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

Cervical Cancer Screening Program

2009 Annual Report

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Cervical Cancer Screening Program

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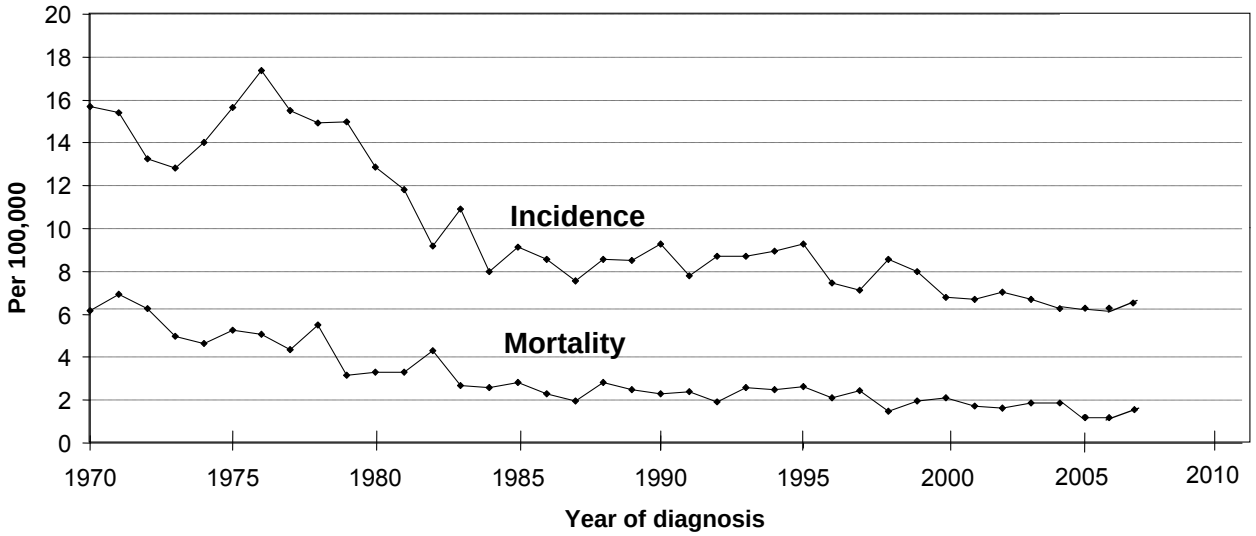
1.0 MESSAGE FROM THE MEDICAL LEADER

Cervical cancer incidence and mortality rates remained low in British Columbia (BC). The age standardized cervical cancer incidence rate for the latest period was 6.1, which is higher than the previous period (Figure 1). Efforts to obtain further reductions in cervical cancer incidence are focused on promoting participation in screening and assessing appropriate screening technologies. In 2008, the Cervical Cancer Screening Program (CCSP) reported on 574,962 cervical cytology slides from 544,710 women. The hysterectomy adjusted participation rate was 79%, which meets the Canadian target of 70%.

FIGURE 1: Age Standardized Incidence and Mortality Rate of Invasive Cervical Cancer in BC



* Rates are standardized to the 1991 Canadian population

Professional and Academic Activities

Professional staff members of the CCSP are involved in research, professional development, and teaching related to cervical cancer screening.

1) The HPV-FOCAL Trial: A randomized controlled trial to evaluate the role of primary Human Papillomavirus (HPV) testing in cervical cancer screening. This is a Canadian Institutes of Health Research (CIHR) sponsored trial which commenced participant recruitment in December 2007, and has recruited over 10,000 study participants by the end of 2009.
2) Professional staff members of the CCSP have membership on the BC HPV study group. This provincial group meets regularly to seek cooperation between researchers who are interested in HPV related diseases.
3) Study of BC physicians' knowledge and awareness of cancer screening programs in BC.

In 2009, I spent some months at the Free University Medical Centre in Amsterdam to gather information on the Dutch National Screening Program and the state of HPV-based screening in The Netherlands. This has been an informative and productive experience, and has led to at least one peer-reviewed publication (in press). Ongoing collaboration is anticipated.

Administrative Activities

None of the activities of the CCSP would be possible without the dedicated support of administrative staff. On an ongoing basis, administrative staff lends support to ensure the integrity of the laboratory information system and the screening registry, enabling the tracking and recall of women for repeat screening tests at appropriate intervals and ensuring follow-up of abnormal results.

Dr. Dirk van Niekerk

2.0 PROGRAM OVERVIEW

Health care providers around the province collect Pap test samples from women and send them to the Cervical Cancer Screening Laboratory (CCS Lab) in the Provincial Health Services Authority (PHSA). The CCS Lab provides cytological interpretation and makes follow-up recommendations to the health care providers. The CCSP, in coordination with the CCS Lab, reminds health care providers when their patients are due for cervical screening, and tracks adherence to screening intervals and follow-up on abnormal results.

