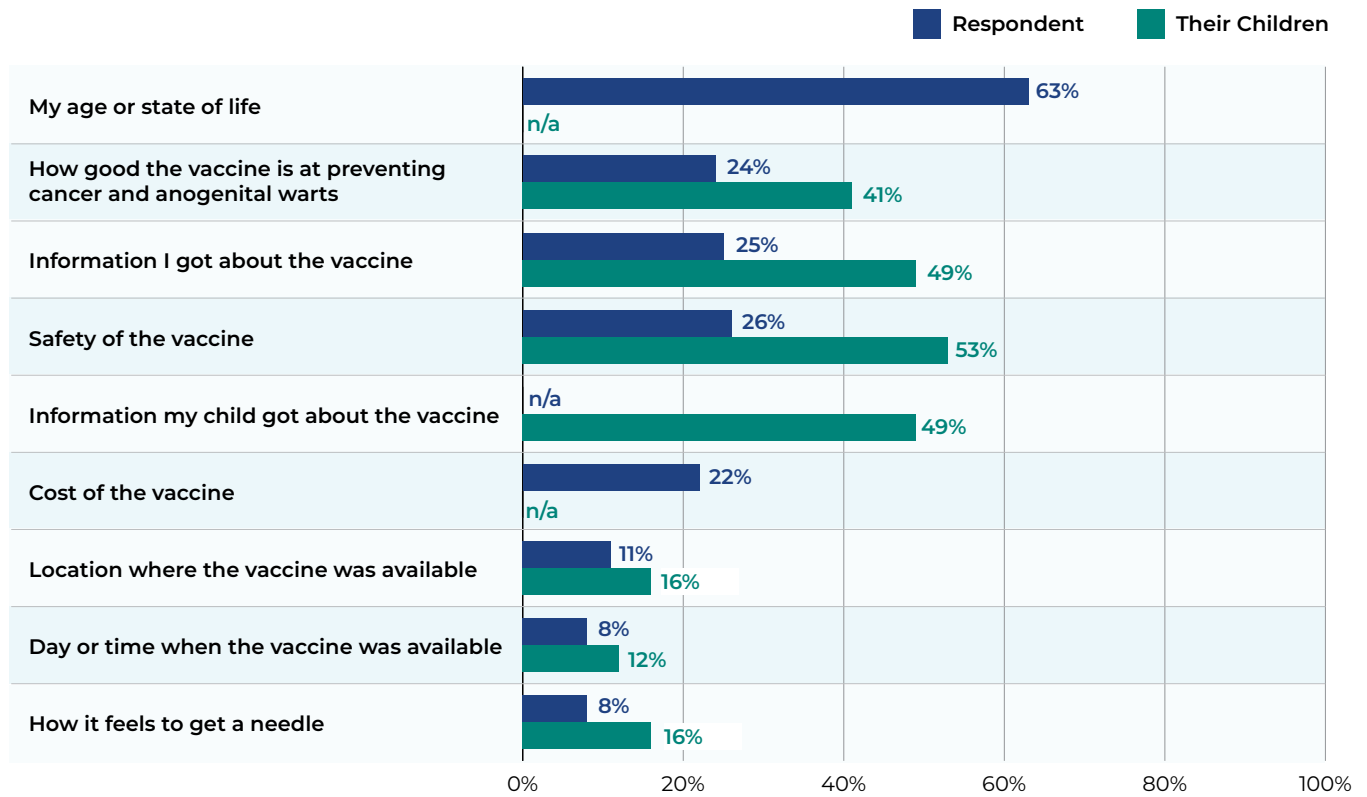
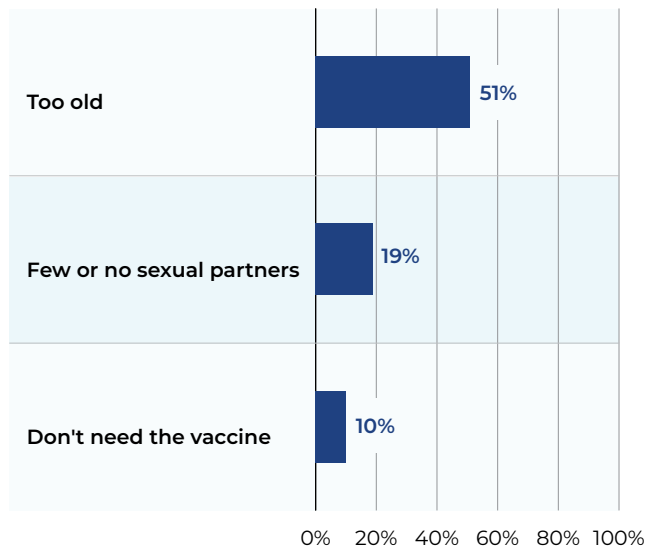
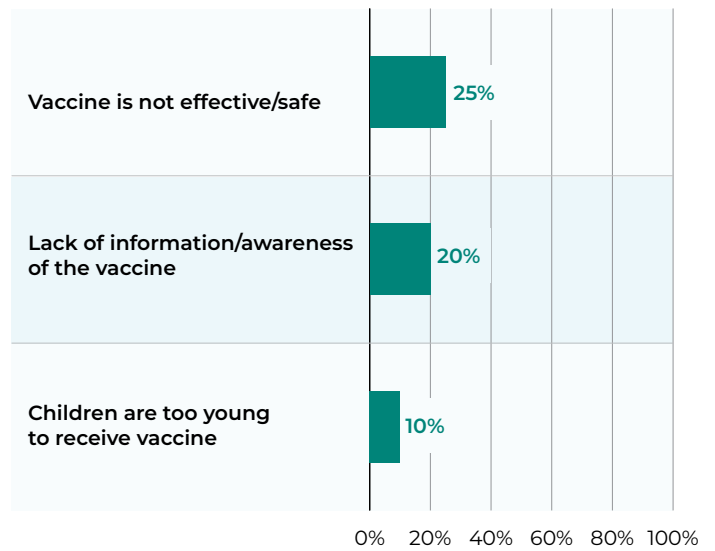


