BC Cancer Agency
CARE + RESEARCH
An agency of the Provincial Health Services Authority

Cervical Cancer Screening Program

Cervical Cancer Screening Program 2011 Annual Report

Table of Contents

1.0 Message From the Medical and Program Leadership 4

Figure 1: Age Standardized Incidence & Mortality Rate of Invasive Cervical Cancer in BC 5

2.0 Program Overview 6

Figure 2: CCSP Screening Process Overview 9

3.0 Program Results 10

3.1 Utilization 10

Table I: Gynecological Cytology Samples Received / Processed, 2010 10

Table II: Number of Patients with Cervical/Endocervical Pap Test Samples, 2010 11

3.2 Participation Rates 12

Figure 3: Participation Rates by Age Group, 2008-2010 12

Table III: Participation Rates of Women 20-29 and 30-39 Years of Age by HSDA, 2008-2010 13

Figure 4: Participation Rates by Health Authority, 2008-2010 14

3.3 Screening Interval 15

Table IV: Retention Rates by Age Group, 2007 15

Figure 5: Retention Rates by Screening Interval Recommendation, 2007 15

Figure 6: 36-Month Retention Rate by Age Group over Time, 2003-2007 16

3.4 Quality of Pap Test Samples 17

Figure 7: Cervical Sample Quality Rates by Age Group, 2010 17

3.5 Screening Test Results 18

Figure 8: Abnormal Screening Test Result Distribution by Age Group, 2010 18

3.6 Follow-up of Abnormals 19
Table V: Follow-up Recommendations by Age Group, 2010 19
Figure 9: Colposcopy Follow-up Rates for women with persistent ASCUS/LSIL Pap test result by Age Group, 2010 20
Figure 10: Colposcopy Follow-up Rates for women with high grade or AGC Pap test result by Age Group, 2010 20
Table VI: Cytology-Histology Agreement, 2010 21
3.7 Provincial Colposcopy Program 22
Figure 11: Reason for Referral to Colposcopy Clinic, 2010 22
Figure 12: Site of Colposcopic Investigation, 2010 22
3.8 Pre-Cancer Detection Rate 23
Figure 13: Pre-Cancer Detection per 1,000 Women Screened by Age Group, 2009 23
3.9 Cancer Incidence 24
Figure 14: Invasive Cervical Cancer Incidence Rate per by Age Group, 2005 – 2009 24
Table VII: Number and Incidence Rate of Invasive Cervical Cancers by Age Group, 2005 – 2009 25
3.10 Screening History in Cases of Invasive Cancer 26
Figure 15: Screening History of Women Diagnosed with Squamous Cell Carcinoma, 2009 26
Figure 16: Screening History of Women Diagnosed with Adenocarcinoma, 2009 26

Appendix

1. General Cancer Screening Program Overview 27
2. Cervical Cancer Screening Guidelines 28
3. Terminology for Reporting Cervical Cytology Results 30
4. Colposcopy Clinic Locations and Personnel 31
5. Educational Materials 33
6. Glossary 34
7. Acknowledgments and Contributors 36
8. Publications and Presentations 37
9. CCSP/BCCA Contact Information 38

1.0 Message From Medical and Program Leadership

Message from the Medical Director

We are pleased to present British Columbia's Cervical Cancer Screening Program's (CCSP) 2011 annual report which summarizes the ongoing activities and results of the program.

CCSP plays an integral role in this province's cancer control strategy. Cervical cancer screening detects pre-cancer cervical abnormalities long before they progress to cervical cancers. Early detection and treatment lead to better health outcomes.

Clinical highlights from this past year include:

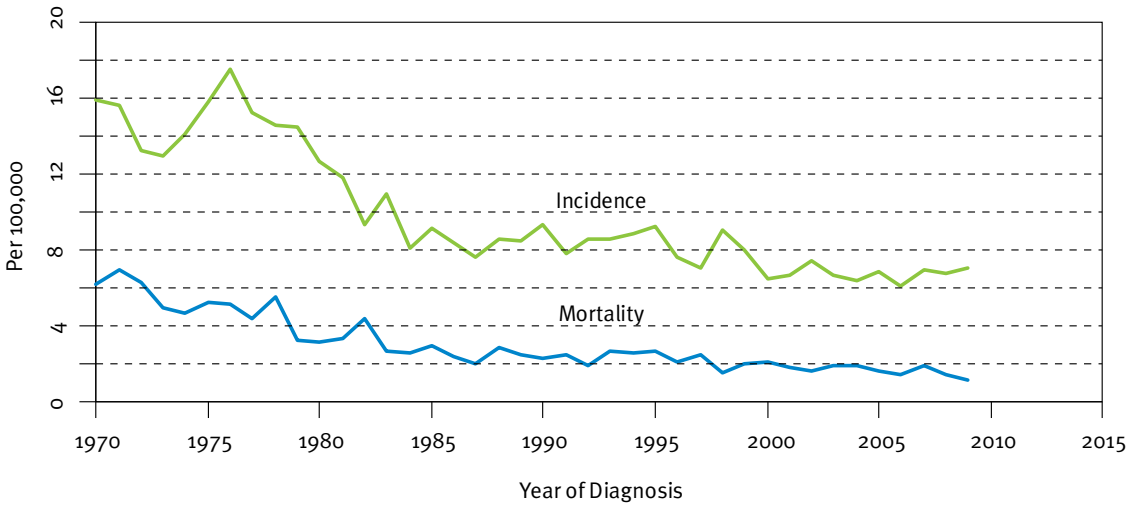
- The Cancer Screening Laboratory achieved full accreditation status with the College of American Pathologists (CAP) – an internationally recognized leader in laboratory quality assurance.
- A total of 517,417 women received Pap tests in 2010 and 2,791 cases of significant cervical abnormalities were detected and treated.
- Of the 172 invasive cervical cancers diagnosed in 2009, about 50% of women were screened more than 5 years ago or had no history of being screened.

The program updated the hysterectomy adjustment for the cervical cancer screening participation rate. The newly adjusted participation rate for women 20-69 years of age is 70.9%. As demonstrated in Figure 1, cervical cancer incidence and mortality rates have remained low in British Columbia, clearly demonstrating the value of an organized population-based screening program.

We look forward to continuing to work together to provide screening to all eligible women in the prevention and early detection of cervical cancer in BC.

- Dr. Dirk van Niekerk

Figure 1: Age Standardized Incidence & Mortality Rate of Invasive Cervical Cancer in BC



* Rates are standardized to the 1991 Canadian Population

Message from the Director of Strategic Screening Operations

It has been a productive and successful year for the Cervical Cancer Screening Program (CCSP).

The results in this annual report emphasize our program's continued commitment to prevention and early detection of cervical cancer in BC. Our performance is strong, particularly in the areas of participation rates for women 30-39 and 40-49 years of age, colposcopy follow-up rate, and cytology-histology agreement.

Program highlights for the year included receiving the BC Medical Association's 'Excellence in Health Promotion' award which recognized our innovative approach to promote cervical cancer screening using social media. We have also collaborated with ethnic and First Nations groups to develop culturally sensitive outreach materials, and partnered with local health advocates to educate women at a community level.

None of the program activities would be possible without the efforts of our many dedicated cytotechnologists, pathologists, laboratory and program staff. I would also like to extend our thanks to our community partners and stakeholders for supporting our program goals in bringing this life-saving service to BC women and for providing follow-up care.

Continual evaluation of cervical cancer screening processes remains a priority of our program. This supports our efforts to maintain quality standards, and identify trends and areas for improvement.

We hope you find this report to be informative and helpful, and we thank you for your continued support of the BC's Cervical Cancer Screening Program.

- Lisa Kan

2.0 Program Overview

The Cervical Cancer Screening Program (CCSP) of the BC Cancer Agency has the oversight responsibility for cervical cancer screening in BC. The program works in partnership with the Cervical Cancer Screening Laboratory of the Provincial Health Services Authority to ensure that appropriate screening tests are available to eligible women to reduce mortality and morbidity due to cervical cancer. The program reminds healthcare providers when their patients are due for cervical screening, tracks adherence to screening recommendations, and monitors system performance and outcomes of cervical screening activities.

The Screening Process

The Screening Process is illustrated in a diagram in Figure 2. The process consists of four stages:

1. Identify and invite the target population for screening
2. Conduct screening examination
3. Investigate abnormalities identified during screening
4. Send screening reminders at the appropriate interval

Evaluation

Data is collected and analyzed on an ongoing basis to monitor the Program's effectiveness and identify areas for improvement. Results of this analysis are presented in the "PROGRAM RESULTS" section of this report. Age-specific cervical cancer incidence and mortality rates are tracked in conjunction with the BC Cancer Registry.

Promotion and Education

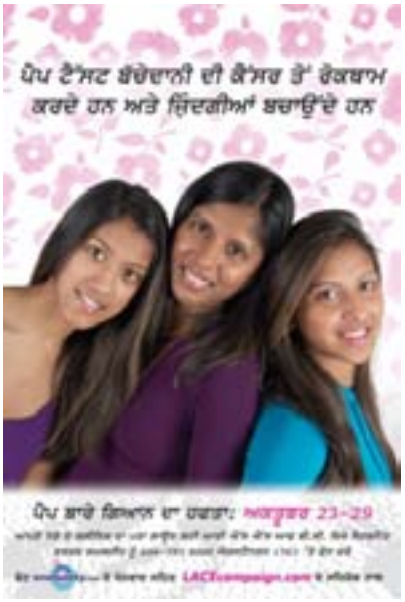
The Cervical Cancer Screening Program's LACE *"Live Aware, Create Empowerment"* Campaign (www.LACEcampaign.com) continues to promote education, awareness, conversation and action using traditional and social media to connect with women across the province. CCSP was honoured to receive an '*Excellence in Health Promotion*' award from the BC Medical Association in 2011 for the LACE Campaign and Pap Awareness Week 2010.

Pap Awareness Week 2011 is a Canada-wide initiative to encourage women, particularly those who may not have a regular doctor or are overdue for a Pap test, to take advantage of dedicated Pap test hours offered by participating medical offices/clinics in their communities. Similar to the 2010 campaign, this past Pap Awareness Week relied on community partners to coordinate and promote the campaign. There was a greater commitment to engage clinics in harder to reach communities, with the number of participating clinics expanding to 143 in 66 communities across the Province.

Ongoing promotion activities include:

- Regular presence at health fairs and events.
- Partnering with local health advocates to educate women in their communities about the importance of screening.
- Collaborating with ethnic and First Nations groups to develop customized materials and culturally-sensitive approaches to increase understanding and interest in screening.
- Development of promotion and educational materials providing accurate and up-to-date information to women on factors related to cervical cancer screening.

An order form for a wide variety of promotion and education materials is available on CCSP's website (www.bccancer.bc.ca/cervicalscreening), under "Resources".



Commitment to Quality

Accreditation: As part of the ongoing commitment to quality improvement, the Cervical Cancer Screening Laboratory (CCS Lab) was granted full accreditation status by the College of American Pathologists (CAP) in 2011. CAP is internationally recognized as a leader in laboratory quality assurance, and its accreditation program ensures that accredited labs achieve the highest standards of excellence for patient care.