The Screening Process

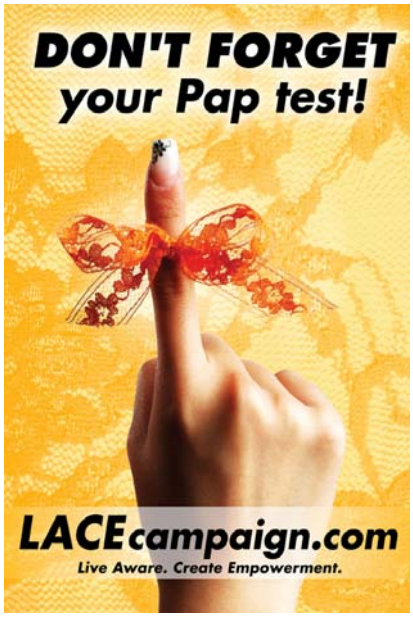
The Screening Process is illustrated in a diagram at the end of this section (page 4). The process consists of four stages:

1. Identify and invite the target population for screening.
2. Conduct screening examination.
3. Investigate abnormality identified on screening.
4. Screening reminder at the appropriate interval.

Promotion and Education

In 2009, CCSP coordinated the first provincial Pap Awareness Week. Almost 100 clinics in 49 communities across the province participated by offering drop-in hours for Pap tests during the week and promoting the event locally. Partner clinics were supportive of the initiative as a way of reaching some underserved women. The geographic coverage and mix of media used was much broader than in CCSP's previous awareness campaigns, but next year's campaign will focus on promoting the locations and hours of partner clinics to women without a regular health care provider.

In the summer and fall, CCSP supported a diverse group of young women, known as the Action Team, to come up with their own approach to encourage their friends and relatives to go for regular Pap tests. After much discussion and brainstorming, and some help from a small local social marketing company with big vision, they came up with www.lacecampaign.com. The look, key messages and outreach strategy are ready to launch in 2010.



An order form for promotion and education materials is available on CCSP's website (www.bccancer.bc.ca/cervicalscreening), under "Resources". It is now easier to find the CCSP website using Google. At no cost to the program, Google AdWords was used to put the CCSP website in the Sponsored Links section at the top of Google searches related to cervical screening.

The Community Grants Fund, a joint project with the Screening Mammography Program, has expanded the provincial reach of screening promotions by supporting local initiatives. This funding opportunity supports partnership-building among CCSP and health care organizations and providers in BC communities. The BC Cancer Agency's Prevention Coordinators dedicate part of their time to community-based promotion of screening.

CCSP worked with BC Women's Hospital and Health Centre to update the educational video for clinicians who perform Pap tests. The objective of the video is to provide information on both the technical aspects of collecting a quality sample for the lab and respectful interaction with women of diverse backgrounds. The project was guided by an advisory group with representatives from the BC College of Family Physicians, University of British Columbia Faculty of Medicine, Department of Family Practice and Division of Midwifery, the College of Registered Nurses of BC, the BC Naturopathic Association, the BC Centre for Disease Control and Women into Healing. The new video is about 30 minutes long, divided into five chapters that focus on screening, the cervix, technique, the exam and women. Clinicians will view the video on password-protected professional websites.

CCSP is working with UBC Division of Continuing Professional Development (UBC CPD) to conduct a province-wide needs assessment study into the perceptions and practice patterns of BC primary care physicians with regards to five specific cancers: breast, cervical, colorectal, prostate, and hereditary predisposition to cancer. This project has been well supported by the Medical Association of BC, BC College of Family Physicians, the Society of General Practitioners of BC, the UBC Department of Family Practice, as well as the Family Practice Oncology Network, British Columbia. The survey phase of the needs assessment was very successful with almost 900 physicians in the province providing feedback.

The project team will continue with detailed analysis of survey data and focus group interviews with physicians to discuss the survey findings in greater depth. Physician feedback in this initiative will be instrumental in the design of further educational programming, clinical support strategies, promotional materials, and other engagement strategies to improve cancer screening practices and increase uptake in recommended cancer screening.

Quality Assurance and Quality Control

The Cervical Cancer Screening Laboratory (CCSL) has ongoing quality management activities to ensure quality and accuracy of the entire laboratory process from the pre-analytical to the post-analytical stage. Policies and procedures are continuously reviewed and updated to ensure uniformity within the laboratory environment. Quality related activities are reported through the PHSA Laboratories Safety and Quality of Care Committee.

