School Based Immunization Program: A Focus on HPV

To:	Chair and Members of the Board of Health
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Recommendations

It is recommended that the Board of Health receive this report for information.

Key Points

- As part of the provincial school immunization program Wellington Dufferin Guelph Public Health (WDGPH) offers the hepatitis B (Hep B), human papillomavirus (HPV) and quadrivalent meningococcal conjugate (MCV4) vaccines to students in over 100 elementary school-based clinics. In WDGPH the uptake for these vaccines is above the provincial average for both 12 and 17-year-olds.
- Of these three vaccines, the HPV vaccine continues to have a lower immunization coverage rate across all grades.
- There is strong evidence that the HPV vaccine successfully prevents many cancers in both males and females.
- In Canada, the National Advisory Committee on Immunization (NACI) and the Canadian Partnership Against Cancer (CPAC) have set targets of 90% HPV vaccine coverage for all 17-year-olds by the year 2025.

- In the 2023-2024 school year the WDGPH HPV immunization coverage rate for 17-year-olds is 77% and 50% for 12-year-olds

- Recently updated NACI recommendations continue to strongly recommend HPV vaccination for all individuals aged 9 to 26 years and now strongly recommend that individuals aged 9 to 20 years receive 1 dose and those 21 to 26 years receive 2 doses.

Background

The prevention of vaccine preventable diseases and related outbreaks relies on high immunization coverage rates. In Ontario there are three publicly funded school-based immunizations delivered to grade 7 students (12-year-olds) by public health units. These include the hepatitis B (Hep B), human papillomavirus (HPV) and quadrivalent meningococcal conjugate (MCV4) vaccines.[1] These vaccines protect against Hepatitis B infection, liver cancer, HPV infections, HPV related cancers and bacterial meningitis.

In Wellington Dufferin Guelph Public Health (WDGPH) these vaccines are offered at Public Health clinics in all office locations and at all public and private schools, resulting in over 100 school-based clinics. A relatively small number of students receive the Heb B, HPV and meningitis vaccine at their physician's office.

At the end of each school year Public Health Ontario (PHO) provides an annual immunization coverage report for school pupils in Ontario, this can be accessed on the PHO website, along with historical reports. WDGPH immunization coverage rates are higher than the reported provincial rates for both 17 and 12-year-olds. The immunization coverage rates of the Hep B, HPV and MCV4 vaccines in WDGPH compared to the province of Ontario for the 2022/23 school year are displayed in Appendix A.[1]

Discussion

HPV infection increases the risk of developing several types of cancer including oropharyngeal, anogenital and cervical cancer which is almost exclusively caused by HPV.[2] In 2020, the World Health Organization (WHO) announced a global strategy to eliminate cervical cancer, and a key aspect of this strategy includes a 90% HPV vaccine coverage rate for all 15-year-old girls by 2030.[3] In Canada, both the National Advisory Committee on Immunization (NACI) and the Canadian Partnership Against Cancer (CPAC) have set a target of 90% HPV vaccine coverage rates for all 17-year-olds by the year 2025.[2] The CPAC reports that there are 3,800 new cancer cases in Canada annually that are caused by HPV infections and that by 2042, this number is expected to almost double.[2] The current updated NACI recommendations on the HPV vaccine states that the HPV vaccine is proven to be highly effective, it works most effectively if given at a

younger age prior to exposure to HPV, and it will significantly reduce HPV infections and potentially eliminate cervical cancer.[3]