The CCS Lab is honoured to be the first anatomic pathology laboratory in BC to achieve the CAP accreditation, and will continue to implement quality improvement processes.

The CCS Lab is currently conducting an online Clinician Satisfaction Survey for clinicians' feedback. This valuable feedback will allow CCSP to evaluate the quality of the lab service and identify opportunities for quality improvement. Clinicians are encouraged to participate by accessing the electronic survey (http://surveys.vch.ca/ccs/).

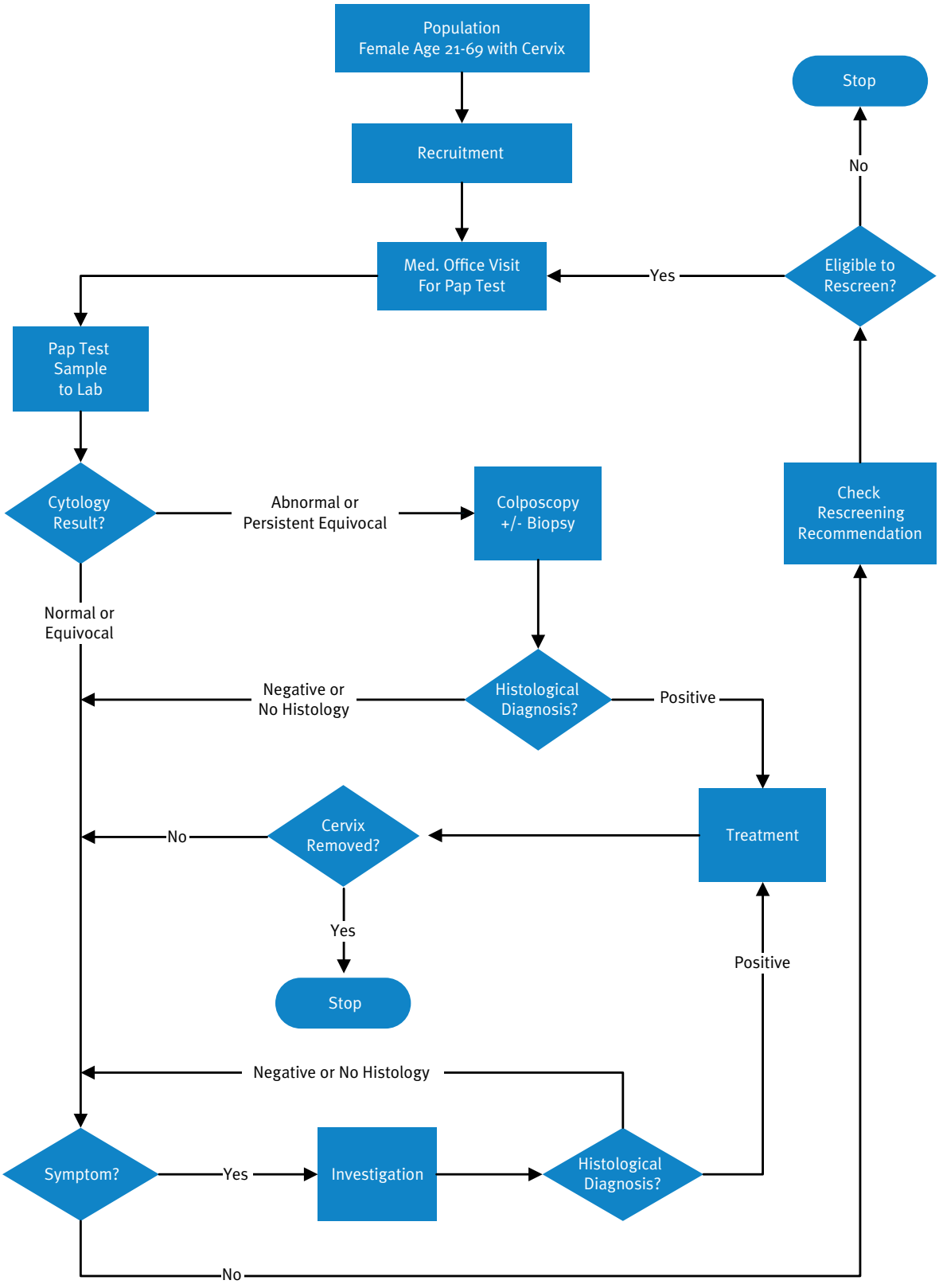
Professional Development: Continuing education is encouraged and expected for all CCS Lab staff. In addition to participating in the CAP and American Society for Clinical Pathology (ASCP) educational programs, CCS Lab staff participate in organized internal education forums and cyto-morphological group discussions. Appropriate on-site resources such as cytology text books and the *Acta Cytologica* journal are available as educational references.

Pathologists associated with the program participate in the Royal College of Physicians and Surgeons certification or equivalent programs.

Professional and Academic Activities: Professional staff members of the Cervical Cancer Screening Program (CCSP) are involved in research, professional development, and teaching related to cervical cancer screening.

1. The HPV-FOCAL Study, funded by the Canadian Institutes of Health research, is the first randomized controlled trial to be conducted in a North American organized screening program. The study is evaluating HPV Testing (with cytology testing for HPV positive women) vs. Cytology testing for cervical cancer screening. To date, 24,500 Metro Vancouver and Victoria women have consented to participate in the study through over 150 collaborating family physician clinics. Women in the study will be followed over the next four years. Preliminary results were presented in early 2011 at two large European Cervical Cancer/HPV scientific meetings. The final results of HPV FOCAL will have significant relevance, not only in British Columbia but all over North America, as a model for future cervical cancer screening guidelines in an organized program.
2. Professional staff members of the CCSP have membership on the BC HPV-FOCAL Study Group. This provincial group meets regularly to seek cooperation between researchers who are interested in HPV-related diseases.
3. A research study examining *'Perceived barriers to access and uptake of cervical cancer screening among on-reserve First Nations women in northern British Columbia'* is being conducted by Dr. van Niekerk and Lynn Chisholm, *Nurse in Charge*, First Nations & Inuit Health, Fort St. John. Baseline survey with women in three on-reserve First Nations communities, established that the majority of eligible women were under-screened. A qualitative study involving semi-structured interviews with women in each community is taking place to identify perceived barriers to screening in this hard-to-access population.

Figure 2: CCSP Screening Process Overview



3.0 Program Results

3.1 Utilization

BC healthcare providers submitted a total of 562,362 gynecological Pap test samples to the Cervical Cancer Screening Lab in 2010. An additional 4,662 samples were submitted from the Yukon Territory.
The program results in this report include samples from BC only. Table I shows the number of gynecological Pap test samples received by 10-year age groups. The samples received include those from clinically asymptomatic women (routine screening), women with previously detected abnormalities, and a small percentage of symptomatic women. Unlabeled or improperly labeled samples were not processed. Over 97% of the samples received were from the cervix/endocervix.

Table I: Gynecological Cytology Samples Received / Processed, 2010

	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
Number of Samples	24,005	122,455	123,751	122,760	104,557	59,391	5,408	562,362
Number of Samples Processed	23,801	121,365	122,718	121,823	103,789	58,957	5,322	557,803
(%)	99.2	99.1	99.2	99.2	99.3	99.3	98.4	99.2
Samples from Cervix Endocervix	23,786	121,213	122,081	119,476	99,523	54,918	4,035	545,059
(%)	99.9	99.9	99.5	98.1	95.9	93.1	75.8	97.7
Samples from Other Sites	15	152	637	2,347	4,266	4,039	1,287	12,744
(%)	0.1	0.1	0.5	1.9	4.1	6.9	24.2	2.3

* Age is computed based on sample date

Table II shows the number and percentage of women having one, two, and three or more cervical/endocervical pap tests in the given year. Also shown in Table II is the number of women being screened for the first time, and the percentage they represent of all women with at least one cervical/endocervical sample.

Table II: Number of Patients with Cervical/Endocervical Pap Test Samples, 2010

	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
Number of Patients	22,032	112,571	114,444	114,867	96,346	53,244	3,912	517,417
With 1 Sample	20,694	104,387	106,800	110,277	93,164	51,521	3,774	490,617
(%)	93.9	92.7	93.3	96.0	96.7	96.8	96.5	94.8
With 2 Samples	1,275	7,914	7,413	4,491	3,119	1,670	128	26,010
(%)	5.8	7.0	6.5	3.9	3.2	3.1	3.3	5.0
With 3+ Samples	63	270	231	99	63	53	10	790
(%)	0.3	0.2	0.2	0.1	0.1	0.1	0.3	0.2
New Patients	10,769	19,087	8,277	4,478	2,319	1,149	181	46,260
(%)	48.9	17.0	7.2	3.9	2.4	2.2	4.6	8.9

* Age is computed based on patient's last Pap test

3.2 Participation Rates

The BC cervical cancer screening policy was updated in October 2010. The new policy advises women to begin screening at age 21 or approximately three years after first sexual contact, whichever occurs first. This is a change from the previous recommendation to start Pap test screening shortly after becoming sexually active. As in the previous screening policy, women should continue having a Pap test once a year until they have three normal results in a row. At that point, women should get screened every two years until age 69. At age 69, women can discontinue screening if no significant abnormality has been detected in their screening history. BC's current screening guidelines are listed in Appendix 2.

Participation rate is defined as the percent of eligible women with at least one cervical/endocervical Pap test in a three-year period. The participation rate should exclude women who have had a total hysterectomy, as most of these women do not need routine screening. Starting 2012, BC is using data from the Canadian Community Health Survey (CCHS), which is conducted every two years by Statistics Canada, to correct for hysterectomy. However, due to the survey's small sample size, the hysterectomy correction can only be applied in two ways: by 10-year age group for the entire province or by Health Authority for age 20-69 combined.

Figure 3 shows the uncorrected and corrected participation rates by age group. The uncorrected and corrected participation rates for the BC female population ages 20-69 are 62.0% and 70.9% respectively. There is considerably more variation in the uncorrected rates across the age groups, from 74.3% among women ages 30-39 to 42.1% among women ages 60-69. After correcting for hysterectomy, participation is highest at 76.1% among women 40-49 years of age and drops less sharply to 61.9% among women ages 60-69. This illustrates the importance of correcting for hysterectomy to avoid misdirecting promotional efforts.