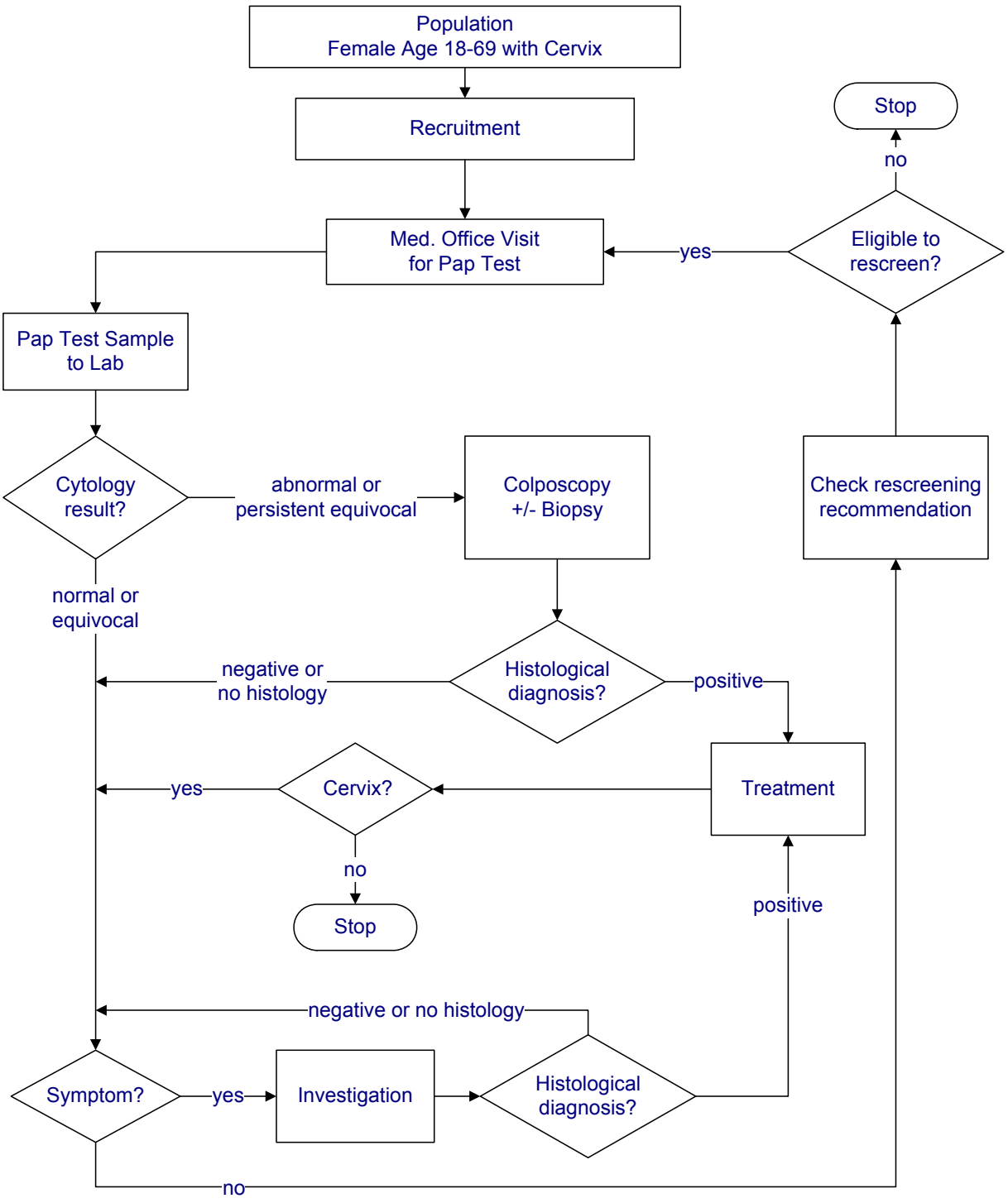
Professional Development

Ongoing learning and professional development is encouraged. The laboratory participates in the College of American Pathologist's continuing education program and subscribes to the American Society of Clinical Pathology teleconference series. Pathologists associated with the program participate in the Royal College of Physicians and Surgeons certification or equivalent programs. Cytotechnologists are encouraged to develop and present their own education experiences at a monthly laboratory Continuing Medical Education conference.

Evaluation

Data are collected and analyzed on an ongoing basis to monitor the Program's effectiveness and to 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.

CCSP Screening Process Overview



3.0 PROGRAM RESULTS

3.1 Utilization

The CCSP received a total of 581,000 gynecological smears from BC women in 2008. Health care professionals who submitted smears include general practitioners, gynecologists, midwives, naturopaths, nurse practitioners, registered nurses, etc. An additional 4,868 smears were submitted from outside of BC, of which the majority (95%) originated in the Yukon Territory. The program results in this report include smears from BC only. Unlabeled or improperly labeled specimens are not processed.

TABLE I shows the number of smears received and age distribution. Smears from "other sites" are those without any cells taken from the cervix or endocervix. The population of women screened by the CCSP includes clinically asymptomatic women (routine screening), follow-up screening for women with previously detected abnormalities, and a small percentage of symptomatic women.

TABLE I: Number of Smears Received / Processed (2008)

	Age* (years)							All Ages
	<20	20-29	30-39	40-49	50-59	60-69	70+	
Number of Smears	26,338	124,613	131,677	132,044	105,450	54,558	6,320	581,000
Number of Smears Processed (%)	26,010 (98.8%)	123,239 (98.9%)	130,242 (98.9%)	130,781 (99.0%)	104,473 (99.1%)	54,031 (99.0%)	6,186 (97.9%)	574,962 (99.0%)
Smears from Cervix/Endocervix (%)	25,975 (99.9%)	123,062 (99.9%)	129,377 (99.3%)	127,659 (97.6%)	98,819 (94.6%)	49,150 (91.0%)	4,503 (72.8%)	558,545 (97.1%)
Smears from Other Sites (%)	35 (0.1%)	177 (0.1%)	865 (0.7%)	3,122 (2.4%)	5,654 (5.4%)	4,881 (9.0%)	1,683 (27.2%)	16,417 (2.9%)

* Age is computed based on smear date.

TABLE II shows the total number of patients who had Pap smears, the number of patients with smears from the cervix/endocervix, and the number of patients with smears from other sites only.

