



## Genital Tract Cancers in Females: Human Papillomavirus Related Cancers (Cervical, Vaginal & Vulvar)

Effective Date: June 15, 2014

Revised Date: July 15, 2016

### Scope

This guideline provides recommendations for the screening, diagnosis, and follow-up care of human papillomavirus (HPV) related cancers, including cervical, vaginal, and vulvar, in females aged  $\geq 9$  years (due to the HPV immunization recommendations).

This guideline is part of the [BCGuidelines.ca](http://BCGuidelines.ca) – *Genital Tract Cancers in Females* series. The series includes two other guidelines: *Endometrial Cancer and Ovarian, Fallopian Tube and Primary Peritoneal Cancers*. Signs and symptoms for the different female genital tract cancers may overlap (e.g., abnormal uterine bleeding); and therefore these guidelines may need to be used in conjunction with each other when performing initial diagnostic investigations.

### Key Recommendations

- HPV immunization is recommended for the prevention of HPV infection, which is the major risk factor for cervical, vaginal and vulvar cancers.<sup>1</sup>
- Screening for cervical cancer in asymptomatic females should be offered as per the BC Cancer Agency's (BCCA) Cervical Cancer Screening Program which were update June 2016.<sup>2</sup>
- If cancer of the cervix is clinically suspected, then proceed to biopsy or colposcopy - even in the case of a normal Papanicolaou smear test (Pap test) result.

### Risk Factors

The major risk factor for cervical, vaginal, and vulvar cancers is HPV infection.<sup>1,2</sup> Additional risk factors include sexual activity at a young age, multiple sexual partners or a partner who has had multiple sexual partners, history of other sexually transmitted infections (STIs), and smoking.<sup>1-4</sup>

### Prevention

Prevention of cervical, vaginal and vulvar cancers revolves around preventing HPV infection through HPV immunization and avoiding skin-to-skin sexual contact with another person through safe sexual behaviours (e.g., condom use<sup>5,6</sup>). Sexual contact may be defined as intercourse, digital or oral sexual contact involving the genital area.

#### ► HPV Immunization Recommendations<sup>7</sup>

According to National Advisory Committee on Immunization (NACI; February 2015):

- 1) HPV vaccine (Cervarix® or Gardasil®) is recommended for females between 9 and 26 years of age.
- 2) HPV vaccine (Cervarix® or Gardasil®) may be administered to females > 26 years of age.

## ▶ HPV Vaccines

For females aged 9 to 45 years without prior HPV exposure, both the quadrivalent (Gardasil®) and bivalent (Cervarix®) vaccines have been shown to have a positive effect for the prevention of HPV-related infection and precancerous cervical disease. However, the overall effectiveness of preventing against cervical cancer has not been demonstrated.

As the HPV vaccines do not protect against all cancers of the cervix, nor do they eliminate pre-existing infection, females should continue cervical cancer screening as per BCCA guidelines. For males, Gardasil® is the only vaccine approved for use in males aged between 9 and 26 years, but at this time there is no publicly funded HPV vaccine program in BC for males.

The two types of HPV vaccines are:

1. Quadrivalent HPV vaccine (Gardasil®)<sup>7,8</sup> – protects against HPV types 6, 11, 16, and 18
  - Indications for females aged between 9 and 45 for the prevention of:
    - i. cervical, vulvar and vaginal cancer (caused by HPV types 16 and 18);
    - ii. genital warts (condyloma acuminata; caused by HPV types 6 and 11); and
    - iii. precancerous or dysplastic lesions (caused by HPV types 6, 11, 16 and 18).
  - Indications for females aged between 9 and 26 for the prevention of:
    - i. anal cancer (caused by HPV types 16 and 18); and
    - ii. precursor lesions (caused by HPV types 6, 11, 16 and 18).
  - Offered free for BC females born in 1994 or later, available through a school-based program (starting in grade 6), physician, pharmacist, or local health unit.<sup>9</sup>
  - Also available for those not eligible for free HPV vaccine through patient-pay (approximately \$500 for the 3 doses).
2. Bivalent HPV vaccine (Cervarix®)<sup>7,10,11</sup> – protects against HPV types 16 and 18
  - Indications for females aged between 9 and 45 for the prevention of:
    - i. cervical cancer (caused by HPV types 16 and 18); and
    - ii. precancerous or dysplastic lesions (caused by HPV types 16 and 18).
  - Offered free for BC females aged ≤ 26 years and born before 1994, available through physician, pharmacist, sexual health clinic, youth clinics and student health centre. This is a time-limited program that is available while supplies are available, until the vaccine has expired.
  - Also available for those not eligible for free HPV vaccine through patient-pay (approximately \$300 for the 3 doses).