Figure 3: Participation Rates by Age Group, 2008-2010

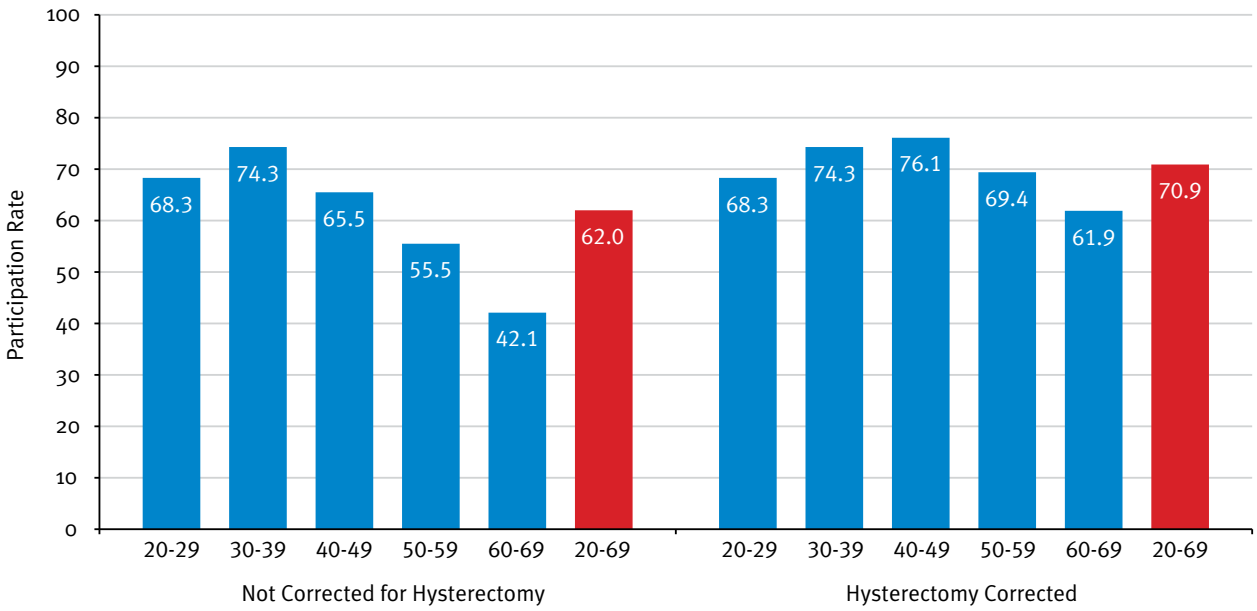


Table III lists the uncorrected participation rates by Health Service Delivery Area (HSDA) for the younger female population in which hysterectomy is less prevalent.

Participation in the 20-29 age group is a challenge in South Vancouver Island and the Lower Mainland — especially in Richmond, Vancouver and the Fraser Valley.

Participation in the 30-39 age group is more uniform across the province, with only Fraser East, Northeast and Richmond falling below the 70% target.

Although participation is generally higher in the 30-39 age group than in the 20-29 age group, the opposite occurred in three of the Interior HSDAs and two of the Northern HSDAs.

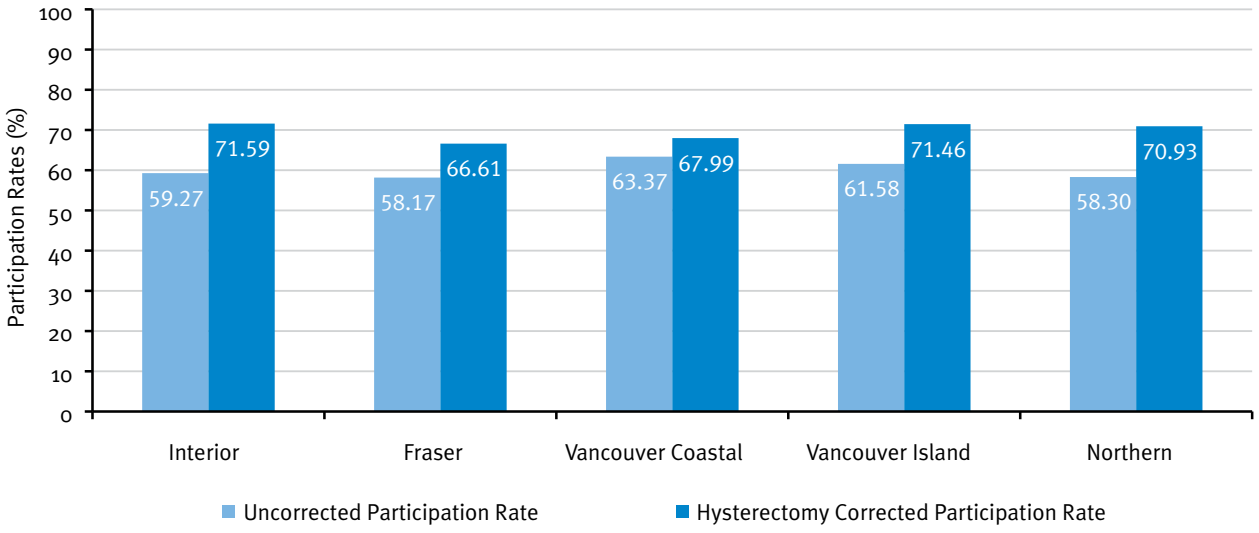
Table III: Participation Rates of Women 20-29 and 30-39 Years of Age by HSDA, 2008-2010

Health Authority	Health Service Delivery Area	20-29	30-39
Interior	East Kootenay	77.0%	73.3%
	Kootenay Boundary	74.0%	77.9%
	Okanagan	79.6%	75.5%
	Thompson Cariboo	73.9%	70.8%
Fraser	Fraser East	62.9%	62.8%
	Fraser North	56.6%	73.5%
	Fraser South	60.7%	71.4%
Vancouver Coastal	Richmond	47.3%	69.4%
	Vancouver	57.2%	70.4%
	North Shore/Coast Garibaldi	69.0%	81.8%
Vancouver Island	South Vancouver Island	67.8%	76.9%
	Central Vancouver Island	73.8%	73.4%
	North Vancouver Island	84.9%	73.6%
Northern	Northwest	77.1%	73.9%
	Northern Interior	72.0%	71.9%
	Northeast	75.6%	64.4%
BC	British Columbia	68.3%	74.3%

* Age computed based on patient's age in 2009

Figure 4 compares the corrected participation rate against the uncorrected rate by Health Authority. Interior Health Authority has the highest overall participation (71.59% corrected for hysterectomy), while Fraser Health Authority has the lowest (66.61% corrected for hysterectomy). Using the uncorrected rates would provide an entirely different impression.

Figure 4: Participation Rates by Health Authority, 2008-2010



3.3 Screening Interval

Retention is the percentage of eligible women re-screened after a negative Pap test. Table IV summarizes the retention rates for women last screened in 2007 by 10-year age groups. It shows that more women in their 20's are returning by 18 months, which is consistent with the recommendation to have three negative annual screens before extending to biennial screening. About 79% of women with a negative Pap test return within 36 months.

Table IV: Retention Rates by Age Group, 2007

Timelist	20-29	30-39	40-49	50-59	60-69	20-69
Number of Patients	104,056	118,216	122,957	92,587	44,904	482,720
Re-screened by						
18 months	47.3%	42.7%	38.9%	37.5%	32.7%	40.8%
24 months	61.1%	56.3%	52.5%	51.4%	45.0%	54.4%
30 months	73.9%	73.0%	72.7%	74.3%	67.7%	72.9%
36 months	79.4%	79.1%	79.2%	80.5%	72.8%	78.9%

* Age is computed based on patient's age on report date of the index Pap test

Figure 5 shows the retention rate by the actual recommended screening interval. Approximately 58% of patients with a 12-month interval recommendation returned by 18 months, and about 72% of those with a 24-month recommendation returned by 30 months. The percentage of women who did not return by 48 months is about 14% and 10% respectively for the 12-month and 24-month groups.

Figure 5: Retention Rates by Screening Interval Recommendation, 2007

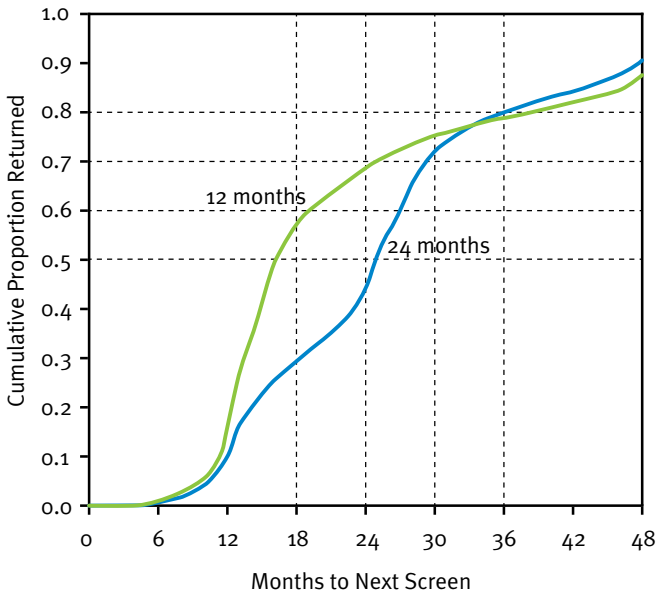
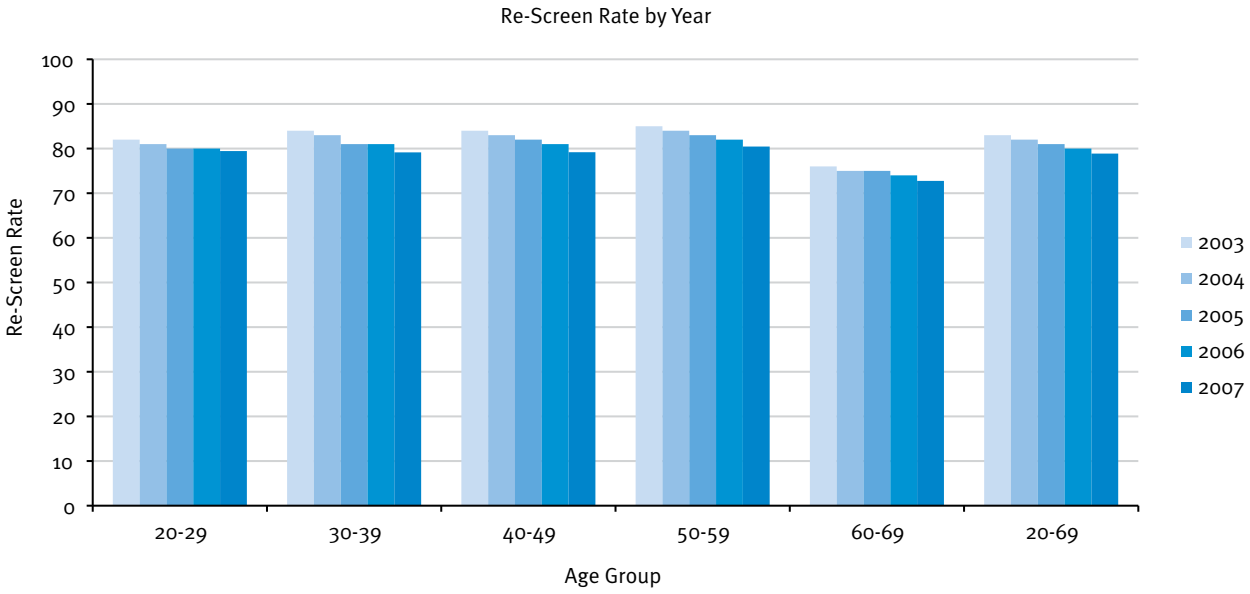


Figure 6 shows the 36-month retention rate of women ages 20-69 by 10-year age groups for calendar years 2003-2007. The retention rate has declined steadily in every age group, and the decline is 5% in ages 30-39, 40-49 and 50-59. Intervention is needed to reverse this trend.