FIGURE 7. REASONS FOR NOT RECEIVING HPV VACCINATION FOR SELF OR CHILDREN

REASONS FOR NOT VACCINATING SELF



REASONS FOR NOT VACCINATING CHILDREN



Source: Public and Patient Engagement to Inform Action Plan for Elimination of Cervical Cancer in Canada – Canadian Partnership Against Cancer, 2020 Unpublished Report.

90%

coverage of HPV immunization coupled with HPV testing could prevent

6,810

cervical cancer cases by 2050, resulting in

1,750

lives saved

Religious or Cultural Objections

Although most religious and cultural groups agree with the use of vaccination, there nevertheless are some groups and individuals that oppose vaccination. Some of the common issues with vaccination that are raised include: ethical concerns associated with the use of human tissue cells or any animal tissue to create vaccines and beliefs that the body should be healed by a higher power, prayer, or other spiritual means.⁷⁹

Economic Evidence for HPV Immunization Policy and Programs

OncoSim^d modelling on the impact of HPV and cervical cancer prevention interventions, indicates that high coverage of HPV immunization (90%) coupled with HPV testing could prevent 6,810 cervical cancer cases by 2050, resulting in 1,750 lives saved.⁴⁹

Offering HPV immunization programs, as well as offering them through school-based programs has

been shown to be cost effective in high-income countries, including Canada.⁸⁰ The effectiveness of the vaccine in females has been found to diminish as recipients age, as the vaccine is most effective when administered prior to the onset of sexual activity. Suggesting that the expansion of HPV vaccination to older (35 to 45 years of age) women may not be a cost-effective strategy.⁸¹ Administering vaccination to girls before age 14 has consistently been found to be the most cost-effective strategy.

While school-based programs remain the primary model for HPV vaccination delivery, one model found that the most cost-effective way to offer HPV vaccinations is through schools *and* primary care settings as compared to a school-only approach or through utilizing any law mandating immunization.⁸² Ultimately, in combination with screening, HPV vaccination has been shown to be a cost-effective intervention in high-income countries, and HPV DNA testing has been identified as a cost-effective strategy across populations.⁸³

^d OncoSim-Cervical is a mathematical simulation tool for cervical cancer. The model reflects cervical cancer's progression and clinical treatments based on current knowledge and evidence-based Canadian practices.

HPV Immunization Legislation Overview

This immunization legislation overview is a component of the Canadian Partnership Against Cancer’s broader efforts toward bringing greater equity and accessibility to cervical cancer prevention, screening, treatment and care. This tool amongst others provides a base of evidence to support addressing the priorities, targets and actions set out in the [Action Plan for the Elimination of Cervical Cancer in Canada \(2020–2030\)](#), which engages partners across the country in work to eliminate cervical cancer by 2040.

The Action Plan and associated knowledge products, including this resource, advance a top priority of the [Canadian Strategy for Cancer Control 2019–2029](#) (the Strategy), which is to decrease the risk of people getting cancer, including cervical cancer. The Strategy is a 10-year roadmap to improve equity in the cancer system and to deliver world-class cancer care to everyone in Canada, while focusing on a sustainable healthcare system for the future.