Age at time of receipt of 1 <sup>st</sup> dose	Recommended Vaccine (Number of Doses)	Costs
9 - 14*	Gardasil® (2 doses)	Publicly funded program
15 - 19	Gardasil® (3 doses)	
20 - 26	Cervarix® (3 doses) or Gardasil® (3 doses)	Cervarix® – Publicly funded by a one-time program Gardasil® – Patient pay
> 26	Gardasil® (3 doses) or Cervarix® (3 doses)	Patient pay
> 45	Neither	

\*Girls who are known to have immune systems defects associated with solid organ transplant, stem cell transplant or HIV infection should receive 3 doses of HPV vaccine given at 0, 2, and 6 months.

For more information on immunization and the vaccines, refer to 1) *Appendix A - HPV Vaccine Descriptions*; 2) Public Health Agency of Canada, link: [www.phac-aspc.gc.ca/](http://www.phac-aspc.gc.ca/); 3) BC Centre for Disease Control (BCCDC), link: [www.bccdc.ca/](http://www.bccdc.ca/); or 4) ImmunizeBC, link: [immunizebc.ca/](http://immunizebc.ca/).

## Screening

### **Cervical Cancer**

In BC, conventional Pap test (also known as cervical cytology) is currently the only test used for the cervical cancer screening program for asymptomatic females. Refer to *Appendix B: Pap Sampling Technique*.

Other tests include liquid-based cytology (LBC) (which is currently unavailable in BC) and high-risk human papillomavirus (hrHPV) molecular testing (which is available in BC by patient pay).

Symptomatic women should be treated appropriately. If cancer of the cervix is clinically suspected, then refer to BCCA's Division of Gynecologic Oncology, even if there are negative screening results.

*Age to Start Screening for Average Risk (as of June 2016)<sup>2</sup>*

It is currently recommended that screening for cervical cancer should begin at age 25, including those who have received the HPV vaccine, in same sex relationship, or transgender with a cervix. Screening is not recommended for those aged 25 – 69 who have never had sexual contact (i.e., intercourse, digital sexual contact, oral sexual contact) or patients after total hysterectomy (i.e., removal of cervix) but with no history of pre-cancerous lesions or cervical cancer.

**Controversies in Care<sup>12</sup>**

There are different recommendations on when to initiate screening for cervical cancer. These include starting at age 21, 25, or 30, or when a female becomes sexually active regardless of age. The Canadian Task Force on Preventive Health Care (CTFPHC)<sup>13</sup> recommends routine screening should start at the age of 25 for those who are or have been sexually active. The age 25 is suggested because 1) invasive cervical cancers in females < 25 are rare; 2) screening methods are less effective in younger females; 3) the majority of oncogenic HPV infections as well as precursor lesions tend to resolve spontaneously in younger females; and 4) harms associated with screening and treating younger females (e.g., treatment of precursor lesions may be associated with an increased risk of preterm births).

*Screening Intervals for Average Risk (as of June 2016)<sup>2</sup>*

Repeat Pap tests every 3 years. An optimal screening interval will minimize the detection of transient cervical intraepithelial neoplasia (CIN) lesions, without exposing females to an unacceptably high risk of invasive cervical carcinoma.

*Screening Intervals for Higher Risk (as of June 2016)<sup>2</sup>*

- Immunocompromised individuals (includes those with human immunodeficiency virus [HIV/AIDS], lymphoproliferative disorders, organ transplants, and those under long-term immunosuppression therapy: *Annual screening.*
- History of pre-cancerous lesions or cervical cancer:

History	Screening Recommendations
CIN 2+: treated (cone, LEEP, ablative therapy), HPV negative, discharge from colposcopy	<i>Follow average risk guidelines.</i>
CIN 2+: treated (cone, LEEP, ablative therapy), HPV positive, discharge from colposcopy	<i>Annual screening until there are 3 no significantly abnormal* Pap tests within 5 years, and then follow average risk guidelines.</i>
CIN 2+: untreated, regressed or discharged	<i>Annual screening until there are 3 no significantly abnormal* Pap tests within 5 years, and then follow average risk guidelines.</i>
CIN 2+: untreated and lost to follow-up	<i>Refer to colposcopy for assessment.</i>
Invasive Cervical Cancer and discharged from colposcopy or the BCCA	<i>Annual screening until there are 3 no significantly abnormal* Pap tests within 5 years, and then follow average risk guidelines.</i>
High-grade squamous intraepithelial lesion (HSIL): CIN 1 or negative at initial colposcopy, no subsequent biopsy or follow-up	<i>Refer to colposcopy for assessment.</i>
HSIL: CIN 1 or negative at colposcopy, discharge from colposcopy	<i>Annual screening until there are 3 no significantly abnormal* Pap tests within 5 years, and then follow average risk guidelines.</i>
Adenocarcinoma in situ (AIS) cytologic diagnosis. CIN 1 or negative at colposcopy, discharged from colposcopy	<i>Annual screening until there are 3 no significantly abnormal* Pap tests within 5 years, and then follow average risk guidelines.</i>