Figure 6: 36-Month Retention Rate by Age Group over Time, 2003-2007



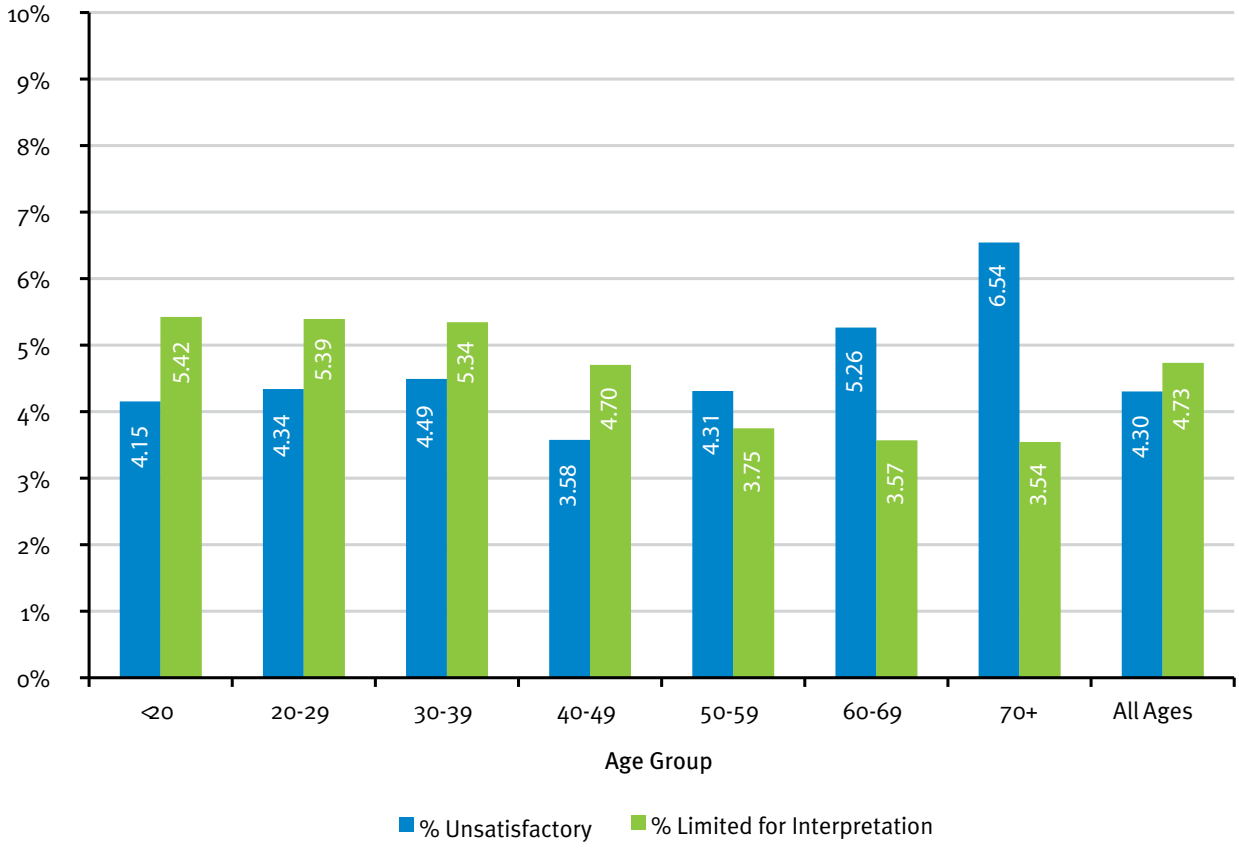
***** *Age is computed based on patient's age on report date of the index Pap test*

3.4 Quality of Pap Test Samples

Figure 7 summarizes Pap test sample quality by 10-year age groups for cervical/endocervical samples. The percentage of samples reported as unsatisfactory for interpretation has increased by 1.1% from the previous report. This is largely due to stricter interpretation of reporting rules by the Cervical Cancer Screening Laboratory.

The most commonly cited factor for inadequate sample is scanty sample material (88% of unsatisfactory samples and 79% of samples that are limited for interpretation). Scanty sample material is especially common in the older age groups. The next most cited reason is inflammatory exudates (9% in unsatisfactory samples and 14% in limited for interpretation samples). Multiple factors may be cited.

Figure 7: Cervical Sample Quality Rates by Age Group, 2010



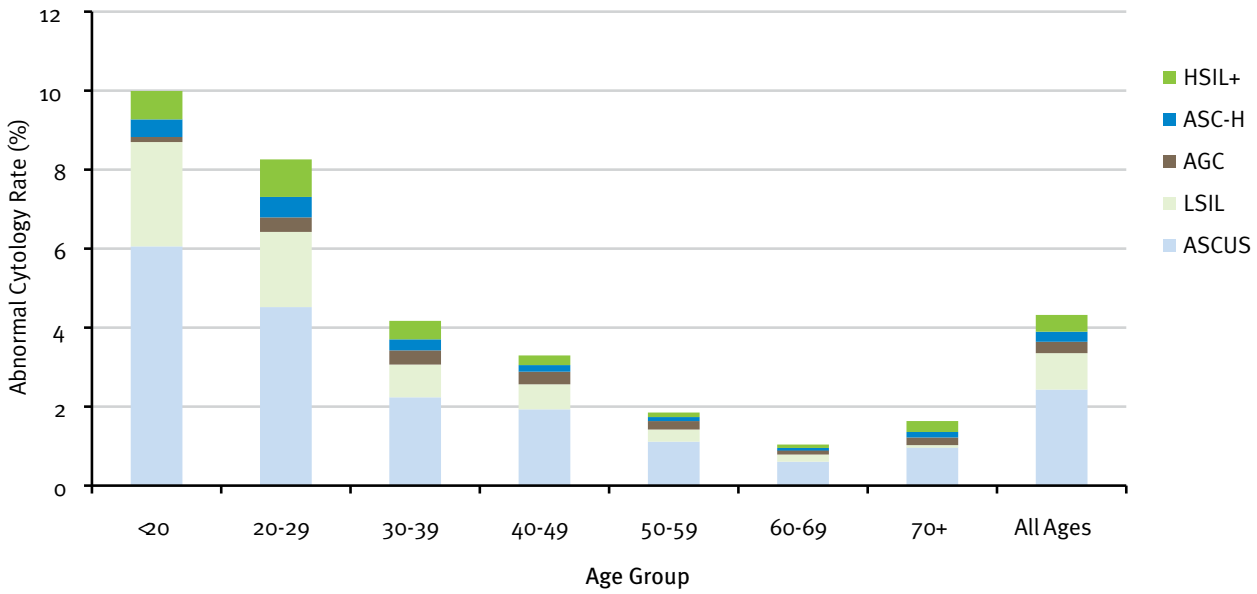
3.5 Screening Test Results

Cytology turnaround time is the average number of working days from the date the sample is received in the Lab to the date the finalized report is issued. The average turnaround time was 13 days in 2010. This has been reduced from an average of 16 days in 2009.

The Cervical Cancer Screening Laboratory adopted the internationally standardized Bethesda nomenclature to report Pap test results on October 1, 2010. The Bethesda terminology simplifies any required ongoing clinical management for women who move out of province, and allows comparisons of our screening outcomes with those of others. See Appendix 3 for a comparison of the Bethesda terminology to the terminology used previously.

The most severe abnormal screening test results for patients are summarized using the Bethesda terminology in Figure 8 and Table V. Pap tests reported using previous terminology were mapped to the Bethesda terminology using a probabilistic algorithm. Overall, 3.4% of Pap tests were reported as ASCUS/LSIL, 0.29% AGC, 0.25% ASC-H, and 0.42% HSIL+.

Figure 8: Abnormal Screening Test Result Distribution by Age Group, 2010



3.6 Follow-up of Abnormals

Follow-up Recommendation

The current CCSP practice is to follow ASCUS/LSIL with a repeat screening test at six-month intervals for up to two years. Patients with persistent ASCUS/LSIL are then advised to have a colposcopy. Other procedures may be recommended on the basis of a patient's clinical condition and cytology history.

Table V summarizes follow-up recommendations for patients by their screening test results.

Table V: Follow-up Recommendations by Age Group*, 2010

	<20	20-29	30-39	40-49	50-59	60-69	70+	all ages
Patients with ASCUS/LSIL	1876	7070	3430	2926	1363	410	44	17120
Repeat in 6 Months	1834	6677	3216	2740	1285	385	35	16173
(%)	97.8	94.4	93.8	93.6	94.3	93.9	79.5	94.5
Other Investigation	42	393	214	186	78	25	9	947
(%)	2.2	5.6	6.2	6.4	5.7	6.1	20.5	5.5
Patients with High Grade or AGC	281	2003	1272	876	463	162	37	5094
Colposcopy and/or ECC ***	256	1965	1185	714	305	96	14	4535
(%)	91.1	98.1	93.2	81.5	65.9	59.3	37.8	89.0
Other Investigation **	25	38	87	162	158	66	23	559
(%)	8.9	1.9	6.8	18.5	34.1	40.7	62.2	11.0

* Age is computed based on the date of the patient's worst Pap test in the year

** The predominant recommendation was colposcopy investigation

*** ECC: Endocervical Curettage

Colposcopy Follow-up Rate

The colposcopy follow-up rate is the percentage of women recommended to have a colposcopy examination that had the follow-up procedure within 12 months of the Pap test. Colposcopies performed within one week of the Pap test are excluded as the Pap test is unlikely to be the reason for the colposcopy referral. Figures 9 and 10 show the colposcopy follow-up rate by age and their Pap test result. The 12-month follow-up rate was 82.0% for women with persistent ASCUS/LSIL Pap test results and 86.4% for women with high grade or AGC Pap test results.