Three policy areas are necessary to consider in order to fully understand the immunization policy environment in Canada:

- i. Public health legislation and their regulations (including scheduled immunization regulations and reporting obligations)
- ii. Mandatory immunization legislation
- iii. Laws concerning consent in healthcare decision-making.

Also relevant to Human Papillomavirus (HPV) immunization, but not discussed here, are policies informing public spending on healthcare, including investments in immunization and screening programs.

Public Health Legislation

Each province and territory has a form of public health legislation (Table 1). Public health legislation can be used to communicate the importance of HPV vaccination, require that persons be vaccinated,

mandate that incidents of HPV infection be reported to provincial/territorial health authorities, and provide direction on treatment.

Public health legislation often identifies vaccines as a preventive measure and can exclude persons from participating in activities or being in specific places if they are not vaccinated.⁸⁴ Public health legislation also typically grants power to order the immunization (or re-immunization) of individuals,⁸⁵ although this power is often confined to cases of an epidemic or threatened epidemic or in situations considered to be a public health emergency.

TABLE 1. PUBLIC HEALTH LEGISLATION IN CANADA

Province / Territory	Public Health Legislation
British Columbia	Public Health Act
Alberta	Public Health Act
Saskatchewan	Public Health Act
Manitoba	The Public Health Act
Ontario	Health Protection and Promotion Act
Quebec	Public Health Act
Newfoundland and Labrador	Public Health Protection and Promotion Act
New Brunswick	Public Health Act
Prince Edward Island	Public Health Act
Nova Scotia	Health Protection Act
Yukon	Public Health and Safety Act
Northwest Territories	Public Health Act
Nunavut	Public Health Act

Reporting obligations are important for monitoring, controlling, and preventing disease. Many provinces have regulations, often enacted under their public health legislation, that require certain infections to be reported to the provincial or territorial health authorities. This includes sexually transmitted infections.⁸⁶ HPV is not specifically identified in any jurisdiction as a reportable infection.

In addition to provincial and territorial legislation, the federal government plays an important role. It provides vaccinations to populations under its jurisdictional authority, including, Canadian Forces, veterans, inmates in federal penitentiaries, and some refugee claimants. The federal government can also enact policies that promote immunization, provide provincial and territorial governments with funding, and invest in public health campaigns to increase public awareness.

Mandatory Immunization Legislation

There does not appear to be any Canadian legislation mandating HPV immunization at present. Every province and territory has policies identifying when immunizations are mandatory – however, there are often exceptions, such as, exemptions for medical or ideological reasons. Immunization maybe required to participate in social institutions including schools and daycares or some workplaces.⁸⁷

Ontario (Immunization of School Pupils Act) and New Brunswick (Public Health Act) require proof of immunization for children and adolescents to attend school. While these acts only require proof of immunization of a limited series of diseases (Table 2) they establish that immunizations for communicable diseases can be required to attend school. While both Ontario and New Brunswick offer HPV vaccinations to students in grade 7, neither province requires this immunization to attend school.⁸⁸

TABLE 2. MANDATORY IMMUNIZATION LEGISLATION – SCHOOL ENTRY

Jurisdiction	Diseases covered	Exemptions
ON	Diphtheria Measles Mumps Meningococcal disease Pertussis	Poliomyelitis Rubella Tetanus Varicella
NB	Diphtheria Measles Mumps Meningococcal disease Pertussis	Poliomyelitis Rubella Tetanus Varicella

In addition to school-entry requirements, there are a number of other ways that provinces encourage greater uptake of immunization. For example, regulations under Ontario's Long-Term Care Homes Act indicates that licensees^e shall ensure that residents are offered immunization against influenza, pneumococcus, tetanus and diphtheria and require that staff be screened for tuberculosis and "other infectious diseases" as well as offer staff an immunization program.⁸⁹ Regulations under Ontario's *Child, Youth and Family Services Act* require that licensees operating a children's residence require that all employees receive immunizations as recommended by the local medical officer of health.⁹⁰ The *Ambulance Act* requires that all emergency medical attendants and paramedics provide proof of immunization according to the "Ambulance Service Communicable Disease Standard".^f

There does not appear to be any Canadian legislation mandating HPV immunization at present.

Consent

The final group of policies that are important to identify in this context are rules on consent and substitute decision-making. Like any medical treatment, HPV vaccination requires the consent of the individual (e.g., child/youth) receiving the vaccination or that of their substitute decision-maker (e.g., parent/guardian). HPV vaccination is most effective when provided before age of first sexual contact, and as such is offered routinely to children in grades 4–7 (in the age range of 8–13). At this age, parents and guardians often provide consent for their child to participate or receive medical treatment.