Oropharyngeal Cancer

Oropharyngeal cancer (OPC) can develop in parts of the mouth, throat, base of the tongue, and tonsils.[5] Traditionally, this type of cancer has been linked to tobacco and alcohol use.[5] However, there's a growing recognition that infection with the human papillomavirus (HPV) is now a major risk factor for OPC.[5] The number of cases of OPC related to HPV is on the rise, and it particularly affects males at a higher rate compared to females. Recent American data indicates that 60-70% of OPC is caused by an HPV infection and is four times more common in men than women.[6,7] Currently, OPC in males is the leading HPV-related cancer in Canada and the United States.[5,8,9] Unfortunately, OPC can take up to 30 years to develop after the initial HPV infection, and without an effective method to screen for OPC, these clients often seek medical care when their disease is at an advanced stage.[5] While the survival rates for OPC are generally high, many patients often experience life altering long-term side effects from the radiation, chemotherapy and surgical treatments such as difficulty swallowing, speech problems, and loss of taste.[5] The current HPV vaccine that is offered in Ontario provides protection against 9 strains of HPV including types 16 and 18 which are most commonly related to cervical cancer but also cause many other types of cancer including OPC.[9] Considering the significant impact of the HPV vaccine in cancer prevention this report will focus on the HPV vaccination that is offered as part of the publicly funded school immunization program at WDGPH.

New HPV Vaccine Recommendations

In 2006, the HPV vaccine was authorized, and this has resulted in high efficacy in preventing HPV infections and related cancers.[10] In Canada, the current recommended vaccine schedule includes a two or three dose series depending on the age of initiation. There is emerging evidence that a single dose of HPV vaccine has similar efficacy in preventing HPV infection.[10]

In a June 2024 study, cervical screening data on women in Scotland born between 1988 and 1996 found that no cases of invasive cervical cancer were found in women who received HPV vaccine at 12-13 years of age, regardless of the number of doses.[11] This study also noted that women who received the HPV vaccine between 14 and 22 years had significant reduction in cases if they had 3 doses of the HPV vaccine.[11]

Further to this, in April 2022 the WHO referred to evidence that a single dose of HPV vaccine provides highly effective protection against HPV infection and announced a single dose as an effective approach for people aged 9-20 years of age.[12] Recent research to assess the potential impact of moving to a single dose HPV vaccine schedule was conducted by Canadian researchers. This study analysis predicts that while there is a risk of potential rebound HPV

infections or cervical cancer cases with a one-dose HPV vaccination it is likely that this more efficient approach would prevent a similar number of cervical and other HPV-related cancers over the next century in Canada.[12] The researchers also highlighted that the limitations to this study include lack of data on duration of protection from a one-dose HPV vaccine; lack of data on prevention of other HPV-related cancers for boys; and a lack of data on potentially waning protection for those >40 who have new sexual partners.[12]

NACI is a panel of experts in Canada that provides evidence-based recommendations and guidance on immunization practices for policy makers to make informed decisions and ensure effective vaccination programs. In a recent update on recommendations on the HPV vaccine NACI stated that there has been extensive research in last ten years indicating that 1-dose of HPV vaccine in females can provide similar health outcomes as a 2-dose schedule.[3] On July 24, 2024, NACI provided the following recommendations on the HPV vaccine:

- **NACI continues to strongly recommend HPV vaccination for all individuals 9 to 26 years of age.**
- **NACI strongly recommends that individuals 9 to 20 years of age should receive 1 dose of HPV vaccine, and individuals 21 to 26 years of age should receive 2 doses of HPV vaccine.**
- **Nonovalent 9vHPV vaccine should be used as it provides protection against the greatest number of HPV types and associated diseases**
- **People that are 27 years of age and older may receive the HPV vaccine as a 2-dose schedule in consultation with their healthcare provider[3]**