- Hysterectomy with the cervix removed and a history of pre-cancerous lesions or cervical cancer:

History	Screening Recommendations
Invasive cervical cancer Histologically proven CIN 2+	<i>Vaginal vault smear annually – for 25 years after the most recent histological evidence of CIN 2+ or vaginal intraepithelial neoplasia (VAIN) 2+.</i>
HISL: CIN 1 or negative at colposcopy	<i>Vaginal vault smear annually – for 25 years after the most recent HSIL.</i>

- High risk behaviours: *Follow average risk guidelines.*

\* Significant abnormality is anything more severe than atypical squamous cells of undetermined significance (ASCUS) or low-grade squamous intraepithelial lesion (LSIL).

### Age to Stop Screening for Average Risk<sup>2</sup>

There is a lack of evidence for or against screening in older age groups. In BC, the current recommendation is that females should discontinue cervical cancer screening at age 69, provided that they have had at least three negative screening test results in the past 10 years and have not been previously treated for CIN or invasive cancer.

### Age to Stop Screening for Higher Risk<sup>2</sup>

Category	Screening Recommendations
Immunocompromised individuals	<i>The benefits of screening beyond age 69 must be weighed in the context of the overall health of the patient.</i>
History of pre-cancerous lesions or cervical cancer	<i>Age 69 or 25 years since diagnosis with at least 5 negative Pap test with no significantly abnormality* in last 10 years whichever occurs later.</i>
Hysterectomy with the cervix removed and a history of pre-cancerous lesions or cervical cancer	
High risk behaviours	N/A

### Vaginal and Vulvar Cancer

These areas should be examined during a gynecological examination for lesions or skin changes.

## Diagnosis

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### Cervical Cancer

Recommendations for further investigations (e.g., colposcopy) or repeat testing will be provided on the cytology report for any abnormal Pap tests.

In the event of a clinical lesion, or if cancer of the cervix is clinically suspected, a Pap test is not an appropriate diagnostic procedure. Even in the case of a reassuring Pap test, if cancer of the cervix is clinically suspected, then arrange either a biopsy or colposcopy.

If invasive cervical cancer is diagnosed, then refer the patient to BCCA for assessment and management planning by a multidisciplinary team.<sup>†</sup> The benchmark for an appointment at BCCA is 2 weeks following referral; urgent cases may be seen sooner upon telephone consultation.

### Vaginal and Vulvar Cancer

Diagnosis is made by vulvo-vaginal visualization, palpation and biopsy. Biopsy any suspicious lesions or refer to BCCA. Note that speculum blades may obscure full visualization of vaginal tissue.

Once diagnosed, refer the patient to BCCA for assessment and management planning by a multidisciplinary team.<sup>†</sup> The benchmark for an appointment at the BCCA is 2 weeks following referral; urgent cases may be seen sooner upon telephone consultation.

## Treatment

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Treatment for cervical, vaginal and vulvar cancers will be directed by the BCCA team.

### Cervical Cancer

Management will be surgical if the lesion is small with no extra-cervical disease, and with a low risk of lymph node metastasis. Radiation with concurrent chemotherapy is standard management for larger lesions.

Fertility-sparing surgery may be an option in some circumstances.

### Vaginal Cancer

Lower vaginal cancers (i.e., lower 1/3) will mostly be treated with surgery. Radiation and concurrent chemotherapy may be advised in selected cases.

Upper vaginal cancers (i.e., upper 2/3) will mostly be treated with radiation and concurrent chemotherapy. Surgery may be

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<sup>†</sup> This multidisciplinary team includes gynecologic oncologists (surgeons), radiation oncologists, medical oncologists, pathologists, radiologists, general practitioners in oncology, nurses, radiation therapists, counsellors and nutritionists.

appropriate in selected cases.