TABLE II: Number of Patients Screened (2008)

	Age* (years)							All Ages
	<20	20-29	30-39	40-49	50-59	60-69	70+	
Number of Patients	24,133	113,790	121,742	125,828	100,983	52,382	5,852	544,710
With Smears from Cervix/Endocervix Site (%)	24,130 (>99.9%)	113,748 (>99.9%)	121,094 (99.5%)	123,082 (97.8%)	95,911 (95.0%)	47,916 (91.5%)	4,360 (74.5%)	530,241 (97.3%)
With Smears from Non-Cervix/Endocervix Site (%)	3 (<0.1%)	42 (<0.1%)	648 (0.5%)	2,746 (2.2%)	5,072 (5.0%)	4,466 (8.5%)	1,492 (25.5%)	14,469 (2.7%)

* Age is computed based on patient's last smear.

TABLE III shows the number and percentage of women having one, two, and three or more cervical/endocervical smears in the given year. Also shown in Table III is the number of women being screened by the CCSP for the first time, and the percentage they represent of all women having at least one cervical/endocervical smear.

TABLE III: Number of Smears in Patients with Cervical/Endocervical Smears (2008)

	Age* (years)							
	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
Number of Patients	24,130	113,748	121,094	123,082	95,911	47,916	4,360	530,241
with 1 Smear (%)	22,705 (94.1%)	105,003 (92.3%)	112,818 (93.2%)	118,553 (96.3%)	92,984 (96.9%)	46,636 (97.3%)	4,211 (96.6%)	502,910 (94.8%)
with 2 Smears (%)	1,374 (5.7%)	8,405 (7.4%)	7,991 (6.6%)	4,389 (3.6%)	2,851 (3.0%)	1,250 (2.6%)	139 (3.2%)	26,399 (5.0%)
with 3+ Smears (%)	51 (0.2%)	340 (0.3%)	285 (0.2%)	140 (0.1%)	76 (0.1%)	30 (0.1%)	10 (0.2%)	932 (0.2%)
New Patients (%)	12,374 (51.3%)	19,293 (17.0%)	8,660 (7.2%)	4,819 (3.9%)	2,340 (2.4%)	1,131 (2.4%)	221 (5.1%)	48,838 (9.2%)

* Age is computed based on patient's last smear.

3.2 Participation Rates

The CCSP recommends women begin Pap screening for cervical abnormality when they become sexually active or soon thereafter, and stop screening at age 69 if no significant abnormality was detected during their screening history. The CCSP recommends biennial screening after three annual normal screens. For comparison with other jurisdictions providing cervical cancer screening, a three-year participation rate (i.e. the percent of women with at least one cervical/endocervical smear in a three-year period) is reported.

Figure 2 shows the participation rates without hysterectomy correction by Health Service Delivery Area (HSDA) for the three-year period ending on December 31 in the year of this report, where HSDAs with lower participation rates have lighter shade and vice versa.