Figure 9: Colposcopy Follow-up Rates for women with persistent ASCUS/LSIL Pap test result by Age Group, 2010

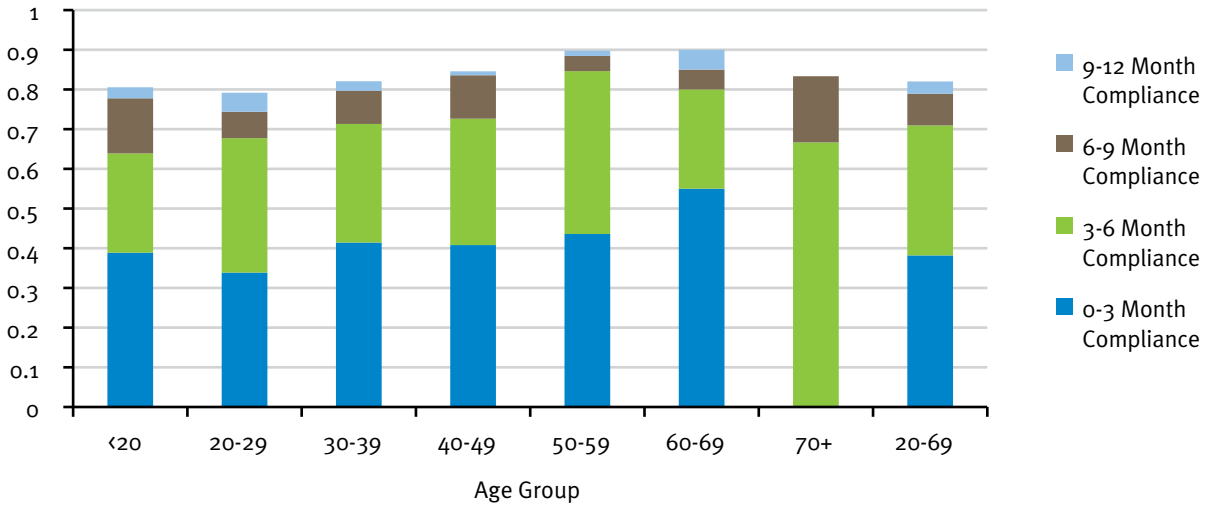
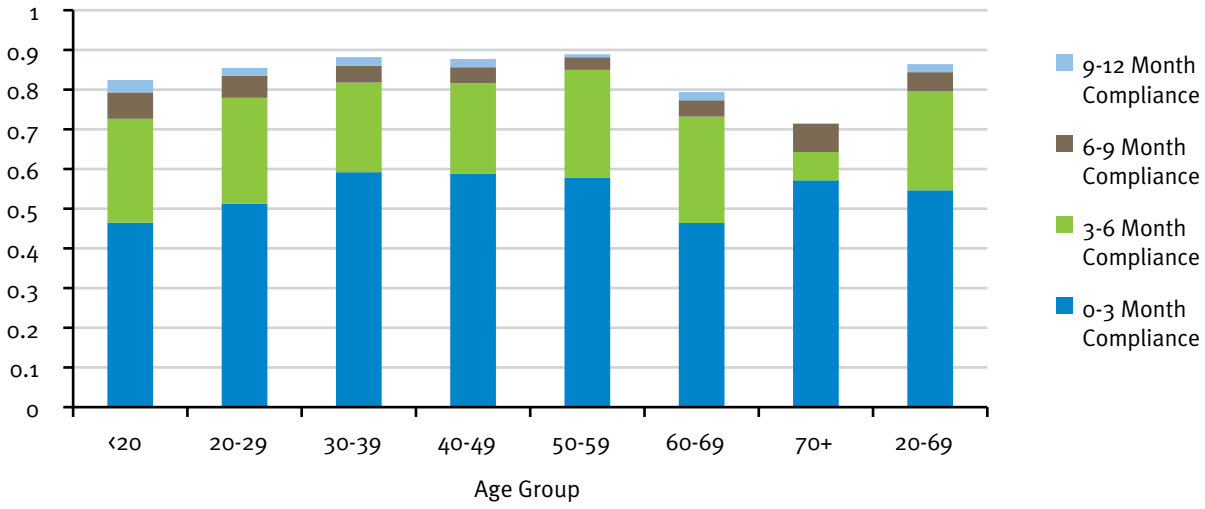


Figure 10: Colposcopy Follow-up Rates for women with high grade or AGC Pap test result by Age Group, 2010



Cytology-Histology Agreement

The cytology-histology agreement or positive predictive value (PPV) of cytology is the percentage of positive Pap tests that have had histological confirmation of significant cervical dysplasia. This measure is an indicator of the predictive validity of a positive test. However, it is important to note the limitations of cytology and histology, i.e. specimen sampling may not be representative of the lesion, and interpretation is subject to observer variability for cytology, and to lesser extent for histology. Furthermore, there may be progression or regression of the lesion in the period between cytology and histology, particularly with mildly abnormal lesions. Histological diagnosis was based on the most severe histological diagnosis from cervical pathology reported up to one year after the Pap test. Cervical intraepithelial neoplasia (CIN) result reporting terminology is used.

Approximately 82% of women with high-grade or AGC Pap test results had a histological diagnosis in the following 12 months. For those women with persistent ASCUS/LSIL that were referred for further investigation, only 73% had a subsequent histological investigation. Table VI shows the level of cytology-histology agreement or PPV for different cytology and histology results. The PPV for CIN II+ is 66% for high-grade or AGC, and is 31% for those ASCUS/LSIL referred for further investigation.

Table VI: Cytology-Histology Agreement, 2010

	ASCUS/LSIL	Rate %	High Grade or AGC	Rate %
Samples With Pathological Diagnosis:	951	73.3	3797	81.9
CIN II or Higher	291	30.6	2500	65.8
CIN III or Higher	119	12.5	1719	45.3
Other Histology Findings				
Glandular Severe	0	0.0	8	0.2
Glandular in Situ	1	0.1	66	1.7
Glandular Invasive	1	0.1	45	1.2

3.7 Provincial Colposcopy Program

The Provincial Colposcopy Program consists of 24 hospital-based clinics located throughout the province. It is estimated that 97% of all colposcopy procedures performed in BC are done through the Provincial Colposcopy Program. Colposcopists affiliated with the Provincial Colposcopy Program are certified and have agreed to use a uniform reporting system with standardized terminology. Results of all colposcopic examinations and suggested course of follow-up action are recorded on a standardized form. Copies of this form are sent to both the referring physician and to CCSP for incorporation into the provincial database. The data are summarized for the annual continuing medical education workshop in colposcopy, held by the Provincial Colposcopy Program.

In 2010, 13,743 colposcopy examinations were provided. A cytological abnormality was the most common reason for the colposcopy referral (see Figure 11) and the primary site of investigation was the cervix (see Figure 12).

Figure 11: Reason for Referral to Colposcopy Clinic, 2010

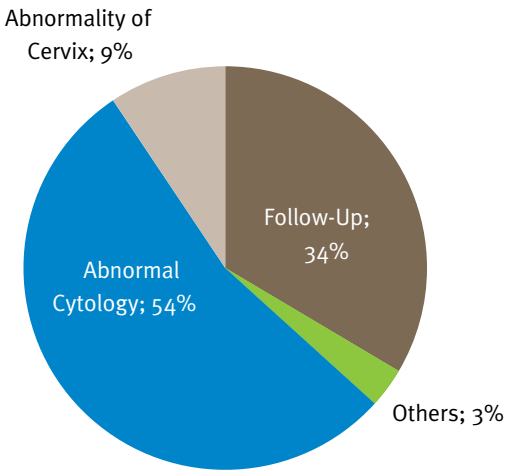
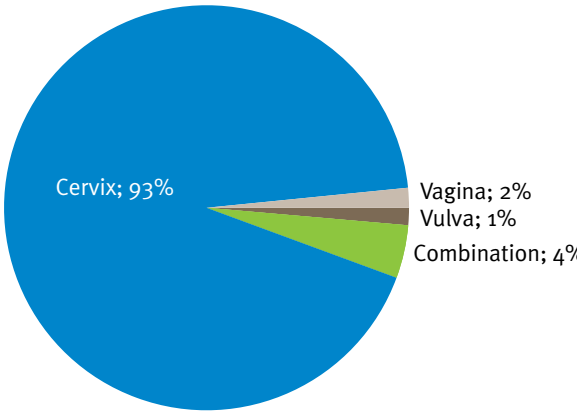


Figure 12: Site of Colposcopic Investigation, 2010

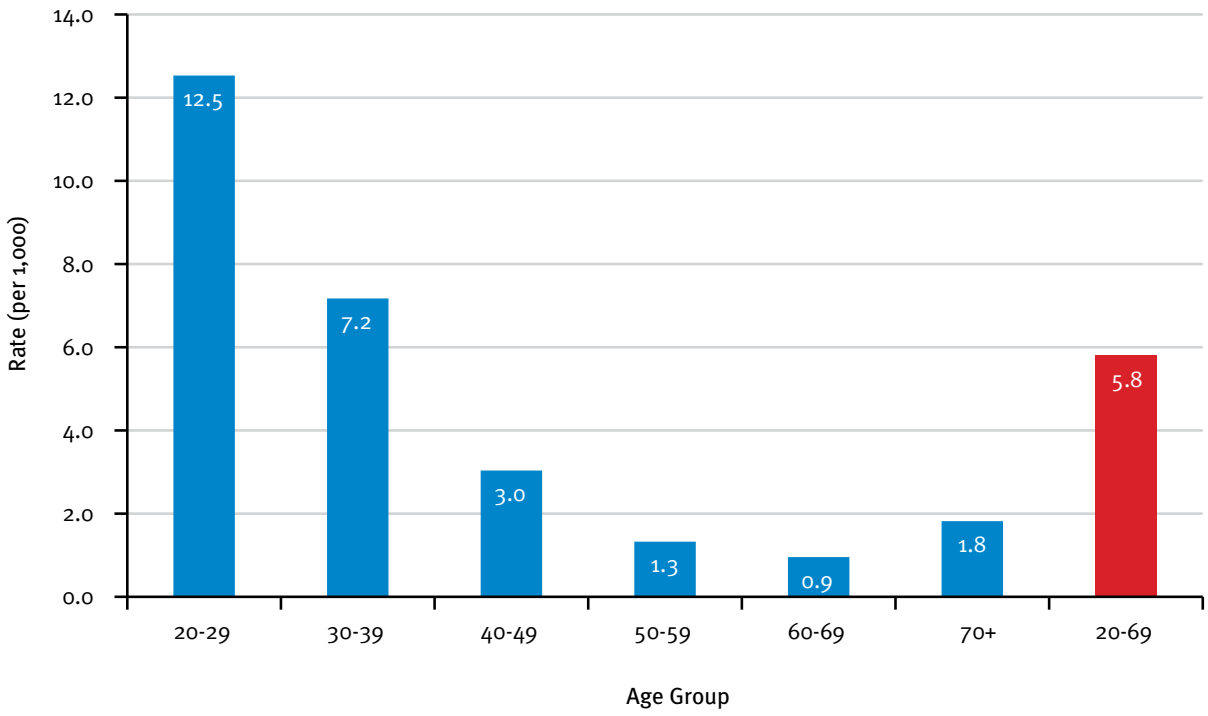


3.8 Pre-Cancer Detection Rate

Pap tests can identify pre-cancerous lesions where treatment is more likely to be effective in preventing the development of cervical cancer and thus reducing the morbidity of treating more advanced disease. Pre-cancerous lesions are histologically confirmed CIN II or III lesions. The pre-cancer detection rate is influenced by a number of factors, such as the screening test, the population's risk profile, and the screening coverage.

Figure 13 shows the pre-cancer detection rate for women ages 20-69 by 10-year age groups. The pre-cancer detection rate in 2009 for women ages 20-69 in BC is 5.8 per 1,000. This would be an important indicator to monitor over time as the environment changes in screening participation, HPV vaccination, and screening policies.