### ***Vulvar Cancer***

The specific surgical procedure may vary from a wide local excision to a radical approach. Surgery will be individualized, to preserve vital but uninvolved structures (such as sphincters and the clitoris), and to avoid radical groin resection. Sentinel node assessment is now the standard approach for lesions smaller than 2 cm.

Neoadjuvant radiotherapy (which is therapy given before surgery) may be used to downstage cancers that involve vital structures. When cancer involves vital structures such as the anus, urethra or clitoris, pre-surgical radiation may reduce the tumour size with the hope that these structures may be preserved at the time of surgery.

Adjuvant radiotherapy (which is therapy given after surgery) may be recommended after resection of involved inguinal nodes, or when surgical margins are close.

## **Follow-up**

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Once the patient has completed treatment, she will be discharged from the BCCA. Upon discharge, the family physician may be asked to manage the patient's follow-up care.

Follow-up care includes:

- 1) surveillance for recurrence or new cancer;
- 2) monitoring and treating complications and/or side effects from treatment; and
- 3) providing patient support.

**Specific recommendations will be provided in the patient's discharge letter.** At any time, the patient and/or family physician may consult with the BCCA regarding any follow-up questions or concerns. If recurrent disease is suspected, then re-refer patient back to the BCCA.

Below are general recommendations for a patient's follow-up visits with her family physician, based on the type of cancer and/or type of therapy.

### ***Cervical Cancer***<sup>14</sup>

The timing of the follow-up visits are:

- Year 1 = Every month for the first 3 months, then every 2 months
- Year 2 = Every 4 months
- Years 3, 4 & 5 = Every 6 months
- Years 5+ = Annually

A follow-up visit consists of:

- 1) review of any symptoms (e.g., pain, discharge, vaginal bleeding, menopause, swelling of leg or vulva, new neurological lower limb symptoms, issues with sexual, urinary and/or bowel functions);
- 2) physical exam, including lymph node surveillance (supraclavicular, inguinal and femoral nodes), abdomen, speculum and pelvic exam;
- 3) cervical or vaginal vault screening as per screening guidelines; and
- 4) any patient support required (e.g., counselling about sexual health - maintenance of vaginal patency post radiotherapy, through regular vaginal intercourse or the use of a dilator).

### ***Vaginal Cancer***<sup>15</sup>

The timing of the follow-up visits are:

- Year 1 = Every 3 months
- Year 2 = Every 4 months
- Years 3, 4 & 5 = Every 6 months
- Years 5+ = Annually

## **Vulvar Cancer**<sup>16</sup>

### 1) Post surgical

The timing of the follow-up visits are:

- Year 1 = Every 4 months
- Years 2, 3, 4 & 5 = Every 6 months
- Years 5+ = Annually

### 2) Post radiotherapy

The timing of the follow-up visits are:

- Year 1 = First visit at 1 month, then every 2 months
- Years 2 & 3 = Every 6 months
- Years 3+ = Annually

A follow-up visit consists of a review of any symptoms; and a physical exam, including pelvic exam and Pap test.

## **Resources**

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### ► **References**

1. BC Cancer Agency. Cancer Management Guidelines - Gynecology – Uterine Cervix – 4.1 Predisposing Factors/Prevention [updated 2008; cited 2014 March].
2. BC Cancer Agency. Screening for cancer of the cervix: An office manual for health professionals. 2016.
3. Collins S, Rollason TP, Young LS, et al. Cigarette smoking is an independent risk factor for cervical intraepithelial neoplasia in young women: A longitudinal study. *Eur J Cancer*. 2010;46(2):405-411.
4. International Collaboration of Epidemiological Studies of Cervical Cancer. Carcinoma of the cervix and tobacco smoking: Collaborative reanalysis of individual data on 13,541 women with carcinoma of the cervix and 23,017 women without carcinoma of the cervix from 23 epidemiological studies. *Int J Cancer*. 2006;118:1481-1495.
5. Lam JU, Rebolj M, Dugue PA, et al. Condom use in prevention of human papillomavirus infections and cervical neoplasia: Systematic review of longitudinal studies. *J Med Screen*. 2014;21(1):38-50.
6. Winer RL, Hughes JP, Feng Q, et al. Condom use and the risk of genital human papillomavirus infection in young women. *N Engl J Med*. 2006;354(25):2645-54.
7. Public Health Agency of Canada. An Advisory Committee Statement (ACS) - National Advisory Committee on Immunization (NACI) - Update on the recommended human papillomavirus (HPV) vaccine immunization schedule. *CCDR*. 2015.
8. Merck Canada Inc. Product monograph: Gardasil® [Quadrivalent Human Papillomavirus (Types 6, 11, 16, 18) Recombinant Vaccine]. 2013 03/14.
9. Immunize BC [Internet], British Columbia: BC Centre for Disease Control. Human Papillomavirus (HPV) Vaccine Extended Schedule: Health Care Professional Questions and Answers [updated July 2013; cited 2014 March].
10. GlaxoSmithKline Inc. Product monograph: CERVARIX® Human Papillomavirus vaccine Types 16 and 18 (Recombinant, AS04 adjuvanted). 2013 05/02.
11. Immunize BC [Internet], British Columbia: BC Centre for Disease Control. Ceravix® Clinical Questions and Answer Document [updated July 2013; cited 2014 March].
12. Kruger H, Kwon J, Sadownik, L et al. What is the most appropriate age to start screening women for cervical cancer? *BCM J*. 2013;55(6):282-286.
13. Canadian Task Force on Preventive Health Care. Recommendations on screening for cervical cancer. *CMAJ*. 2013;185(1):35-45.
14. BC Cancer Agency. Cancer Management Guidelines - Gynecology – Uterine Cervix – 4.6 Follow-up [cited 2014 April].
15. BC Cancer Agency. Cancer Management Guidelines - Gynecology – Vagina – Follow-up [cited 2014 April].
16. BC Cancer Agency. Cancer Management Guidelines - Gynecology – Vulva – 5.4 Follow-up [cited 2014 April].