FIGURE 2: Participation Rates by HSDA January 1, 2006 – December 31, 2008

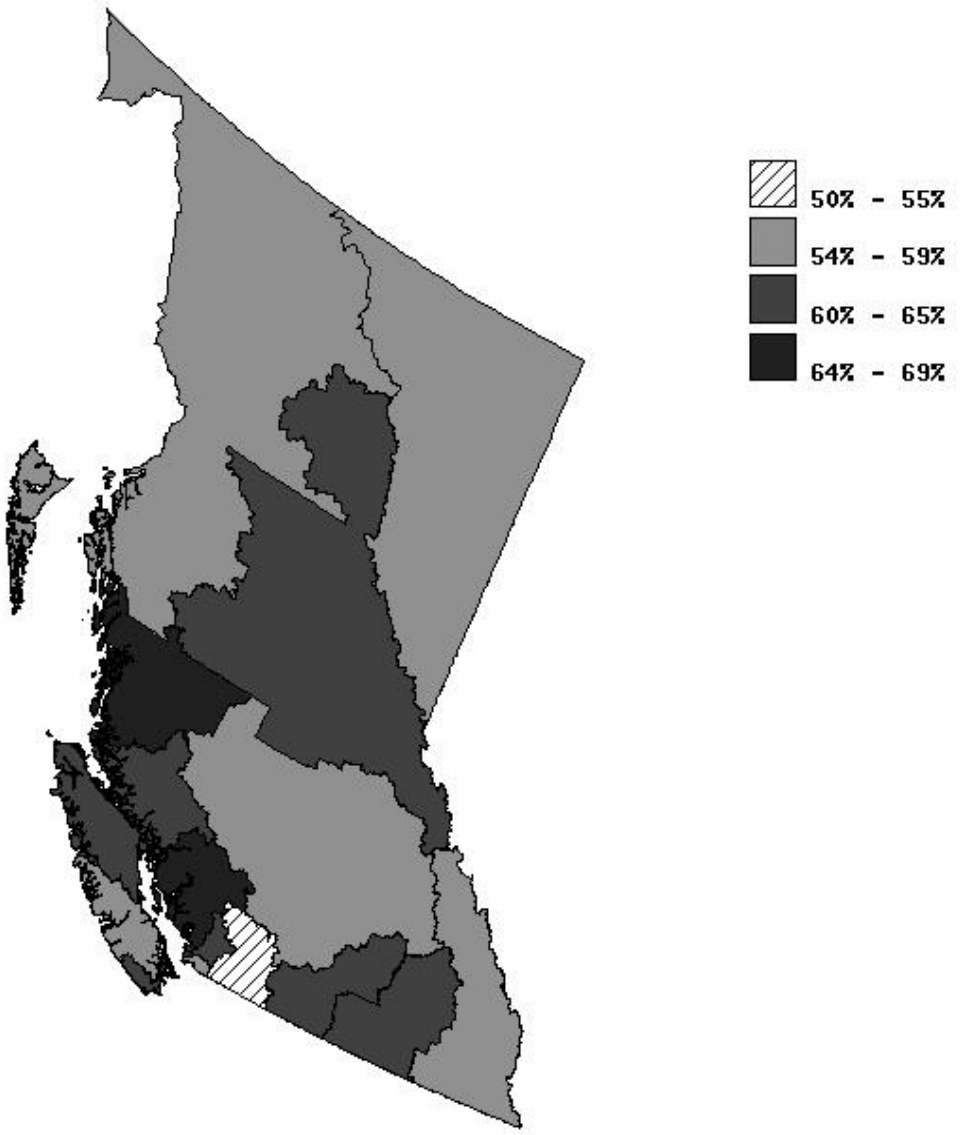


Table IV lists participation rates by HSDA and 10-year age groups for the three-year period ending on December 31 in the year of this report. In addition, the provincial participation rates are further adjusted for hysterectomies. The hysterectomy adjustment is based on the estimated age-specific hysterectomy rates for BC to exclude women without a cervix. Hysterectomy rates were not available by HSDAs. As there may be significant regional variations, it is not appropriate to adjust regional participation rates using province-wide hysterectomy rates. The adjusted participation rate for the BC female population ages 20-69 is 79%.

TABLE IV: Participation Rates by HSDA (January 1, 2006 – December 31, 2008)

Health Service Delivery Area	Age* (years)							Age
	<20	20-29	30-39	40-49	50-59	60-69	70+	20-69
East Kootenay	13.4	81.2	70.6	59.9	48.8	39.4	5.6	58.8
Kootenay Boundary	12.9	85.4	76.0	64.4	55.6	40.5	5.9	62.6
Okanagan	11.1	78.4	78.2	66.2	53.6	40.2	4.6	62.2
Thompson Cariboo	13.4	77.4	72.2	58.5	48.0	35.1	5.0	57.3
Fraser East	7.6	63.7	66.2	57.3	44.5	32.7	4.4	54.3
Fraser North	6.9	58.8	75.0	66.8	55.8	40.5	5.9	61.6
Fraser South	7.1	60.9	71.3	63.8	51.4	36.6	5.0	58.5
Richmond	5.6	50.5	74.2	70.4	63.1	46.1	6.3	62.6
Vancouver	5.9	54.6	72.9	71.1	61.1	46.7	6.2	63.0
North Shore/Coast Garibaldi	10.0	69.2	79.6	71.7	63.0	50.4	7.1	67.4
South Vancouver Island	12.7	70.3	77.5	69.3	58.9	45.6	4.5	64.8
Central Vancouver Island	13.2	77.2	74.8	62.6	52.3	40.7	4.8	59.8
North Vancouver Island	13.7	84.7	77.0	65.5	56.4	45.8	5.8	64.3
Northwest	12.0	81.2	70.4	59.5	45.6	32.9	4.7	58.7
Northern Interior	12.2	74.2	73.5	61.0	50.3	37.4	6.0	60.7
Northeast	11.0	75.3	65.0	52.5	42.0	27.7	4.9	55.9
British Columbia	10.2	70.7	76.9	67.2	55.9	41.7	5.5	63.7
Adjusted for Hysterectomy	10.2	70.7	83.6	85.1	83.4	67.3	5.5	78.9

* Age computed based on patient's age in 2007.

Notes:

- Population data (P.E.O.P.L.E. 34) was acquired through the Health Data Warehouse, BC Ministry of Health
- Hysterectomy rates were estimated from a population sample of an epidemiological study conducted in 1995

The overall provincial hysterectomy corrected participation rate for women ages 20 to 69 increased by 1%, compared to the three-year period reported in the 2008 CCSP Annual Report. The participation rates in the younger age groups (up to age 39) increased across all HSDAs. However, the participation rates decreased in the older age groups (50 and older) in all but two HSDAs (Kootenay Boundary and Northeast). Participation rates for women ages 20 to 69 are lowest in northern BC (Northeast, Northwest, and Thompson Cariboo) and in the Fraser Valley (Fraser East and Fraser South). Therefore, specific age-targeted recruitment initiatives are needed across the province.

In the 20 to 29 age group, participation rates have surpassed the national benchmark of 70 % in three of the five regional health authorities (Interior Health, Vancouver Island Health Authority, and Northern Health). Future promotion and education initiatives targeted at young women are most needed in the Lower Mainland of British Columbia (Vancouver Coastal Health and Fraser Health).

3.3 Screening Interval

Repeat interval recommendations were given based primarily on the current smear result and cytology history. A patient's clinical condition may influence the specific recommendation. The last satisfactory negative smear per patient taken in the reference year was used in the screening interval analyses.

