

# Pocket Guide for Immunizers:

## HPV Vaccination

**The purpose of this pocket guide is to serve as a tool for health care providers to learn more about human papillomavirus (HPV) vaccines, enabling them to make strong and informed recommendations to their patients.**



Human papillomavirus (HPV) is endemic worldwide, and is today the most common sexually transmitted infection in Canada. Almost every sexually active Canadian will be exposed to HPV in their lifetime; it is estimated that around 75% of sexually active Canadians who have not been immunized against HPV will have an HPV infection at some point in their life.

While some HPV infections can cause visible genital warts, many infections will run their course without any outwardly noticeable symptoms. The invisible health risks of infection, however, are severe. HPV infections are the cause of almost all cases of cervical cancer, as well as being a cause of other cancers in both men and women, including oropharyngeal cancer, anal cancer, and penile cancer. It is estimated that HPV-related cancers account for 5.2% of all cancers worldwide.

With the advent of vaccines that are highly effective against the highest-risk genotypes of HPV, a wide group of common and deadly cancers are now vaccine preventable. In addition to keeping individuals safe from genital warts and HPV-caused cancers, a diligent immunization program has the very real potential to virtually eliminate cervical cancer in the Canadian population. In the United States, the HPV vaccine was introduced in 2006 and has helped to dramatically reduce the incidence rates of cervical cancer within the country. The American Cancer Society reported that from 2012 to 2019, there was a 65% decrease in the incidence rates of cervical cancer among women ages 20 to 24<sup>1</sup>. Cervical cancer is becoming a vaccine-preventable cancer.

**Combined with condom use and other safer sex practices, HPV vaccination is essential for protection against Canada's most ubiquitous sexually transmitted infection.**

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Please note that the Canadian Immunization Guide Chapter on Human Papillomavirus Vaccine from the National Advisory Committee on Immunization (NACI) is due for revisions. In particular, the recommended HPV immunization schedules will be reviewed. Immunize Canada will release an updated version of this pocket guide once the revisions to the chapter on HPV immunization have been published. Please refer to the recommendations summarized in this pocket guide until then.

<sup>1</sup>American Cancer Society. (2023.) Incidence Drops for Cervical Cancer Drop But Rises for Prostate Cancer. <https://www.cancer.org/research/acs-research-news/facts-and-figures-2023.html>

This pocket guide references recommendations made in the Canadian Immunization Guide Chapter on Human Papillomavirus Vaccine from the National Advisory Committee on Immunization (NACI), information from the product monograph for GARDASIL<sup>®</sup>9 from Merck, and information from the product monograph for CERVARIX<sup>®</sup> from GlaxoSmithKline.

## What vaccines are available?

The two HPV vaccines authorized for use in Canada are both recombinant formulations, with the most salient difference being the number of HPV genotypes they protect against. There are more than 100 known genotypes of HPV, with varying levels of risk for cancers and genital warts. Both authorized HPV vaccines protect against the two highest-risk types, with HPV9 adding protection against moderate- and lower-risk types.

**Table 1: Preparations Authorized for Use in Canada**

Class Code	Class Details	Vaccine Name	Vaccine Code
HPV	Recombinant vaccines protecting against multiple genotypes of HPV	CERVARIX <sup>®</sup>	HPV2
		GARDASIL <sup>®</sup> 9	HPV9

*Note: Throughout the rest of this guide, vaccines will be referred to by vaccine code when there is a specific recommendation within the class, and by class code when there is not.*

## What is the recommended dosage and how is it given?

For both authorized preparations, dosage is 0.5mL administered intramuscularly (IM).

## How do I choose which vaccine to give?

The majority of HPV-related cancers are caused by just two genotypes of the virus: type 16 and type 18. Immunization against these two types is therefore the priority. These are precisely the types protected against by the HPV2 vaccine; protection against these types is also included in the HPV9 vaccine. HPV9 adds protection against two types of HPV known to cause genital warts, as well as protection against five additional, less common, cancer-causing genotypes. HPV9 can be preferred for the broadest protection, although cost and availability may affect this choice. Again, both formulations are effective against the most dangerous cancer-causing genotypes. HPV2 is not authorized for use in boys and men.

## A Note on Interchangeability

Whenever possible, the same HPV vaccine should be used to complete a vaccine series. If the vaccine used for previously received doses is not known, or not available, any authorized HPV vaccine may be used to complete the vaccine series.

## Who should receive the HPV vaccines?

### Healthy girls (9 to 14 years of age)

- Routine immunization with HPV2 or HPV9 is recommended
- Provincial and territorial schedules may consist of either 2 or 3 doses
- The timing of the first dose may vary by provincial or territorial schedule
- HPV vaccination prior to onset of sexual activity is recommended, to maximize the benefit of the vaccine
- [See Table 2 for schedule](#)

### Girls and women 15+ years of age

- Immunization with HPV2 or HPV9 is recommended for those up to 27 years of age who have not been previously immunized
- Immunization can be considered at 27 years of age and older for unimmunized women at ongoing risk of exposure
- Peak risk for HPV infection occurs within 5 to 10 years of the onset of sexual activity. There is, however, a second peak observed in sexually active women aged 45 years and older
- A 3-dose schedule is recommended in all cases where immunization begins at or after 15 years of age
- [See Table 2 for schedule](#)