### ► **Resources**

- BC Cancer Agency, [www.bccancer.bc.ca](http://www.bccancer.bc.ca), which includes many patient resources.
  - o Division of Gynecologic Oncology, telephone 1-800-663-3333 (extensions 2353, 2365, or 2367)
  - o Cervix Cancer Screening in BC, [www.screeningbc.ca/Cervix/default.htm](http://www.screeningbc.ca/Cervix/default.htm)
- Immunize BC, [www.immunizeBC.ca](http://www.immunizeBC.ca)
  - o For patients: [www.immunizebc.ca/diseases-vaccinations/hpv](http://www.immunizebc.ca/diseases-vaccinations/hpv)
  - o For health professionals: [www.immunizebc.ca/healthcare-professionals/hpv](http://www.immunizebc.ca/healthcare-professionals/hpv)
- BC Centre for Disease Control, [www.bccdc.ca](http://www.bccdc.ca)
- Public Agency of Canada, [www.phac-aspc.gc.ca](http://www.phac-aspc.gc.ca)

- HealthlinkBC, [www.healthlinkbc.ca](http://www.healthlinkbc.ca) or by telephone (toll free in BC) 8-1-1 or 7-1-1 (for the hearing impaired) for health information, translation services and dieticians.

## ► Appendices

- Appendix A: HPV Vaccine Descriptions
- Appendix B: Pap Sampling Technique
- Appendix C: Cervical Cytology Terminology used by BC Cervical Cancer Screening Program

## ► Associated Documents

The following documents accompany this guideline:

- [BCGuidelines.ca](http://BCGuidelines.ca) - *Genital Tract Cancers in Females: Endometrial Cancer*
- [BCGuidelines.ca](http://BCGuidelines.ca) - *Genital Tract Cancers in Females: Ovarian, Fallopian Tube and Primary Peritoneal Cancers*

This guideline is based on scientific evidence current as of the Effective Date.

The guideline was developed by the Family Practice Oncology Network and the Guidelines and Protocols Advisory Committee. The guideline was approved by the British Columbia Medical Association and adopted by the Medical Services Commission.

## THE GUIDELINES AND PROTOCOLS ADVISORY COMMITTEE

### **The principles of the Guidelines and Protocols Advisory Committee are to:**

- encourage appropriate responses to common medical situations
- recommend actions that are sufficient and efficient, neither excessive nor deficient
- permit exceptions when justified by clinical circumstances

### **Contact Information:**

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### **Disclaimer**

The Clinical Practice Guidelines (the “Guidelines”) have been developed by the Guidelines and Protocols Advisory Committee on behalf of the Medical Services Commission. The Guidelines are intended to give an understanding of a clinical problem, and outline one or more preferred approaches to the investigation and management of the problem. The Guidelines are not intended as a substitute for the advice or professional judgment of a health care professional, nor are they intended to be the only approach to the management of clinical problem. **We cannot respond to patients or patient advocates requesting advice on issues related to medical conditions. If you need medical advice, please contact a health care professional.**