FIGURE 13: PRE-CANCER DETECTION PER 1,000 WOMEN SCREENED BY AGE GROUP, 2009



3.9 Cancer Incidence

New invasive cervical cancers diagnosed in 2005 to 2009 were identified from the British Columbia Cancer Registry and the data collected by the CCSP. The age-specific cancer incidence rates for 2005-2009 are presented in Figure 14, and the cancer counts are shown in Table VII. Figure 14 shows that invasive cervical cancers are rare in women ages 20-29.

FIGURE 14: INVASIVE CERVICAL CANCER INCIDENCE PER 100,000 BY AGE GROUP, 2005 – 2009

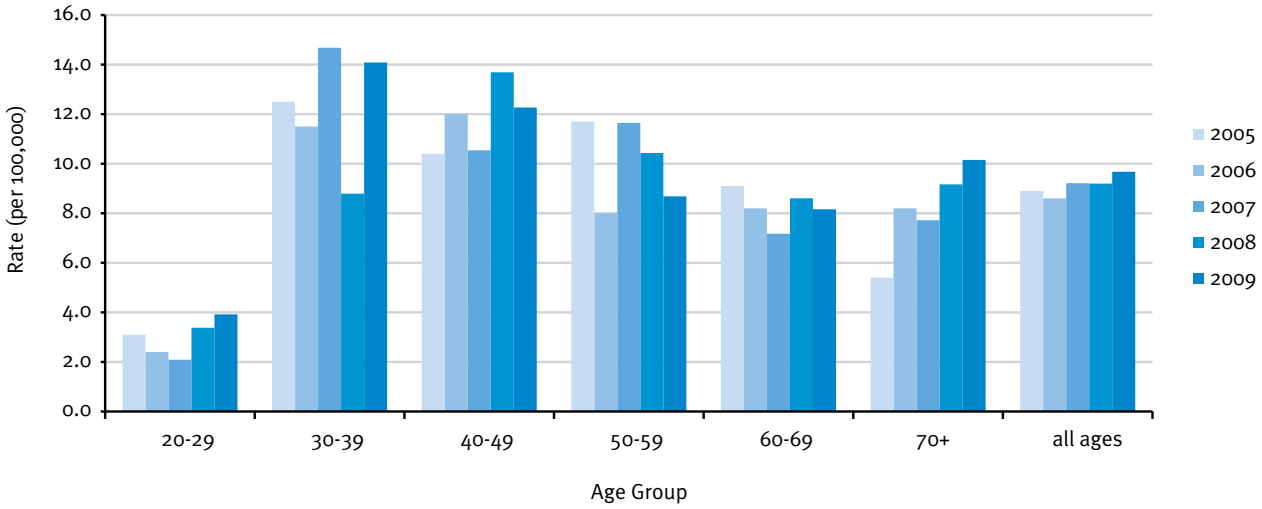


Table VII: Number and Incidence Rate of Invasive Cervical Cancers by Age Group, 2005 – 2009

	20-29	30-39	40-49	50-59	60-69	70+	all ages
2009 Number of cases							
All cell types	12	42	43	29	19	26	172
Squamous	11	27	25	22	12	25	122
Incidence rate (per 100,000)							
All cell types	3.9	14.1	12.3	8.7	8.2	10.2	9.7
Squamous	3.6	9.1	7.1	6.6	5.2	9.8	6.9
2008 Number of cases							
All cell types	10	26	48	34	19	23	160
Squamous	6	16	38	25	13	16	114
Incidence rate (per 100,000)							
All cell types	3.4	8.8	13.7	10.4	8.6	9.2	9.2
Squamous	2.0	5.4	10.8	7.7	5.9	6.4	6.6
2007 Number of cases							
All cell types	6	43	37	37	15	19	157
Squamous	5	28	23	30	13	14	113
Incidence rate (per 100,000)							
All cell types	2.1	14.7	10.5	11.6	7.2	7.7	9.2
Squamous	1.7	9.6	6.6	9.4	6.2	5.7	6.6
2006 Number of cases							
All cell types	7	35	43	25	16	20	146
Squamous	4	23	26	20	13	17	103
Incidence rate (per 100,000)							
All cell types	2.4	11.5	12.0	8.0	8.2	8.2	8.6
Squamous	1.4	7.5	7.3	6.4	6.7	7.0	6.0
2005 Number of cases							
All cell types	9	38	37	35	17	13	149
Squamous	8	26	19	23	13	8	97
Incidence rate (per 100,000)							
All cell types	3.1	12.5	10.4	11.7	9.1	5.4	8.9
Squamous	2.8	8.5	5.3	7.7	7.0	3.4	5.8

Notes:

1. Population estimates: BC STATS, BC Ministry of Finance and Corporate Relations
2. Population data was acquired through the Health Data Warehouse, BC Ministry of Health
3. Cancer data source: BC Cancer Registry and Cervical Cancer Screening Program of BC Cancer Agency

3.10 Screening History in Cases of Invasive Cancer

Screening history of women diagnosed with invasive cancer is summarized in Figures 14 and 15 for squamous cell carcinomas and adenocarcinoma respectively. As Pap tests performed within six months prior to the invasive cancer diagnosis are less likely to be done for screening purpose, these Pap samples are excluded in the categorization of screening history.

Figure 15 shows that 56% of patients with squamous cell carcinoma are "inactive" screening participants (›5 years or no screening history with CCSP), 5% are "under screened" (›3 to 5 years), and 39% are "active" screening participants (0.5 to 3 years). Figure 16 shows that 33% of patients with adenocarcinoma are "inactive" screening participants (›5 years or no screening history with CCSP), 2% are "under screened" (›3 to 5 years), and 63% are "active" screening participants (0.5 to 3 years).

In total, about 50% of the 172 patients diagnosed with invasive cervical cancer in 2009 were screened over 5 years ago, or did not have a screening history.

Figure 15: Screening History of Women Diagnosed with Squamous Cell Carcinoma, 2009

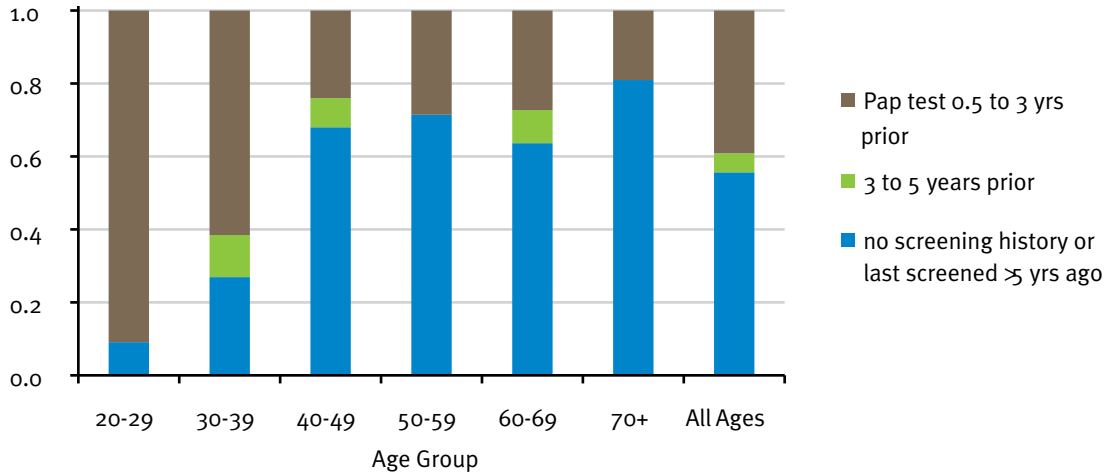
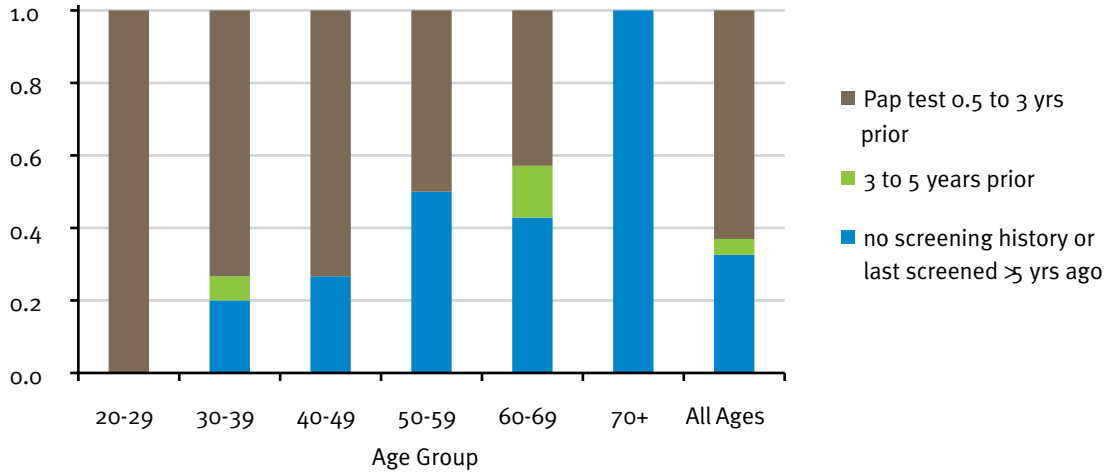


Figure 16: Screening History of Women Diagnosed with Adenocarcinoma, 2009



Appendix 1 — General Cancer Screening Program Overview

Definition of Screening

Screening is a prevention strategy. Primary cancer prevention strategy involves changes of behavior or habits that reduce a risk, for example, stopping smoking, fat reduction in the diet, etc. Screening for cancer is a secondary prevention strategy. Secondary cancer prevention strategy targets disease in process.[1] A secondary prevention can reduce cancer morbidity and mortality by diagnosing invasive disease at an earlier, more favorable prognostic stage; and, detecting precursor lesions associated with some cancers that once eliminated, prevent progression to invasive disease. Screening is "*the application of various tests to apparently healthy individuals to sort out those who probably have risk factors or are in the early stages of specified conditions.*"[2]

Limitations of Screening

The decision to screen an at-risk population for pre-clinical signs of cancer is based on well-established criteria related to cancer and the screening tests that we use to identify individuals who may have occult disease.[3,4,5]

The overall objective of a screening program is to reduce morbidity and mortality from cancer. The goal of screening is to "apply a relatively simple, inexpensive test to a large number of persons in order to classify them as likely or unlikely to have the cancer". The emphasis on likelihood underscores the limits of what should be expected from screening (i.e., screening tests are not diagnostic tests).

A person with an abnormal screening test does not have a definitive diagnosis until additional, more sophisticated diagnostic tests are completed. The emphasis on likelihood also is important because screening tests are inherently limited in their accuracy, which varies by test, cancer site, and individual characteristics. Although most of screening interpretations are accurate, it is inevitable that some individuals are identified as possibly having cancer when they do not, and screening tests fail to identify some individuals who do not have the disease.

The comparative evaluation of accuracy versus error cannot be considered in absolute terms, but rather should be evaluated in terms of the relative consequences of one or the other kind of error.

Organized Population Screening Program

To reduce morbidity and mortality from cancer in a population by screening, there must be coordinated and effective strategies to ensure acceptance and utilization of the established screening test. Since screening is targeted at asymptomatic women, the fine balance between maximizing benefits and minimizing undesirable effects must be maintained.

