

## **It's time to get real about cancer prevention: Extending OHIP coverage for HPV vaccination**

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### **INTRODUCTION**

Human papillomavirus (HPV) is the most common sexually transmitted infection (STI) in Canada and worldwide (1, 2). Without immunization, 75 percent of sexually active Canadians will be infected with HPV at some point in their lives (2). The risk of HPV contraction is highest shortly after the onset of sexual activity, which for many North Americans, is between ages 15-19 (3). Long-lasting infections with high-risk strains of HPV can cause cancer in infected regions, like the oropharynx, anus, rectum, penis, vagina, vulva, and most commonly, the cervix (4). In fact, research now shows that virtually all cancers of the cervix are caused by HPV infection (4). It is estimated that 1350 Canadian women will be diagnosed with cervical cancer each year and 410 will die from it (5). In recent years, HPV has also been implicated in the pathogenesis of many head and neck cancers, which are a group of cancers associated with significant morbidity, reduced quality of life and one of highest rates of suicide among all cancers (6). The most common oncogenic strains of HPV (strains 16 and 18) that can lead to both cervical cancer and head and neck cancers are covered by current vaccines. In 2020, the FDA approved Gardasil 9 for the prevention of HPV-associated head and neck cancers (7), building upon decades of evidence to demonstrate that HPV can directly cause multiple types of cancer (6).

#### **The current Ontario HPV vaccination program**

Ontario has a publicly-funded, school-based HPV vaccination program, which was first rolled out to female students in grade 8 during the 2007-2008 school year. In 2017, the program was modified to include male students, and the vaccination schedule was changed to take place throughout the grade 7 year, during which time students are between the ages of 11-12. The reasons for this were two-fold: 1) studies have shown that two doses, instead of three are sufficient to produce immunogenic response in children under 14 years of age, and 2) vaccinating a year earlier may provide an opportunity for unvaccinated or incompletely vaccinated pupils to receive the full vaccine regimen before their grade 9 year, which is often associated with changing schools (8). The Ontario HPV vaccination program currently offers the HPV9 vaccine (Gardasil 9), which protects against the same four HPV strains as the original HPV4 vaccine, plus five additional strains that can lead to cervical, anal, genital, and head and neck cancers (9). In most cases, parents or guardians must sign a consent form before a student will be vaccinated (10). The HPV vaccine is not mandatory and is not required for school attendance, unlike other vaccinations given through in-school programs (ie. diphtheria, tetanus, polio, measles, mumps, rubella, meningococcal disease, pertussis and varicella). If students do not receive HPV vaccinations in grade 7, they remain eligible to receive the vaccination series at no cost until the end of their grade 12 year (10). In addition to these vaccination program changes in 2017, Ontario also expanded OHIP coverage of the HPV9 vaccine to include men who have sex with men (MSM) until 26 years of age

(11). This was a critical policy change to ensure high-risk males were able to receive the vaccine free of charge, given that many were not previously eligible for the in-school vaccine program prior to 2017.

### **Lack of OHIP coverage for HPV vaccination is a health equity issue**

Despite this stride towards equitable access to HPV vaccination, the current policy leaves many young adults in a difficult position. There is no OHIP coverage for HPV vaccines for youth beyond their grade 12 year, unless the individual identifies as a member of the MSM population. This means that non-MSM individuals who did not receive HPV vaccination before graduating high school must pay an average of \$550 to receive the vaccine series as a young adult. Interestingly, many private insurance plans through post-secondary institutions also do not cover HPV vaccine costs (12).

Although the optimal time for HPV vaccination is before the onset of sexual activity, barriers to access may prevent many Ontarians from receiving the vaccines until early adulthood. Among these barriers includes the requirement for youth to gain parental consent for the vaccine. We believe the long-term health of Ontarians, especially the reproductive health of women, should not be dictated by decisions made by a guardian when an individual is a minor. The current provisioning of OHIP funding for HPV vaccination overlooks those whose guardians opted out of the vaccine on their behalf at a time when they were below the age of majority in this province. We believe that our government should be supporting young Ontarians in receiving HPV vaccinations because it is a proven investment in long-term health (13). There is also conclusive evidence that vaccinating young adults, even after the onset of sexual activity, confers a significant reduction in HPV-related cancers by protecting against additional strains they have not yet been exposed to (14).

### **Expanded OHIP coverage would be an investment in cancer prevention**

It is difficult to accurately estimate the total degree of health system savings that may be achieved over several decades through a more comprehensive HPV vaccination program in Ontario. There have been a variety of cost-saving and cost-effectiveness evaluations completed across Canada, the United States and Australia, among other countries, all using different outcome indicators such as quality-adjusted life years (QALY), disability-adjusted life years, varying currencies, and models including different types of HPV-associated cancers in analyses. In Canada, it has been estimated that eradication of female HPV diseases through universal vaccination would eliminate an estimated annual economic burden of \$33.3 million on the Canadian healthcare system (13). This estimate did not take into account the economic burden of male HPV diseases.