Table V shows the three-year re-screen rate of women ages 20-69 by 10-year age groups for calendar years, 2003-2005, inclusive. The re-screen rate has slowly declined over the years. Further investigation is warranted. Table VI summarizes the 2005 re-screen rate for women ages 20-69 by 10-year age groups in six-month intervals. Lastly, Figure 3 shows the re-screen rate by the recommended screening interval.

TABLE V: 3-Year Re-screen Rate (2003-2005)

	Calendar Year					
	2003		2004		2005	
Age*	n	%	n	%	n	%
20-29	93,794	82%	102,414	81%	103,279	80%
30-39	119,105	84%	128,375	83%	122,114	81%
40-49	114,822	84%	129,352	83%	125,777	82%
50-59	72,492	85%	83,984	84%	88,056	83%
60-69	32,486	76%	37,907	75%	40,300	75%
20-69	432,699	83%	482,032	82%	479,526	81%

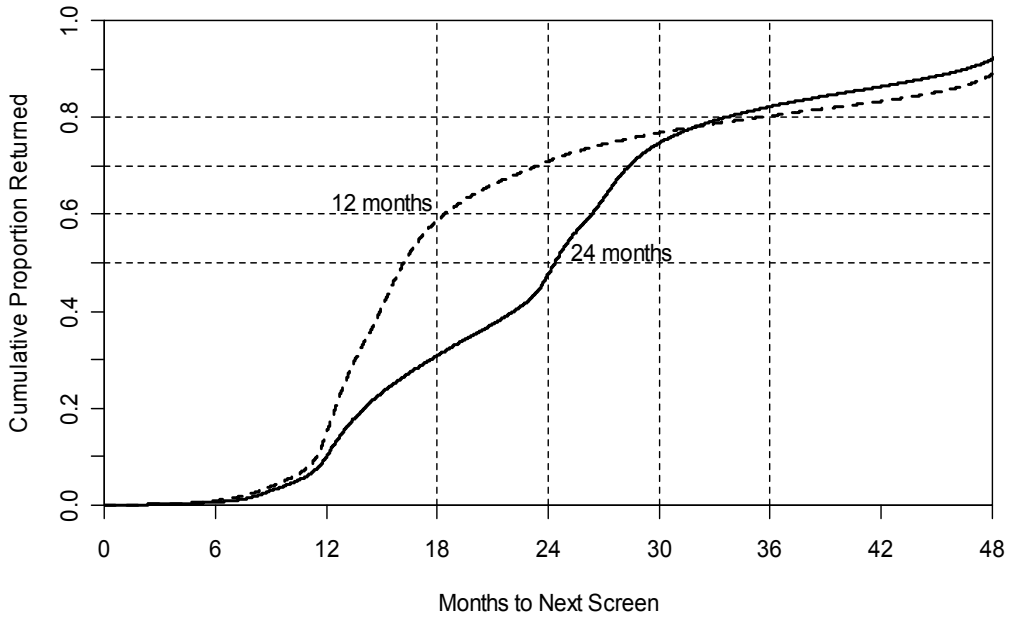
* Age is computed based on patient's age on report date of the index Pap smear.

TABLE VI: Re-screen Rate (2005)

	Age*					Age*
	20-29	30-39	40-49	50-59	60-69	20-69
Number of Patients	103,279	122,114	125,777	88,056	40,300	479,526
Rescreened by						
18 months	48%	45%	42%	40%	35%	43%
24 months	62%	59%	57%	55%	48%	58%
30 months	75%	76%	76%	77%	70%	75%
36 months	80%	81%	82%	83%	75%	81%

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

FIGURE 3: Re-screen Rate by Recommended Interval (2005)



3.4 Quality of Smears

The adequacy of a smear for interpretation is assessed as follows: satisfactory for interpretation, satisfactory but limited for interpretation, and unsatisfactory. The *unsatisfactory* category is used when the smear quality is inadequate for an interpretation. In general, the *satisfactory but limited* category is used when the smear quality is not ideal but still possible to interpret. In previous reportings of CCSP smear quality, "no endocervical cells" was considered *satisfactory but limited* for interpretation. It has been summarized in the *satisfactory* category since the 2004 report. The absence of an endocervical, transformation zone component continues to be noted on the cytology report.

Table VII summarizes smear quality by 10-year age groups for cervical/endocervical smears. The most commonly cited factor, for approximately 80% of smears of unsatisfactory quality, is scanty smear material. Scanty smear material is especially common in the older age groups. The next most cited reason is inflammatory exudates (14%). Multiple factors may be cited. The percentage of smears reported as unsatisfactory for interpretation increased by approximately 16% 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 smears which are limited for interpretation is scanty smear (52%), followed by inflammatory exudates (40%).

TABLE VII: Smear Quality (2008)

	Age* (years)							All Ages
	<20	20-29	30-39	40-49	50-59	60-69	70+	
Cervical/Endocervical Smears	25,975	123,062	129,377	127,659	98,819	49,150	4,503	558,545
Unsatisfactory (%)	525 (2.0%)	2,623 (2.1%)	2,812 (2.2%)	2,054 (1.6%)	2,551 (2.6%)	1,732 (3.5%)	207 (4.6%)	12,504 (2.2%)
Limited for Interpretation (%)	809 (3.1%)	4,280 (3.5%)	4,405 (3.4%)	3,728 (2.9%)	2,541 (2.6%)	1,300 (2.6%)	153 (3.4%)	17,216 (3.1%)

* Age is computed based on smear date.