In Canada, there is no age identified at which point a child is eligible to consent to a medical procedure, with the exception of Quebec, which has established that for children below the age of 14 years parental consent is required. Instead, the ability to consent is based on *capacity*, which in turn

is often determined by assessing *maturity*. Capacity is determined by assessing whether the child's mental and emotional development allows them to appreciate the nature and consequences of the proposed treatment. Application of this assessment seems to vary based on treatment – the more serious a treatment decision, the more that is expected of an individual. There is also a *presumption* of capacity in individuals, meaning that the default position, unless legislation indicates otherwise (e.g., Quebec), is that a child has capacity. This presumption does not nullify the obligation of healthcare providers to assess whether or not an individual has capacity.

This area of law has become convoluted given an often contradictory and confusing body of case law addressing issues of maturity and capacity in children making medical decisions. In situations when a child lacks the capacity to consent to medical treatment, then the responsibility to consent falls on the parent or guardian (or otherwise delegated substitute decision-maker). In making this decision, the substitute decision-maker is to act in the best interests of the minor. This can be specified in legislation – for example, Ontario's Health Care Consent Act stipulates that assessing what is in a best person's interest must consider, *inter alia*, how the treatment will impact the well-being of the patient. Importantly, common law doctrine as expressed in judicial decisions (e.g., "best interests, "parens patriae") and ethical principles (e.g., "best interests") also inform when a child has the capacity to consent to medical treatments.

Although most provinces and territories offer HPV vaccinations to children in grade 6 or 7, and many of these children possess the requisite capacity/maturity to consent to receiving the HPV vaccination (although capacity for each individual student is to be assessed on a case-by-case basis), many school-based programs require the consent of parents or guardians and therefore it is common practice for parental or guardian consent to be required and not that of the child.⁹¹

e Here "licensee" refers to the holder of a licence issued under the Act. Section 95 of the Act stipulates that "in order to operate a residential premises for persons requiring nursing care or in which nursing care is provided to two or more unrelated persons except under the authority of a licence."

f See General, O Reg 257/100, s. 6(h) which stipulates that emergency medical attendants and paramedics "hold a valid certificate signed by a physician that states that the person is immunized against diseases listed in Table 1 to the document entitled "Ambulance Service Communicable Disease Standards", published by the Ministry, as that document may be amended from time to time, or that such immunization is contra-indicated." The standards can be access here: <https://www.lhsc.on.ca/media/3064/download>.

TABLE 3. RELEVANT HEALTH CARE CONSENT LEGISLATION IN CANADA

Province/ Territory	Consent Legislation
British Columbia	<u>Health Care (Consent) and Care Facility (Admission) Act, RSBC 1996, c 181</u> <u>Infants Act, RSBC 1996, c 223</u>
Alberta	<u>Personal Directives Act, RSA 2000, c P-6</u> <u>Alberta Health Services, ‘Consent to Treatment/Procedures Minor/Mature Minors’ (PRR-01-03)</u> <u>Immunization Regulation, Alta Reg 182/2018</u>
Saskatchewan	<u>Health Care Directives and Substitute Health Care Decision Makers Act, 2015, SS 2015, c H – 0.0002</u>
Manitoba	<u>Health Care Directives Act, CCSM, c H27</u> <u>Substitute Consent to Health Care</u> <u>Immunization Regulation, Man Reg 36/2009</u>
Ontario	<u>Health Care Consent Act, 1996 c.2</u> <u>Substitute Decisions Act, 1992 c.30</u>
Quebec	<u>Quebec Civil Code, Articles 14–18</u> <u>Act Respecting End-of-Life Care RSQ c S-32.0001</u>
Newfoundland and Labrador	<u>Advanced Health Care Directives Act, SNL 1995, c A-4.1</u>
New Brunswick	<u>Medical Consent of Minors Act SN.B 1976, c M-6.1</u> <u>Enduring Powers of Attorney Act,, SNB 2019, c 30</u>
Prince Edward Island	<u>Consent to Treatment and Health Care Directives Act, RSPEI 1988,c C-17.2</u> <u>Immunization Regulations, PEI Reg EC520/17</u>
Nova Scotia	<u>Personal Directives Act, SNS 2008, c 8</u>
Yukon	<u>Care Consent Act, SY 2003, c 21</u>
Northwest Territories	<u>Personal Directives Act, SNWT 2005, c16</u>
Nunavut	<u>Guardianship and Trusteeship Act SNWT (Nu) 1994, c 29</u>

Adapted from Coughlin K. Medical decision-making in paediatrics: Infancy to adolescence. Paediatrics & Child Health. 2018;23(2):138-146.