More recently, an international systematic review of 34 studies provided updated economic evidence regarding gender-neutral vaccination (compared to female-only vaccination) and multiple age cohort immunization programs (14). More than half of the studies examined found there is an economic benefit to gender-neutral vaccination strategies, especially when vaccination coverage for females is below 70-80%. This is of particular relevance for Ontario, given that 2017/2018 vaccination rates through in-school programs were estimated to be as low as 62% for girls and 58% for boys (15). Additionally, the authors of the systematic review noted the benefits are likely underestimated given that many studies did not include male HPV disease outcomes such as penile, anal and oropharyngeal cancers in their analyses. They also found that many studies support multiple age cohort vaccination strategies, and that there is no clear upper limit for a cost-effective age range. A final key consideration for economic analyses is the type of HPV vaccine distributed (ie. nonavalent, quadrivalent, or bivalent). Canadian data has shown that the nonavalent vaccine is more cost-effective than the quadrivalent vaccine, as long as the additional cost per dose does not exceed \$11CAD (16). The National Advisory Committee on Immunization also recommends that Canadian vaccination programs utilize the HPV9 vaccine (as opposed to the bivalent or quadrivalent options), regardless of age or gender (17).

### **HPV vaccination coverage in Ontario lags behind other provinces and territories**

Across Canada, coverage for HPV vaccination varies greatly between provinces and territories. Alberta, Northwest Territories, Saskatchewan and Yukon cover the cost of the vaccine for all males and females up to age 26. British Columbia, Manitoba, New Brunswick, Nova Scotia, Prince Edward Island and Quebec have provincially-funded catch-up programs which allow an extra window for those who missed the school program to be vaccinated free of charge (table 1). Ontario lags behind in providing

comprehensive access to HPV vaccinations, and as a result, Ontarians are not receiving the same standard of care as the majority of other Canadians.

**Table 1: HPV Vaccination Coverage Across Canada**

<i>Ontario (8,10)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 7</li> <li>• Males and females who missed the vaccine in grade 7, provided they have not yet finished their grade 12 year</li> <li>• Males age 26 or under, who have sex with men, who identify as gay, bisexual, or transgender and have not started their HPV vaccine before September 5, 2017</li> </ul>
<i>Alberta (18)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 6 and, if missed, in grade 7 and 9</li> <li>• Males and females up to and including age 26, if missed in school</li> </ul>
<i>British Columbia (19)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 6</li> <li>• Males born after 2006 and females who missed the vaccine in grade 6, provided they started the series before age 19 and finish by age 26</li> <li>• HIV positive individuals age 9-26</li> <li>• Transgender individuals age 9-26</li> <li>• Males age 9-26 who have sex with men, are questioning their sexual orientation but are not sexually active, or are street-involved</li> <li>• Males age 9-18 in care of the Ministry of Children and Family Development</li> <li>• Males of any age in youth custody services centres</li> </ul>
<i>Manitoba (20)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 6</li> <li>• Females born in or after 1997</li> <li>• Males born in or after 2002</li> <li>• Immunocompetent HIV-infected males age 9-26 and females age 9-45</li> <li>• Males age 9-26 and females age 9-45 who have congenital or acquired immune deficiencies, or who are hematopoietic stem cell transplant recipients</li> <li>• Males who are age 18 and younger who are, or who have ever been, incarcerated</li> <li>• Individuals who are, or who have previously been diagnosed with recurrent respiratory papillomatosis (RRP)</li> <li>• Patients under the care of a haematologist or oncologist from CancerCare Manitoba for malignant neoplasms (solid or hematological) or clonal blood disorders who will receive or have completed immunosuppressive therapy. Patients who are hyposplenic or asplenic are also eligible</li> <li>• Males age 9-26 who identify as gay or bisexual</li> <li>• Transgender males and transgender females age 9-26</li> <li>• Females age 9-45 who have certain newly diagnosed high-grade abnormal cervical/pap smear results</li> <li>• Males age 9-26 and females age 9-45 who are victims of sexual assault</li> </ul>
<i>New Brunswick (21)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 7</li> <li>• Grade 7 females or those born in 1995 and after</li> <li>• Grade 7 males or those born in 2005 and after</li> </ul>