3.5 Cervical Smear Results

In 2008, the average time from the date the specimen is received to the date the finalized report is issued was 12 days. The most severe cervical/endocervical smear results for patients in a given year are summarized in Table VIII. The table shows the result distribution within 10-year age groups.

TABLE VIII: Distribution of Cytology Findings Based on Patient's Most Severe Cervical/Endocervical Smear Result (2008)

	Age* (years)							
	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
Number of Patients	24,225	113,769	121,050	123,066	95,868	47,904	4,359	530,241
Unsatisfactory (%)	355 (1.5%)	1,737 (1.5%)	1,793 (1.5%)	1,370 (1.1%)	1,716 (1.8%)	1,194 (2.5%)	156 (3.6%)	8,321 (1.6%)
Limited for interpretation (%)	615 (2.5%)	3,320 (2.9%)	3,634 (3.0%)	3,294 (2.7%)	2,301 (2.4%)	1,219 (2.5%)	141 (3.2%)	14,524 (2.7%)
Negative** (%)	21,166 (87.4%)	100,343 (88.2%)	110,788 (91.5%)	114,027 (92.7%)	89,595 (93.5%)	44,855 (93.6%)	3,964 (90.9%)	484,738 (91.4%)
"No endocervical cells"	1	5	4	4	2	0	0	16
Reactive changes (%)	293 (1.2%)	1,253 (1.1%)	1,041 (0.9%)	1,352 (1.1%)	807 (0.8%)	231 (0.5%)	22 (0.5%)	4,999 (0.9%)
Atypia (of unspecified significance) *** (%)	9 (< 0.1%)	34 (< 0.1%)	49 (< 0.1%)	49 (< 0.1%)	99 (0.1%)	73 (0.2%)	28 (0.6%)	341 (0.1%)
Mild atypia (%)	1,572 (6.5%)	5,659 (5.0%)	2,822 (2.3%)	2,521 (2.0%)	1,149 (1.2%)	240 (0.5%)	16 (0.4%)	13,979 (2.6%)
No previous atypia**** in past 2 yrs	1,218	3,998	1,973	1,770	798	143	9	9,909
Mild or higher atypia**** in past 2 yrs	354	1661	849	751	351	97	7	4070
Moderate or higher atypia (%)	215 (0.9%)	1,423 (1.3%)	923 (0.8%)	453 (0.4%)	201 (0.2%)	92 (0.2%)	32 (0.7%)	3,339 (0.6%)

* Age is computed based on the smear date of the patient's worst smear

** Include "no endocervical cells"

*** Small subset of atypical squamous cells of uncertain significance cannot rule out high grade lesion (ASC-H)

**** Atypia – mild or higher atypia

Table IX shows the significant atypia rates (per 1,000 patients) by 10-year age groups. Rates are presented by cell type and level of significance. Squamous cell type is the most common. Atypical squamous cells of undetermined significance (ASC-US) and low-grade squamous intraepithelial lesion (LSIL) are reported as a combined group of Mild atypia, which is more frequently reported in younger women.

TABLE IX: Significant Atypia Rates (per 1000) Based on Patient's Most Severe Cervical/Endocervical Smear Result (2008)

	Age* (years)							All
	<20	20-29	30-39	40-49	50-59	60-69	70+	Ages
Number of Patients with Satisfactory Smear	23,870	112,032	119,257	121,696	94,152	46,710	4,203	521,920
Squamous:								
Mild (ASC-US/LSIL)	65.5	49.8	22.0	18.1	9.5	4.3	3.8	25.1
Moderate+ (HSIL)	8.6	12.0	7.0	3.1	1.3	0.8	2.4	5.6
Atypical (of unspecified significance)	0.4	0.3	0.3	0.2	0.8	1.3	4.8	0.5
Glandular:								
Mild	0.3	0.6	1.4	2.4	2.4	0.6	0.0	1.5
Moderate (High grade)	0.0	0.1	0.2	0.2	0.4	0.6	1.2	0.2
Marked+ (High grade)	0.0	0.0	0.1	0.1	0.1	0.2	2.9	0.1
Epithelial:								
Mild (Low grade)	0.1	0.2	0.2	0.2	0.2	0.2	0.0	0.2
Moderate+ (High grade)	0.4	0.6	0.5	0.3	0.3	0.3	1.2	0.4

* Age is computed based on patient's worst smear's smear date.

ASC-US – atypical squamous cells of undetermined significance

LSIL – low grade squamous intraepithelial lesion

HSIL – high grade squamous intraepithelial lesion

3.6 Follow-up of Abnormals

Follow-up Recommendation

The current CCSP practice is to follow mild atypia with repeat smear at six-month intervals for up to two years. Patients with persistent mild atypia 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 X summarizes follow-up recommendations on the most severe atypia results for patients in a given year.