## Appendix A: HPV Vaccines Descriptions<sup>1,2,3</sup>

Trade Name <sup>A</sup>	Gardasil <sup>®</sup>		Cervarix <sup>®</sup>	
Generic Name <sup>B</sup>	Quadrivalent vaccine (HPV types 6, 11, 16 and 18)		Bivalent vaccine (HPV types 16 and 18)	
Vaccine Type	Recombinant (AAHS Adjuvant)		Recombinant (AS04 Adjuvant)	
Indication <sup>C</sup>	<i>For the prevention of:</i>	<i>Caused by:</i>	<i>For the prevention of:</i>	<i>Caused by:</i>
	Females aged 9 to 45		Females aged 9 to 45	
	cervical, vulvar and vaginal cancer	HPV types 16 and 18	cervical cancer	HPV types 16 and 18
	genital warts (condyloma acuminata)	HPV types 6 and 11	CIN grade 1, 2, and 3	
	AIS	HPV types 6, 11, 16 and 18	AIS	
	CIN grade 2 and 3			
	VIN grade 2 and 3			
	VaIN grade 2 and 3			
	CIN grade 1			
	Females aged 9 to 26			
	anal cancer	HPV types 16 and 18		
	AIN grade 1, 2, and 3	HPV types 6, 11, 16 and 18		
	Males aged 9 to 26			
	anal cancer	HPV types 16 and 18		
	genital warts (condyloma acuminata)	HPV types 6 and 11		
AIN grade 1, 2, and 3	HPV types 6, 11, 16 and 18			
Dosage & Schedule	<b>If aged 9 to 14 years old at time of receipt of 1st dose</b> 2 doses: 0.5 mL IM at 0 and 6 months <sup>D</sup>  <b>If aged ≥ 15 years old at time of receipt of 1st dose (or aged 9 to 14 and not immunocompetent)</b> 3 doses: 0.5 mL IM at 0, 2, and 6 months		3 doses of 0.5 mL IM at 0, 1, and 6 months <sup>E, F</sup>	
Costs	<b>Females born in 1994 or later</b> = publicly funded (school-based program)  <b>Others<sup>G</sup></b> = patient pay, about \$500 for the 3 doses		<b>Females aged ≤ 26 years and born before 1994</b> = publicly funded (one-time program)  <b>Others<sup>G</sup></b> = patient pay, about \$300 for the 3 doses	

**Abbreviations:** AAHS – amorphous aluminum hydroxyphosphate sulfate; AIN – anal intraepithelial neoplasia; AIS – cervical adenocarcinoma in situ; ASO4 – amorphous aluminum hydroxyphosphate sulfate; CIN – cervical intraepithelial neoplasia, HPV – human papillomavirus; IM – intramuscular; VaIN – vaginal intraepithelial neoplasia; VIN – vulvar intraepithelial neoplasia.



**Notes:**

- <sup>A</sup> Manufacturers have provided evidence of vaccine efficacy and safety when used in accordance with product monographs; consult the most current monograph. For females previously exposed to HPV, the risks or benefits of being vaccinated have not been demonstrated.
- <sup>B</sup> Routine monitoring and Papanicolaou smear tests should continue to be performed as per guidelines regardless of vaccination.
- <sup>C</sup> The safety and efficacy of GARDASIL<sup>®</sup> have not been evaluated in children aged < 9 years or in adults aged > 45 years. The safety and effectiveness of CERVARIX<sup>®</sup> have not been established in children aged < 9 years.
- <sup>D</sup> Girls who are known to have immune system defects associated with solid organ transplant, stem cell transplant or HIV infection should receive a 3 dose HPV schedule at 0, 2 and 6 months.
- <sup>E</sup> The minimum interval between the 1st and 2nd dose is 4 weeks, the minimum interval between the 2nd and 3rd dose is 12 weeks with a minimum interval of 20 weeks between the 1st and 3rd dose. Minimum interval guidance is provided for use in specific circumstances where the patient cannot be immunized on the recommended schedule, and is not the preferred schedule.
- <sup>F</sup> Whenever possible, the same HPV vaccine (CERVARIX<sup>®</sup> or GARDASIL<sup>®</sup>) should be used to complete a vaccine series. If the brand of the previously received doses is not known, either vaccine may be used to complete series. Both vaccines provide protection against HPV types 16 and 18 and therefore patients are likely to achieve protective antibody level against these HPV types. If less than 3 doses of quadrivalent HPV vaccine are administered, protection against HPV types 6 and 11 (genital warts) cannot be assured.
- <sup>G</sup> Some private health insurance plans cover the cost of the vaccine.