<i>Newfoundland and Labrador (22)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 6</li> </ul>
<i>Northwest Territories (23, 24)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 4-6</li> <li>• Males and females age 9-26</li> </ul>
<i>Nova Scotia (25)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 7</li> <li>• Females: Youth who have missed or refused HPV vaccine as part of the school based program up to and including age 18</li> <li>• Males: Youth who have missed or refused HPV vaccine as part of the school based program (beginning September 2015) up to and including age 18</li> <li>• Males up to and including age 45 who have sex with men</li> <li>• As pre-exposure prophylaxis for HIV positive individuals up to and including age 45</li> </ul>
<i>Nunavut (26)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 6 (age 9 or older)</li> <li>• Females and males in grade 9</li> <li>• Males and females who would have been in grade 6 in the 2017/2018 school year or later remain eligible until grade 12</li> </ul>
<i>Prince Edward Island (27)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 6</li> <li>• Males and females who missed the HPV immunization in Grade 6 since 2007</li> </ul>
<i>Quebec (28,29)</i>
<ul style="list-style-type: none"> <li>• First dose provided in school in grade 4 (HPV9) followed by second dose in secondary 3 (HPV2)</li> <li>• Females age 9-17</li> <li>• Males: <ul style="list-style-type: none"> <li>○ In grade 4 of primary school or who have completed grade 4 since 2016-2017</li> <li>○ Age 9-13 who are at risk of exposure to HPV</li> <li>○ In Secondary 3, when their immunization status is updated</li> <li>○ Age 9-17 who attend rehabilitation centres for youth in difficulty, who are under the care of youth protection services or who are homeless</li> </ul> </li> <li>• Males and females age 26 or under who: <ul style="list-style-type: none"> <li>○ Have a weakened immune system</li> <li>○ Are infected with HIV</li> </ul> </li> <li>• Males age 26 or under who have or plan to have sex with men</li> </ul>
<i>Saskatchewan (30)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 6</li> <li>• Males and females up to age 27 if missed in school</li> <li>• Males and females with specified medical conditions (check with public health)</li> </ul>
<i>Yukon (31, 32)</i>
<ul style="list-style-type: none"> <li>• Provided in school in grade 6</li> <li>• Males and females up to and including age 26</li> </ul>

## PRINCIPLES

The Ontario Medical Students Association (OMSA) puts forward the following principles to guide recommendations for extending OHIP coverage of HPV vaccination for everyone until age 26:

1. Ontarians require proactive and evidence-based measures to prevent HPV-associated cancers, which can cause significant morbidity and mortality as well as increased healthcare costs
2. Ontarians should have the same access to HPV vaccination programs as Canadians in other provinces that provide more extensive coverage
3. Improving the health literacy of Ontarians includes educating the public about the risks of contracting HPV and the importance of HPV vaccination in preventing a number of cancers, including cervical and head and neck cancers

These principles follow the core conditions of the Canada Health Act:

1. Universality, in that all Ontarians between the ages of 12-26 should be eligible for OHIP-funded HPV vaccination without discrimination.
2. Comprehensiveness, in that all provincial health insurance programs should cover the cost of HPV vaccination for eligible individuals up until the age of 26 as an important cancer prevention measure. This will allow individuals to make an informed decision when they are of the age of majority, which is especially critical for those who were opted out by guardians as minors.
3. Accessibility, in that all eligible individuals have timely and reasonable access to the HPV vaccine regardless of socioeconomic status, faith, gender, sexual orientation or race.

## RECOMMENDATIONS

The Ontario Medical Students Association recommends the following:

- 1. That the Ontario government provide OHIP coverage for HPV vaccination for all Ontarians until 26 years of age by December 31, 2022.**

This policy adjustment would encourage young adults to reap the benefits of HPV vaccination who, for whatever reason, did not have the opportunity to receive it as a minor. Extended OHIP-funded access is currently available for MSM men until age 26, but there are no safeguards in place to provide affordable vaccine access to non-MSM individuals beyond the completion of grade 12. The cost of acquiring a full HPV9 vaccine series is over \$500 if patients have to pay out of pocket (12). Removing this cost barrier would greatly improve the accessibility of HPV vaccination for Ontarians who may not have been able to access it before the completion of high school. By increasing the comprehensiveness of Ontario's HPV vaccination program, we can expect to reduce morbidity and mortality due to various HPV-related cancers. As such, extending vaccine coverage for all Ontarians until age 26 represents a key investment opportunity that would lead to health system savings by reducing the incidence of HPV infections and HPV-related cancers. We think it is reasonable for this policy change to be enacted by December 31st, 2022.

- 2. That a public awareness campaign be initiated to educate Ontarians about HPV vaccination and HPV-related cancers.**

Additionally, we recommend that the Ontario Medical Students Association launch a social

media-based public awareness campaign to educate medical students and the public about this proposed expansion of coverage and the benefits of HPV vaccination. Engaging more students and the larger public will further our advocacy efforts and amplify this important (and timely) public health message. It is critical that Ontarians be informed of the health benefits of the HPV9 vaccine and that the cost of the vaccine is not covered as broadly in Ontario as it is in many other provinces. Increasing public awareness about the potential consequences of HPV infection and improving Ontarians' health literacy about the safety and efficacy of HPV vaccination is also important to promote vaccine uptake. By collaborating with the OMSA Ontario Political Advocacy Committee, we will create a series of infographics which communicate salient points from this position paper. This campaign will also provide Ontarians with information on how to connect with their Member of Provincial Parliament to demand expanded vaccine coverage. We propose these infographics be developed over the summer of 2021, and the social media campaign be launched in September 2021.

**3. That the OMSA dedicates a day of action to improving HPV vaccine uptake, or to improving accessibility and public uptake of vaccines in general.**

This is a critical policy issue that needs to be addressed in Ontario. There are clear population health benefits to expanding vaccine coverage, and doing so would remove financial barriers to accessing this service. As such, we recommend that this topic be included in the list of potential topics for the OMSA's Day of Action in 2021. Medical students should be made aware of this gap in preventative healthcare and should be given the opportunity to choose to advocate for improving Ontarians' accessibility to this potentially life-saving vaccine.

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