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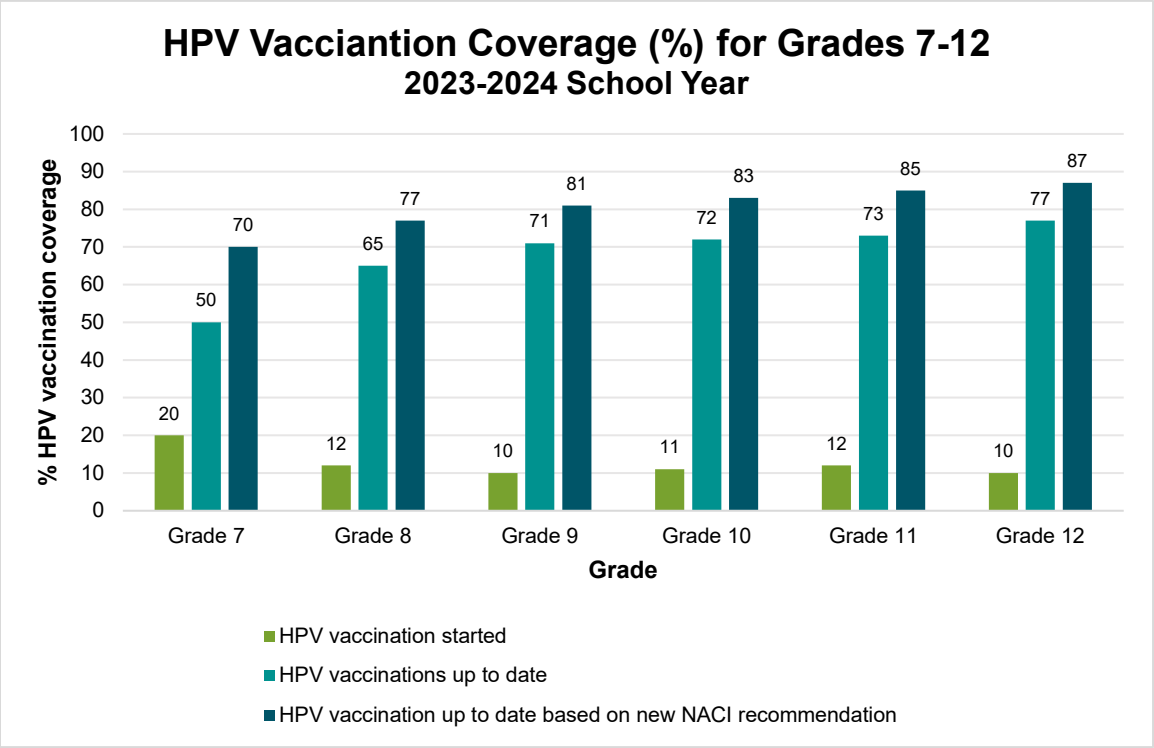
HPV Coverage in WDGPH

Currently, the HPV vaccine is offered as a 2-dose series initially to students that are in grade 7. In the 2023-2024 school year the uptake of completed vaccine series in Grade 7 was 50% and by Grade 12 the uptake had reached 77%. WDGPH continues to offer the HPV vaccine from grade 7 through to grade 12 to provide protection to students before they leave school and when the vaccine is still free.



The figure above shows the local uptake of HPV vaccine in WDGPH in the 2023-2024 school year from Grades 7 through 12 as well as the updated coverage rates in line with the new NACI guidance recommending that one dose of HPV vaccine is sufficient to provide completion of the series. The overall uptake of completed 2-3 dose HPV vaccine series among female students is slightly higher than males at 72.8% and 70.5% respectively. The current uptake with a 2-3 dose series is lower in Grade 7 and continues to rise as students approach graduation, but it is not yet at 90% coverage for 17-year-olds as recommended by NACI and CPAC.

At the time that this report was written the Ministry of Health of Ontario had not yet announced implementation of this change to a 1-dose schedule for the 2024/25 school year. WDGPH will continue to strongly advocate for the use of the HPV vaccine as a key health care decision to prevent many cancers in both males and females.

Strategies to Increase Uptake

To increase the HPV vaccination coverage rate to reach the NACI target of 90% WDGPH continues to use many different and innovative communication methods to contact students that remain eligible. Grade 7 parents receive an online or paper consent and information package directly from WDGPH via local school communication. In the 2023-2024 school year 6600 high school students received notification via letter if they still needed either the Hep B or HPV vaccine; this letter resulted in action (i.e. having a vaccine) from 35% of students for the Hep B vaccine and 25% of students for the HPV vaccine. In June 2024 WDGPH implemented a

‘Graduation vaccine campaign’ reaching out to all graduates via school-based email and social media to update their vaccines before leaving school, in addition robocalls and texts were sent directly to those students still not up to date for the HPV or HB vaccine to make an appointment.