**References**

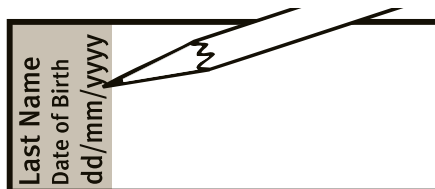
1. BC Centre for Disease Control. Communicable Disease Control Immunization Program Section VII – Biological Products. August 2013.
2. Merck Canada Inc. Product monograph: Gardasil<sup>®</sup> [Quadrivalent Human Papillomavirus (Types 6, 11, 16, 18) Recombinant Vaccine]. 2013 03/14.
3. GlaxoSmithKline Inc. Product monograph: CERVARIX<sup>®</sup> Human Papillomavirus vaccine Types 16 and 18 (Recombinant, AS04 adjuvanted). 2013 05/02.



## Appendix B: Pap Sampling Technique

### Slide Labeling is Mandatory

Use a **pencil** to print the **woman's date of birth and surname** on the **frosted** end of the slide. Include at least the first seven letters if the surname has more than 7 letters. The name and DOB must be easy to read, written correctly and match the name and DOB on the requisition.



### Single Slide Method

Please use the single slide method. Multiple slides from one woman are not necessary or cost effective. Women with a double cervix are the obvious exception.

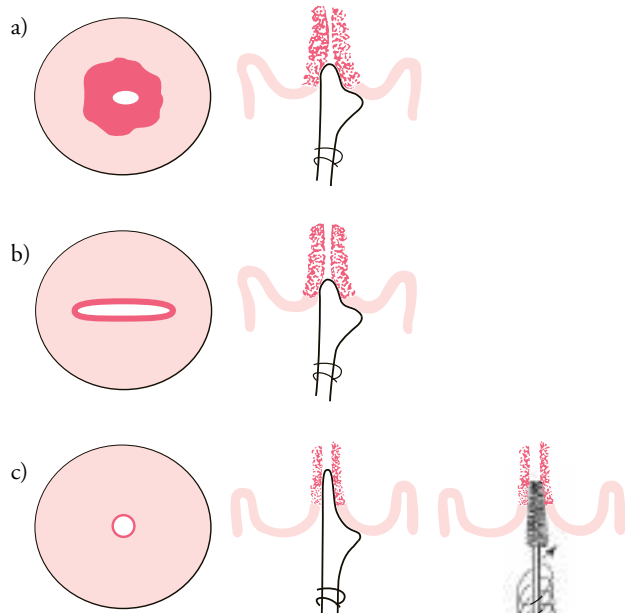
If two sites are sampled (i.e. cervix and endocervix), they can be applied side-by-side on the same side of a single slide.

### Variations in Cervical Transformation Zone

**A major cause of a false negative test is failure to sample the transformation zone (squamocolumnar junction).**

The transformation zone is the region lying between the columnar epithelium of the endocervix and the mature squamous epithelium of the ectocervix. It is here that carcinogens act upon the squamous metaplastic cells of the transformation zone to cause squamous dysplasia and squamous carcinoma.

Generally, during the reproductive years, the transformation zone lies on the ectocervix. Post-menopausally, it recedes within the endocervix.



The location of the squamocolumnar junction is dependent on the woman's age, parity, hormonal status and any previous surgery.

If squamocolumnar junction is visible, sample with a spatula. If not visible (i.e. in the canal), sample with the elongated end of spatula or cytobrush.

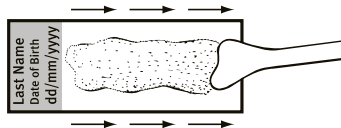
- a) Reproductive age group, nulligravida; squamocolumnar junction often visible on ectocervix lateral to os. Os (small, round or oval). Sample with spatula.
- b) Reproductive age group, parous; squamocolumnar junction often at or near external os. Sample with spatula.
- c) Post menopause. Squamocolumnar junction often in canal. Cervical os often smaller. Sample with elongated end of spatula and cytobrush.

## Obtaining the Sample

1. Gently insert a sterile, pre-warmed speculum to visualize cervix.  
A small (tiny) amount of lubricant may be used on the lower bill of the speculum for post menopausal women.
2. Gently cleanse the cervix with cotton pledget if obscured with discharge or secretions.
3. Identify extent of transformation zone and probable squamocolumnar junction.