### Healthy boys (9 to 14 years of age)

- Routine immunization with HPV9 is recommended
- HPV2 is not authorized for use in boys and men
- Provincial and territorial schedules may consist of either 2 or 3 doses
- The timing of the first dose may vary by provincial or territorial schedule
- HPV vaccination prior to onset of sexual activity is recommended to maximize the benefit of the vaccine
- [See Table 3 for schedule](#)

### Boys and men 15+ years of age

- Immunization with HPV9 is recommended for those up to 27 years of age who have not been previously immunized
- HPV2 is not authorized for use in boys and men
- No evidence-based recommendations can be made for immunization with HPV vaccines in men 27 years of age and older; however, immunization may be offered to unimmunized men at ongoing risk of exposure
- Gay, bisexual, and other men who have sex with men have a disproportionately high burden of infection with high-risk HPV genotypes, and immunization should be strongly considered
- A 3-dose schedule is recommended in all cases where immunization begins at or after 15 years of age
- [See Table 3 for schedule](#)

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## Who should not receive the HPV vaccines?

These vaccines have a well-established history of safety, but there are some contraindications and situations which warrant extra precautions.

- HPV vaccines are not recommended for use during pregnancy due to a lack of safety data, although there is no evidence that immunization during pregnancy increases risk of adverse outcomes. HPV immunization (including the continuation of a vaccination series initiated before pregnancy) should be delayed until after the completion of the pregnancy.
- HPV vaccines are contraindicated in persons with a history of anaphylaxis after previous administration of the vaccine, and in persons with proven immediate or anaphylactic hypersensitivity to any component of the vaccine or its container. Individuals who develop symptoms indicative of hypersensitivity after receiving a dose of HPV vaccine should not receive further doses.

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## Can these vaccines be given at the same time as other vaccines?

HPV vaccines may be administered concomitantly with other age-appropriate vaccines. As they are known to cause more injection pain, HPV vaccines should be administered after other vaccines given in the same visit.

### REMEMBER

In all cases, if vaccines are administered simultaneously, a separate injection site and a different syringe must be used for each.

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## What about side effects and adverse reactions?

Severe adverse effects are rare following immunization and, in most cases, data does not suggest a causal relationship. Clinical trials have found no increase in the number or type of serious adverse events in recipients of HPV vaccines, compared with those who received placebo. Some short-term mild to moderate reactions are more commonly seen.

- Pain at the injection site is extremely common.
- Swelling and redness at the injection site also occur commonly.
- Systemic reactions such as headache, fever, and nausea can also occur, though they are not as common as injection site reactions.
- Reactions generally last no more than a few days, and do not prevent completion of the immunization schedule.

## What if someone has already been exposed to HPV before immunization?

To maximize the benefit of immunization, it is recommended that HPV vaccines be administered before the onset of sexual activity. Immunization after the onset of sexual activity continues to be beneficial, however, as protection will still be conferred against genotypes to which the vaccine recipient has not been exposed. Sexually active vaccine recipients should be advised that they may already be infected with one or more HPV genotypes, and that the vaccine will not have any therapeutic effect on pre-existing infections.



## Why do men and boys need to be immunized against HPV?

In the past, it was sometimes recommended that only girls and women be vaccinated against HPV. New data and increased understanding of the risks associated with this disease have, however, led to the recommendation that all Canadians be immunized.

Although HPV infection is most commonly associated with cervical cancer, it can also cause cancers of other types, including penile cancer, anal cancer, and oropharyngeal cancers, all of which affect men. Likewise, the genital warts caused by HPV can affect both men and women.

Models predict that, as well as preventing cancers and genital warts in men, the inclusion of men and boys in routine HPV immunization programs will also prevent additional cases of deadly cervical cancer in women.

## What about immunocompromised individuals?

Immunization with a 3-dose schedule of HPV vaccine is safe and recommended for immunocompromised individuals, though the immune response and vaccine efficacy may be lessened. For complex cases, referral to a physician with expertise in immunization or immunodeficiency is advised. For example, HPV vaccination may be considered prior to surgery in a 7- or 8-year-old child who will be immunosuppressed following a renal transplant.

## Immunization schedules

**Table 2: Recommended Routine HPV Immunization for Healthy Girls and Women**

When HPV immunization begins before 15 years of age	2 or 3 doses of HPV2 or HPV9, depending on provincial or territorial schedule
When HPV immunization begins at or after 15 years of age	3 doses of HPV2 or HPV9, depending on provincial or territorial schedule

**Table 3: Recommended Routine HPV Immunization for Healthy Boys and Men**

When HPV immunization begins before 15 years of age	2 or 3 doses of HPV9, depending on provincial or territorial schedule
When HPV immunization begins at or after 15 years of age	3 doses of HPV9, depending on provincial or territorial schedule

### Notes on Dose Scheduling in Tables 3 and 4

In all HPV immunization series, the first and last dose should be separated by a minimum of 24 weeks. In a three-dose series, the minimum interval between the first and second doses is 4 weeks, and the minimum interval between the second and third doses is 12 weeks.

When HPV9 is administered as a three-dose series for children under 9 years of age or adolescents 15 years of age and older, all HPV9 doses should be given within 1 year.

When HPV9 is administered as a two-dose series for children and adolescents between 9 and 14 years of age, the second dose should be given within a timeframe of 5 to 13 months after the first dose. If the second dose is given **earlier than 5 months** after the first dose, the series should always be completed with a third dose.

## Incomplete or interrupted vaccine schedules

An HPV vaccine series should be initiated, even if the series may not be completed according to schedule. If an HPV vaccine series is interrupted, the series may later be continued without needing to be restarted.