WDGPH will implement a social media campaign linked to updated website pages, from June 2024 – June 2025 with consistent HPV educational messaging to increase awareness and knowledge about the vaccine and highlighting HPV and risks associated with it (e.g. related cancers). The HPV communications plan builds off lessons learned during the COVID-19 pandemic. Campaigns that urged individuals to protect their family members by encouraging vaccination resonated deeply with the public's desire to keep their loved ones safe. COVID-19 also highlighted the importance of collective action in public health. Campaigns that emphasized the role of each person in protecting the community by getting vaccinated and encouraging others to do the same fostered a strong sense of social responsibility. This collective mindset was crucial in driving community-wide vaccination efforts.

In conclusion, WDGPH remains committed to improving health outcomes and the well-being of our community’s health through accessible HPV vaccination initiatives. By offering vaccinations via multiple channels including school clinics, in-house sessions, and off-site locations in rural areas, the agency is committed to ensuring that all eligible students have convenient access to this key measure to prevent cancer for both males and females. A comprehensive communication strategy, which includes mailed letters, emails, texts, robocalls, social media campaigns, and school notifications, aims to inform and empower students and parents alike to take advantage of these opportunities. Together, WDGPH continues to strive towards a healthier future for our community by protecting against HPV-related infections and cancers.

Health Equity Implications

Reducing health inequities is a priority in WDGPH’s 2024-2028 Strategic Plan. The Vaccine Preventable Disease team implements many strategies to decrease barriers to vaccines for clients in the community including; offering vaccine clinics in all public and private schools, and off-site locations to provide greater access in rural areas; collaboration with Guelph Immigration Services to assist with the interpretation of documents for school vaccine clinics, and processes for submitting vaccine records; translation of vaccine information sheets for Hep B, HPV and MCV4 into the top ten languages as noted by local school boards; and providing local primary care offices with streamlined vaccine ordering processes to enhance access for students at their locations.

Conclusion

As WDGPH prepares for the upcoming new school year, it is important to emphasize all the publicly funded vaccines that are offered in the school immunization program. These vaccines protect against Hepatitis B infection, liver cancer, HPV infections, HPV related cancers and bacterial meningitis. This report highlighted the many successes of the HPV vaccination, which has been scientifically proven to prevent many different types of HPV infections and related cancers.

Starting in September local schools will be sending parents/guardians of grade 7 students the online consents and information packages regarding school vaccine clinics. The Hep B, HPV and Meningitis vaccine will be available to students that attend school clinics or schedule an appointment at WDGPH or at their primary care physician's office.

Ontario Public Health Standards

Foundational Standards

- ☒ Population Health Assessment
- ☒ Health Equity
- ☐ Effective Public Health Practice
- ☐ Emergency Management

Program Standards

- ☐ Chronic Disease Prevention and Well-Being
- ☐ Food Safety
- ☐ Healthy Environments
- ☐ Healthy Growth and Development
- ☒ Immunization
- ☒ Infectious and Communicable Diseases Prevention and Control
- ☐ Safe Water
- ☒ School Health
- ☐ Substance Use and Injury Prevention

2024-2028 WDGPH Strategic Goals

More details about these strategic goals can be found in WDGPH's 2024-2028 Strategic Plan.

☒ Improve health outcomes

☒ Focus on children's health

☐ Build strong partnerships

☐ Innovate our programs and services

☐ Lead the way toward a sustainable Public Health system

References

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13. BH.01.NOV0619.C19 Vaccine Coverage in School-Age Children WDGPH

14. BH.01.FEB0222.R02 Immunization Coverage for School-Based Immunization WDGPH

Appendices

Appendix A

Table 1.1: Immunization Coverage (%) for school-based immunization programs among 17-year-olds (2022-2023 school year)

	Hep B	HPV	MCV4
WDGPH	80.2	71.6	94.5
Ontario	76.4	68.6	91.1

Table 1.2: Immunization Coverage (%) for school-based immunization programs among 12-year-olds (2022-2023 school year)

	Hep B	HPV	MCV4
WDGPH	59.2	50.5	78.7
Ontario	58.2	47.8	73.7