An organized approach to screening ensures that the target population has access to the screening service and that it accepts and uses the services offered. This is achieved by including the following six program components:

1. Health Promotion
2. Professional Development/Education
3. Recruitment & Retention
4. Screening Test & Reporting
5. Follow-up
6. Evaluation/Research Partnerships

The success of screening is a shared responsibility of the team of individuals working together to develop goals, set standards, monitor progress, and continue improvement in each of the six components.

1 US Preventive Services Task Force: Guide to Clinical Preventive Services, Ed 2. Baltimore, Williams & Wilkins, 1996

2 Morrison A: Screening in Chronic Disease. New York, Oxford Press, 1992

3 Cole P, Morrison AS: Basic issues in cancer screening. In Miller AB (ed); Screening in Cancer. Geneva, International Union Against Cancer, 1978, p7

4 Miller AB; Fundamentals of Screening. In Screening for Cancer. Orlando, Academic Press, 1985, p3

5 Wilson JMG, Junger G; Principles and Practice of Screening for Disease. Geneva, World Health Organization, 196

Cervical Cancer Screening

Clinical Practice Guidelines

BC Cancer Agency
CARE + RESEARCH

Screening Initiation

Cervical cancer screening should begin at age 21 or approximately three years after first sexual contact, whichever occurs first. Sexual contact includes intercourse as well as digital or oral sexual contact involving the genital area with a partner of either gender.

The guideline of screening initiation at age 21 provides a way for healthcare providers to offer cervical screening and have a discussion about sexual history. Unfortunately, some women may be reluctant to share information about previous sexual contacts with their healthcare provider. This may be due to a number of reasons, such as embarrassment, fear of disclosing premarital sexual relationship(s), or a history of sexual abuse or assault. A woman's choice to be screened or not should always be respected.

Women who have never had any sexual contact do not need to be screened.

Screening Interval

Repeat Pap tests every 12 months until there are three consecutive negative results, then continue at 24-month intervals.

Discontinue Screening

Women older than 69 years should discontinue screening if they have had at least three negative Pap tests in the past 10 years, with no previous history of biopsy confirmed significant abnormalities (CIN*2 or CIN 3, AIS** or invasive cervical cancer).

Women older than 69 who have never been screened, should be screened with three annual Pap tests. If results are negative, discontinue screening.

HPV vaccination is recommended for females between nine and 26 years of age. For National Advisory Committee on Immunization (NACI) guidelines visit:
www.phac-aspc.gc.ca/publicat/ccdr-rmtc/07vol33/acs-ea/index-eng.php

A woman with a visibly abnormal cervix or abnormal bleeding should be referred appropriately, regardless of the Pap test findings

Screening Women with Special Circumstances

- Women should follow regular guidelines for screening if they (1) received the HPV vaccine, (2) are lesbian or (3) are pregnant.
- Women with immunosuppression should be screened annually. This includes women with human immunodeficiency virus (HIV/AIDS), lymphoproliferative disorders, an organ transplant, and women under long-term immunosuppression therapy.
- Women currently being assessed by a colposcopy clinic or being followed by a cancer clinic should not undergo additional Pap testing unless being directed by the treating physician.
- Women who have ever had biopsy confirmed CIN 2, CIN 3, AIS or invasive cervical cancer should be screened annually thereafter.
- Women who have had a hysterectomy with the cervix removed
  - and have a history of invasive cervical cancer, should have a vault smear annually thereafter;
  - and have a history of CIN 2, CIN 3 or AIS, should have a vault smear until there are three consecutive negative results in a three-year period, then discontinue screening;
  - due to benign disease, may discontinue screening if adequate pathological documentation exists that the cervix has been removed completely and there is no history of biopsy confirmed CIN 2, CIN 3, AIS or invasive cervical cancer.
- Women who have undergone subtotal hysterectomy and retained their cervix should continue with screening according to the guidelines.

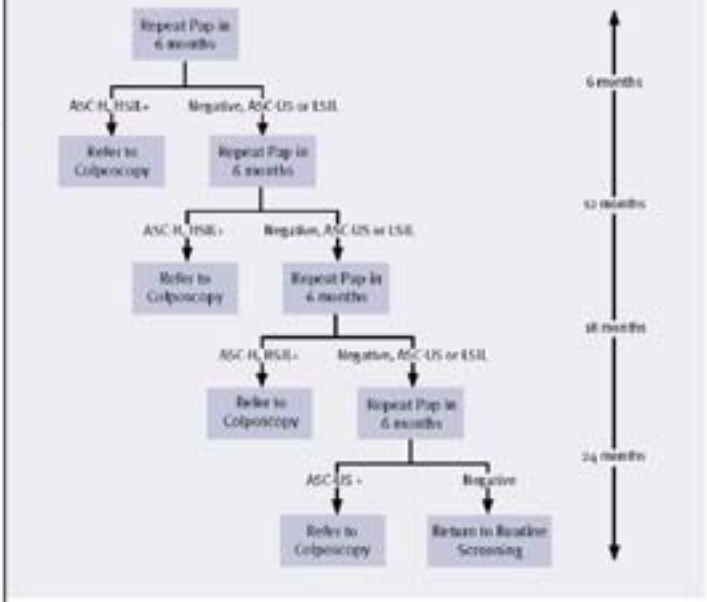
* CIN - cervical intraepithelial neoplasia
** AIS - adenocarcinoma in situ

February 2011

BC Cancer Agency
CARE + RESEARCH

Cervical Cancer Screening

Results and Recommended Management

Pap Test Result	Recommended Management
Atypical squamous cells of undetermined significance (ASC-US) Low-grade squamous intraepithelial lesion (LSIL)	 ASC-US in background of atrophy should be repeated after topical estrogen
Atypical squamous cells – cannot exclude HSIL (ASC-H) High-grade squamous intraepithelial lesion (HSIL) Atypical glandular cells (AGC), Adenocarcinoma in situ (AIS)	Refer for colposcopy
Squamous cell carcinoma, adenocarcinoma, other malignancy	Refer to specialist care
After age 40, endometrial cells should be managed as appropriate	

February 2011

Appendix 3 — Terminology for Reporting Cervical Cytology Results

Bethesda System (after October 1, 2010)	BC Cervical Cancer Screening Program (before October 1, 2010)
Unsatisfactory: state reason	Unsatisfactory: state reason
Negative for Intraepithelial Lesion or Malignancy (NILM)	Negative, no atypical cells are seen
NILM Reactive Change due to: • Trichomonas vaginalis • Fungal organisms morphologically consistent with Candida sp. • Cellular changes associated with Herpes Simplex Virus • Inflammation • Treatment effects	Benign changes due to: • Trichomonas vaginalis • Monilia (Candida species) • Cellular changes suggestive of Herpes simplex viral infection • Inflammation • Radiation effect
Atypical Squamous Cells of Undetermined Significance (ASC-US)	Some cases of Mild squamous dyskaryosis, Atypia nos, or Benign changes
Atypical Squamous Cells, Cannot Exclude HSIL (ASC-H)	Some cases of Moderate or Marked squamous dyskaryosis, or Atypia nos.
Low-grade Squamous Intraepithelial Lesion (LSIL)	Mild squamous dyskaryosis
High-grade Squamous Intraepithelial Lesion (HSIL) • Moderate • Marked	Moderate squamous dyskaryosis • Marked squamous dyskaryosis • Some cases of Suspicious squamous cells
Squamous Cell Carcinoma	Some cases of Suspicious squamous cells Malignant squamous cells
Adenocarcinoma	Malignant glandular cells
Carcinoma, unspecified	Malignant epithelial cells
Atypical Glandular Cells, not otherwise specified (AGC – NOS).	Mild glandular atypia Some cases of Moderate glandular atypia
Atypical Glandular Cells, favour neoplastic (AGC – favour neoplastic)	Some cases of Moderate glandular atypia Marked glandular atypia
Adenocarcinoma in situ (AIS)	Suspicious glandular cells

Appendix 4 — Colposcopy Clinic Locations and Personnel

Abbotsford
Abbotsford Regional Hospital
32900 Marshall Road
Abbotsford, BC V2S 0C2
Phone: 604-851-4700
Dr. F. Ahman

Comox
St. Joseph's General Hospital
2137 Comox Avenue
Comox, BC V9M 1P2
Phone: 250-339-2242
Dr. B.M. Bagdan, Dr. D. Hartman

Duncan
Cowichan District Hospital
3045 Gibbins Road
Duncan, BC V9L 1E5
Phone: 250-746-4141
Dr. S. Hancock

Kamloops
Royal Inland Hospital
311 Columbia Street
Kamloops, BC V2C 2T1
Phone: 250-374-5111
Dr. A. Human

Kelowna
Kelowna General Hospital
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Kelowna, BC V1Y 1T2
Phone: 250-862-4000
Dr. M. Jones, Dr. McGregor, Dr. P. Wilson

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22051 Fraser Highway
Langley, BC V3A 4H4
Phone: 604-533-6406
Dr. E. Mah

Maple Ridge
Ridge Meadows Hospital &
Health Care Centre
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Maple Ridge, BC V2X 7G5
Phone: 604-463-4111
Dr. W.H. Yeung

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Phone: 250-754-2141
Dr. A. Hunt, Dr. P. Mitchell

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New Westminster, BC V3L 3W7
Phone: 604-520-4253
Dr. L. Neapole, Dr. S. Pedersen

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231 East 15th Street
North Vancouver, BC V7L 2L7
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Penticton, BC V2A 3G6
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Dr. M. Jones

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Prince George Regional Hospital
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Prince George, BC V2M 1S2
Phone: 250-565-2000
Dr. B. Galliford, Dr. W. Kingston, Dr. M. Odulio

Prince Rupert
Prince Rupert Regional Hospital
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Phone: 250-622-6295
Dr. M. Pienaar

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Richmond, BC V6X 4A2
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Dr. H. Mackoff, Dr. H. Robson

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Sechelt, BC VoN 3Ao
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Dr. R. Kellett

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Phone: 250-635-2211
Dr. L. Almas

Trail
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Phone: 250-368-3311
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2101 - 32nd Street
Vernon, BC V1T 5L2
Phone: 250-545-2211
Dr. K. Daniel, Dr. C. Hatfield

Surrey
Surrey Memorial Hospital
13750 - 96th Avenue
Surrey, BC V3V 1Z2
Phone: 604-581-2211
Dr. M. Bakhet, Dr. P. Yeung

Victoria
Royal Jubilee Hospital
1952 Bay Street
Victoria, BC V8R 1J8
Phone : 250-370-8000
Dr. H. Hunt, Dr. M. Mazgani,
Dr. D. Quinlan, Dr. M. Rippington

White Rock
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15521 Russell Avenue
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Phone: 604-531-5512
Dr. J. Christilaw, Dr. G. Jackson

Williams Lake
Cariboo Memorial Hospital
517 North 6th Avenue
Williams Lake, BC V2G 2G8
Phone: 250-392-4411
Dr. G. Gill, Dr. S. Raffard

Appendix 5 — Educational Materials

Education materials for health care providers and women are available at no charge from the Cervical Cancer Screening Program.