School Board Communication on HPV Immunization Across Canada^g

School Board	Information Provided
<u>Vancouver Public School Board</u>	<u>Parent newsletter</u> mentions that vaccines are the best way to protect children against many diseases
<u>Surrey Public School Board</u>	<u>Parent newsletter</u> mentions children should receive the vaccine by the end of grade 9
<u>Toronto Public School Board</u>	<u>Parent email</u> reinforces that vaccine is voluntary and requires parental consent and exemptions are granted
<u>Toronto Catholic School Board</u>	<p><u>Parent newsletter</u> states that parents have the right to decide whether or not their child is vaccinated and that sexual activity is the main method of contracting HPV and sexual activity is only permitted within marriage.</p> <p>A fact sheet from the <u>National Vaccine Information Center</u> is provided that shares mixed opinions about of the vaccine</p> <p><u>Director of Education message</u>, quoting the <u>Canadian Catholic Bioethics Institute</u>, stated the HPV vaccine is an “inappropriate and unnecessary response to preventing girls from contracting this sexually transmitted virus.”</p>
<u>Peel Public School Board</u>	<u>Board meeting</u> mentions expansion of HPV vaccine program to include boys.
<u>Dufferin-Peel Catholic School Board</u>	<u>Board meeting</u> notes that grade 7 and 8 students received their second dose of HPV vaccinations.
<u>Ottawa-Carleton District School Board</u>	<u>Newsletter</u> reports about a student interested in promoting awareness in Mongolia regarding the HPV vaccine.
<u>Hamilton-Wentworth Public District School Board</u>	<u>International Student Application Package</u> identifies HPV vaccine as part of publicly funded immunization routine schedule.
<u>Hamilton-Wentworth Catholic District School Board</u>	<p><u>Parent newsletter</u> emphasizes that the participation in the school-based immunization program is voluntary.</p> <p><u>The Bishop of Hamilton letter</u> reinforces that abstinence is being promoted.</p>
<u>Calgary Catholic School Board</u>	<p><u>Information provided</u> about change in dose schedule, and informing parents that do not consent to the vaccine that should there be a vaccine-preventable disease outbreak, then their child will be excluded from school.</p> <p><u>The Calgary Catholic School Board of Trustees</u> noted that Bishop Henry was not supportive of the HPV vaccine being offered at Catholic schools.</p>
<u>Edmonton Public School Board</u>	<u>Health and Safety Fact Sheet</u> noted that immunizations will only be given with parental consent. HPV vaccine schedule is outlined.

^g Only school boards where results were discovered are identified.

School Board	Information Provided
<u>Brandon Public School Division</u>	<u>Parent newsletter</u> emphasizes the importance of getting vaccines, including the HPV vaccine, at a young age ⁹ .
<u>Anglophone West School District</u> (Fredericton-Public School Board)	<u>New Brunswick HPV Infection Fact Sheet</u> highlights that the vaccine is most effective if given prior to exposure, which is why it is very important to adhere to the vaccine schedule that ensures that children are immune to HPV before becoming sexually active.
<u>Anglophone East School District</u> (Moncton-Public School Board)	<u>The Immunization Information Sheet for Schools</u> does not list HPV as a required vaccine, but it is included in the <u>routine immunization schedule</u> for grade 7 students.
<u>Anglophone South School District</u> (Saint John-Public School Board)	<u>Routine Immunization Schedule</u> identified as being offered in grade 7
<u>South Slave Divisional Education Council</u> (Hayriver-Public School Board. No Catholic school board)	<u>The Health and Wellness webpage</u> does not mention HPV specifically, but notes that parents are primarily responsible for communicating to their children about communicable disease and the immunization schedule is provided.
<u>Yellowknife Public School Board</u>	<u>Ecole Sir John Franklin High School Minutes</u> notes that HPV vaccine is also made available to boys for free and <u>Principal's message</u> notes HPV catch-up program for girls
<u>Yellowknife Catholic School Board</u>	<u>Committee minutes</u> note that HPV cancers in boys will surpass female cancers in the next few years, but the committee is divided about whether or not it is their responsibility to speak about vaccinations
<u>Regina – Catholic School Division</u>	<p><u>The letter from the Bishops of Saskatchewan</u> identifies 'risk compensation' when receiving the HPV vaccine. It is stated that if young people receive this vaccine, they may have a false sense of security that could contribute to risky behavior.</p> <p><u>The letter from the Bishops of Saskatchewan</u> clarified that HPV vaccines do not increase risky sexual behavior. However, it is emphasized that chastity is always important.</p>

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Production of this document has been made possible through financial support from Health Canada.