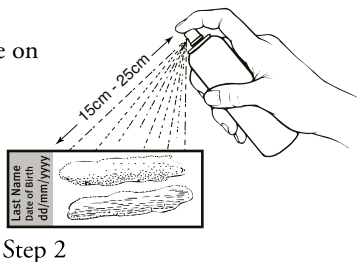
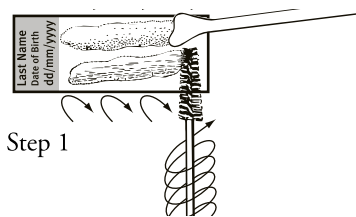
### If Squamocolumnar Junction is Visible

- Rotate a spatula 360° once to obtain a single sample.
- Smear the sample onto the labeled slide.
- Fix the sample immediately (before it is air-dried) using a cytology spray fixative. Hold the fixative 15-20 cm (6 to 8 inches) away from the slide and evenly spray the slide by depressing the plunger 2 or 3 times. (See Step 2 below).



### If Squamocolumnar Junction is Not Visible

- First use a spatula for the exocervical specimen.
- Then use a cytobrush or the elongated end of the spatula for the endocervical sample. Rotate cytobrush 180° only.
- Place both specimens side-by-side lengthwise on a single slide and fix immediately.



## Cautions

- Use of the cytobrush is not recommended in pregnant women.
- If a clinically suspicious lesion is seen, biopsy immediately.
- If the patient is menstruating or infection is present reschedule exam.
- Irregular bleeding may be a symptom of gynecological malignancy. Pelvic examination with lower genital tract and appropriate investigation is indicated.

The use of cotton swabs for sampling is associated with cellular trapping and distortion and is not recommended.

## Equipment and Supplies

Equipment and supplies	Order from:
Examination table	Medical supplier
Good illumination	
Bi-valve speculum (various sizes)	
Endocervical brush	
Cytology spray fixative (e.g. cytospray)	
Extended-tip spatula	Cervical Cancer Screening Laboratory (supplied free of charge)
Glass microscope slide with frosted end	<ul style="list-style-type: none"> <li>• See the supply order form at <a href="http://www.screeningbc.ca/cervix">www.screeningbc.ca/cervix</a> → For Health Professionals</li> <li>• Fax order form to 604-707-2606</li> </ul>
Container for transporting slide to the lab	
Requisition form	
Lead pencil for labeling slide	Stationery supplier

Source: BC Cancer Agency. Screening for cancer of the cervix – An office manual for health professionals. (10th Ed). 2013.



## Appendix C: Cervical Cytology Terminology used by BC Cervical Cancer Screening Program

Terminology used prior October 1, 2010	Bethesda System Terminology after October 1, 2010
Unsatisfactory: state reason	Unsatisfactory: state reason
Negative; no atypical cells are seen	Negative for intraepithelial lesion or malignancy (NILM)
Benign changes due to: <ul style="list-style-type: none"> <li>• <i>Trichomonas vaginalis</i></li> <li>• <i>Monilia (Candida sp.)</i></li> <li>• cellular changes suggestive of herpes simplex viral infection</li> <li>• inflammation</li> <li>• radiation effect</li> </ul>	NILM reactive change due to: <ul style="list-style-type: none"> <li>• <i>Trichomonas vaginalis</i></li> <li>• fungal organisms morphologically consistent with <i>Candida sp.</i></li> <li>• cellular changes associated with herpes simplex virus</li> <li>• inflammation</li> <li>• treatment effects</li> </ul>
Some cases of mild squamous dyskaryosis, atypia not otherwise specified (NOS), or benign changes	Atypical squamous cells of undetermined significance (ASC-US)
Some cases of moderate or marked squamous dyskaryosis, or atypia NOS	Atypical squamous cells, cannot exclude HSIL (ASC-H)
Mild squamous dyskaryosis	Low-grade squamous intraepithelial lesion (LSIL)
Moderate squamous dyskaryosis <ul style="list-style-type: none"> <li>• marked squamous dyskaryosis</li> <li>• some cases of suspicious squamous cells</li> </ul>	High-grade squamous intraepithelial lesion (HSIL) <ul style="list-style-type: none"> <li>• moderate</li> <li>• marked</li> </ul>
Some cases of suspicious squamous cells Malignant squamous cells	Squamous cell carcinoma
Malignant glandular cells	Adenocarcinoma
Malignant epithelial cells	Carcinoma, unspecified
Mild glandular atypia Some cases of moderate glandular atypia	Atypical glandular cells, not otherwise specified (AGC-NOS)
Some cases of moderate glandular atypia Marked glandular atypia	Atypical glandular cells, favour neoplastic (AGC-favour neoplastic)
Suspicious glandular cells	Adenocarcinoma in situ (AIS)

Source: BC Cancer Agency. Screening for cancer of the cervix – An office manual for health professionals. (10th Ed). 2013.