For health care providers

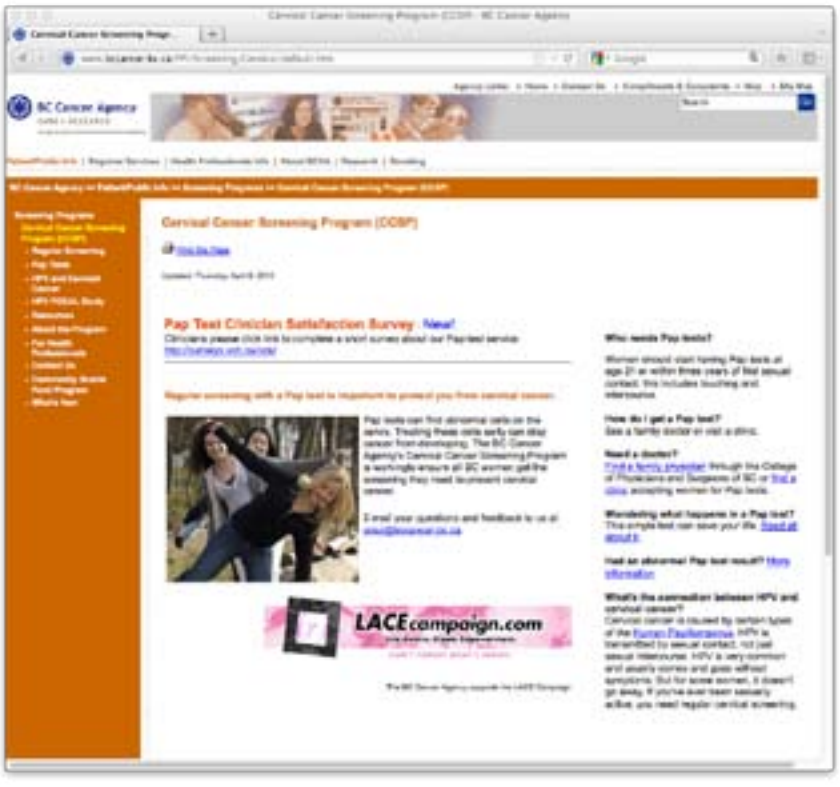
- Educational video (online or DVD) – A Woman-Centered Approach to Cervical Cancer Screening
- Information cards on the following:
  - Cervical Cancer Screening Clinical Practice Guidelines
  - Pap Sampling Technique

For women

- Brochures about Pap tests and HPV
- Booklets about cervical cancer and abnormal results
- Posters
- Postcards
- Calendar reminder stickers

Educational materials online

Educational materials and the order form are available at:
www.bccancer.bc.ca/cervicalscreening ⇢ Resources
www.bccancer.bc.ca/cervicalscreening ⇢ For Health Professionals



Appendix 6 — Glossary

- **Age-Standardized Incidence Rate**
  Age-standardized incidence rate is the weighted average of the age-range specific incidence rates, where the weights are the proportions of people in the corresponding age groups of the 1991 Canadian population.

$$\text{Age - Standardized Incidence Rate} = \sum_i \left(\frac{Ca_i}{Pop_i} \times \text{weight}_i \times 100{,}000 \right)$$

  Where Ca_i is the number of cervical cancers detected in a given year for age group *i*, pop_i is the BC female population in a given year for age group *i*, and weight_i is the proportion of people in age group *i* of the 1991 Canadian population.

- **Age-Standardized Mortality Rate**
  Age-standardized mortality rate is the weighted average of the age-range specific mortality rates, where the weights are the proportions of people in the corresponding age groups of the 1991 Canadian population.

$$\text{Age - Standardized Mortality Rate} = \sum_i \left(\frac{Deaths_i}{Pop_i} \times \text{weight}_i \times 100{,}000 \right)$$

  Where $Deaths_i$ is the number of cervical cancer deaths in a given year for age group *i*, pop_i is the BC female population in a given year for age group *i*, and weight_i is the proportion of people in age group *i* of the 1991 Canadian population.

- **Incidence Rate**
  Incidence rate is the proportion of women in the population who develop cervical cancer in a given year, expressed as the number of deaths per 100,000 people.

$$\text{Incidence Rate} = \frac{\text{Number of cervical cancer detected in a given year}}{\text{BC female population in a given year}} \times 100{,}000$$

- **Mortality Rate**
  Mortality rate is the proportion of women in the population who died of cervical cancer in a given year, expressed as the number of deaths per 100,000 people at risk.

$$\text{Mortality Rate} = \frac{\text{Number of cervical cancer deaths in a given year}}{\text{BC female population in a given year}} \times 100{,}000$$

- **Participation Rate**
  BC Overall
  Proportion of women in the BC female population (20-69 years of age) had a Pap test sample taken from the cervix and/or endocervix and processed at least once over a three-year period. Age is calculated in year two of the reporting period.

$$\text{Participation Rate} = \frac{\text{Number of women (age 20 - 69) with at least one Pap test in a 3 - year period}}{\text{Number of women in the BC (age 20 - 69) population at year two}} \times 100$$

  BC Adjusted for Hysterectomy
  Proportion of women out of the target BC female population (20-69 years of age) without hysterectomy had a Pap test sample taken from the cervix and/or endocervix and processed at least once over a three-year period. The BC female population without hysterectomy is computed using the hysterectomy rates estimated from the 2008 Canadian Community Health Survey.
- **Positive Predictive Value**
  Proportions of Pap test samples with significant cytology findings and have histological confirmation of cervical abnormality out of those samples with significant cytology and had follow-up investigation with pathological result. Surveillance with repeat Pap test only is not regarded as follow-up investigation.

$$\text{PPV} = \frac{\text{Number of samples with significant pathology and cytology findings}}{\text{Number of samples with significant cytology findings, investigated and has pathological diagnosis}}$$

- **Pre-Cancer Detection Rate**
  Number of pre-cancerous lesions detected per 1,000 women who had a Pap test in a 12-month period.

$$\text{Pre - Cancer Detection Rate} = \frac{\text{Number of women with histology CIN II and CIN III}}{\text{Number of women who had at least one Pap test}} \times 1{,}000$$

- **Retention Rate**
  Proportion of women with a negative sample returned for Pap test.

$$\text{Rescreen Rate} = \frac{\text{Number of women returned for Pap test after an index sample with negative result}}{\text{Number of women with a negative sample eligible to return for Pap test}}$$

Appendix 7 — Acknowledgments and Contributors

The Cervical Cancer Screening Program would like to thank its partners who have supported and contributed to the Program over the years. The success of the Program depends on an integrated system of:

- Community health professionals taking the cervical Pap test samples (Pap test slides).
- Dedicated and highly trained staff to process and read the slides.
- Community facilities providing space and personnel to support regional colposcopy clinics.
- Medical specialists to provide colposcopy follow-up and treatment.

We would also like to thank the following organizations for their ongoing support:

- All Hospitals participating in the Provincial Colposcopy Program
- BC Centre for Disease Control
- BC College of Registered Nurses
- BC Medical Association
- BC Naturopathic Association
- BC Women's Hospital and Health Centre
- Canadian Cancer Society
- First Nations Health Council
- SFU Faculty of Health Sciences
- UBC Faculty of Medicine
- Women's Health Bureau

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- Ms. Jane Lo, Chief Cytotechnologist, Cervical Cancer Screening Laboratory
- Mr. Javis Lui, Coordinator, Screening Promotions
- Ms. Remy Malong, Program Secretary
- Dr. Dirk van Niekerk, Medical Leader, Cervical Cancer Screening Program

Appendix 8 — Publications and Presentations

Publications

I Vergote, F Amant, G Kristensen, T Ehlen, N Reed, A Casado. ***Primary Surgery or Neoadjuvant Chemotherapy Followed by Interval Debulking Surgery in Advanced Ovarian Cancer***. European Journal of Cancer Vol 47 Supp 3, pg S88-S92, Sept 2011.

Vergote I, Ehlen T. ***Neoadjuvant Chemotherapy is the Better Treatment Option in Some Patients with Stage IIIc-IV Ovarian Cancer***. Journal of Clinical Oncology. Jul 2011.

Kwon JS, Mazgani M, Miller DM, Ehlen T, Heywood M, McAlpine JN, Finlayson SJ, Plante M, Stuart GC, Carey MS. ***The Significance of Surgical Staging in Intermediate-risk Endometrial Cancer***. Gynecologic Oncology 2011 Mar 19. [Epub ahead of print].

Cantor SB, Yamal JM, Guillaud M, Cox DD, Atkinson EN, Benedet JL, Miller D, Ehlen T, Matisic J, van Niekerk D, Bertrand M, Milbourne A, Rhodes H, Malpica A, Staerkel G, Nader-Eftekhari S, Adler-Storthz K, Scheurer ME, Basen-Engquist K, Shinn E, West LA, Vlastos AT, Tao X, Beck JR, Macaulay C, Follen M. ***Accuracy of Optical Spectroscopy for the Detection of Cervical Intraepithelial Neoplasia: Testing a Device as an Adjunct to Colposcopy***. Int J Cancer. 2011 Mar 1; 128(5):1151-68. Epub 2010 Nov 9.

Buys TP, Cantor SB, Guillaud M, Adler-Storthz K, Cox DD, Okolo C, Arulogon O, Oladepo O, Basen-Engquist K, Shinn E, Yamal JM, Beck JR, Scheurer ME, van Niekerk D, Malpica A, Matisic J, Staerkel G, Atkinson EN, Bidaut L, Lane P, Benedet JL, Miller D, Ehlen T, Price R, Adelwole IF, Macaulay C, Follen M. ***Optical Technologies and Molecular Imaging for Cervical Neoplasia: A Program Project Update***. Gend Med. 2011 Sep 21. [Epub ahead of print] PubMed PMID: 21944317.

Gilbert M, Kwag M, Mei W, Rank C, Kropp R, Severini A, van Niekerk D, Zhou C, Press N, Ogilvie G, Wong T; Mancount Study Team. ***Feasibility of Incorporating Self-collected Rectal Swabs into a Community Venue-Based Survey to Measure the Prevalence of HPV Infection in Men who have Sex with Men***. Sex Transm Dis. 2011 Oct; 38(10):964-9.

Presentations

K Ceballos, A Coldman, D Cook, T Ehlen, E Franco, L Kan, M Krajden, M Martin, W Mei, ***G Ogilvie***, ***S Peacock***, L Smith, G Stuart, ***D van Niekerk***

Primary HPV Testing in a Canadian Population-Based Screening Program. Eurogin 2011. Lisbon, Portugal. May 2011

HPV FOCAL: Round 1 Results of a Cervical Cancer Screening Trial. International Papilloma Virus Annual Meeting (IPV) 2011. Berlin, Germany. September 2011

HPV FOCAL, Canadian Trial of Cervical Cancer Screening. Canadian Cancer Research Conference. Toronto, Ontario. November 2011

HPV FOCAL: Round 1 Results of a Cervical Cancer Screening Trial. BC Cancer Agency Annual Conference. Vancouver, Canada. December 2011

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