TABLE X: Follow-up Recommendation Based on Patient's Most Severe Cervical/Endocervical Smear Result (2008)

	Age* (years)							
	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
Patients With Mild Atypia	1,572	5,659	2,822	2,521	1,149	240	16	13,979
Repeat in 6 months (%)	1,521 (96.8%)	5,248 (92.7%)	2,605 (92.3%)	2,310 (91.6%)	1,006 (87.6%)	211 (87.9%)	13 (81.3%)	12,914 (92.4%)
Other investigation** (%)	51 (3.2%)	411 (7.3%)	217 (7.7%)	211 (8.4%)	143 (12.4%)	29 (12.1%)	3 (18.8%)	1065 (7.6%)
Patients with Moderate or Higher Atypia	215	1,423	923	453	201	92	32	3,339
Colposcopy and/or ECC (%)	200 (93.0%)	1,389 (97.6%)	889 (96.3%)	418 (92.3%)	157 (78.1%)	53 (57.6%)	11 (34.4%)	3,117 (93.4%)
Other investigation (%)	15 (7.0%)	34 (2.4%)	34 (3.7%)	35 (7.7%)	44 (21.9%)	39 (42.4%)	21 (65.6%)	222 (6.6%)
Patients with Atypia NOS	9	34	49	49	99	73	28	341
Repeat in 6 months (%)	4 (44.4%)	9 (26.5%)	14 (28.6%)	15 (30.6%)	9 (9.1%)	6 (8.2%)	3 (10.7%)	60 (17.6%)
Colposcopy and/or ECC (%)	5 (55.6%)	19 (55.9%)	30 (61.2%)	15 (30.6%)	10 (10.1%)	3 (4.1%)	1 (3.6%)	83 (24.3%)
Other investigation (%)	0 (0.0%)	6 (17.6%)	5 (10.2%)	19 (38.8%)	80 (80.8%)	64 (87.7%)	24 (85.7%)	198 (58.1%)

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

** The predominant recommendation was colposcopy investigation.

*** ECC: Endocervical Curettage

Compliance to Colposcopy Recommendations

Table XI presents age-specific compliance to colposcopy recommendations for patients with findings of mild atypia and moderate or more severe cervix/endocervix smears. Compliance is defined as having been achieved when a colposcopy examination was conducted within one week to one year of being recommended. Colposcopy examinations performed within one week of recommendation are not likely to be prompted by that recommendation.

TABLE XI: Colposcopy Compliance Rate (2008)

	Age*							All Age
	<20	20-29	30-39	40-49	50-59	60-69	70+	
Number of Patients with Mild Atypia	31	358	189	162	85	19	3	847
Colposcopy by								
3 months	32%	45%	47%	56%	55%	47%	0%	48%
6 months	58%	67%	72%	83%	74%	63%	33%	72%
9 months	65%	73%	77%	86%	76%	68%	33%	76%
12 months	65%	76%	78%	89%	76%	68%	33%	78%
Number of Patients with Moderate+ Atypia	200	1,389	889	418	157	53	11	3,117
Colposcopy by								
3 months	58%	59%	65%	66%	69%	51%	64%	62%
6 months	76%	77%	81%	83%	80%	68%	64%	79%
9 months	81%	82%	85%	85%	82%	75%	73%	83%
12 months	84%	84%	86%	88%	83%	79%	73%	85%

* Age is computed based on smear date.

Positive Predictive Value of Cytology

The positive predictive value (PPV) of cytology is assessed for positive Pap tests that have had confirmational investigation, such as colposcopy and/or pathology reported within one year after the Pap tests are reported. Surveillance with repeat Pap tests only is not regarded as confirmational investigation. This measure is an indicator of the predictive validity of a positive Pap 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 variation 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.

Table XII below shows the number of Pap tests with findings of mild or higher squamous atypia that are recommended for investigation, and the PPV of cytology for positive Pap tests with confirmational investigation. Results are shown separately for smears with mild squamous atypia recommended to have further investigation, and for smears with moderate or higher atypia.

TABLE XII: Positive Predictive Value of Cytology (2007)

	Significant Cytology Finding			
	Mild Atypia*		Moderate+ Atypia	
	No.	%	No.	%
Smears:	1,686	100.0%	4,996	100.0%
without confirmational investigation	410	24.3%	469	9.4%
with confirmational investigation**	1,276	75.7%	4,527	90.6%
with pathological diagnosis	1,148	68.1%	4,280	85.7%
Positive Predictive Value:				
CIN II or higher	246	21.4%	2,695	63.0%
CIN III or higher	86	7.5%	1,789	41.8%
Other Histology Finding:				
Glandular				
Severe	-	-	5	0.1%
In situ	2	0.2%	56	1.3%
Invasive	3	0.3%	26	0.6%
Other invasive	-	-	0	< 0.1%

* With recommendation for colposcopy investigation

** Do not include investigation where there are only repeated Pap smears

The PPV for CIN II or higher on histology is 63% for moderate or higher atypia, and 21% for mild atypia that were referred for further investigation. The majority of Pap tests with mild atypia cytology results were recommended to repeat the smear in six months (93%). Some of these smears would have further indication, such as subsequent significant Pap test result to warrant colposcopy or other investigation within one year (7%).

3.7 Provincial Colposcopy Program

The Provincial Colposcopy Program was developed to act in a complimentary manner to CCSP. This service currently consists of 24 hospital-based clinics located throughout the province. Their locations and the community gynecologists who staff them are listed in Appendix 3: Colposcopy Clinic Locations and Personnel Staffing.

The majority of all diagnostic colposcopic examinations in the province are performed through regional, hospital-based clinics. Individuals who are affiliated with the provincial colposcopy program essentially confine their colposcopic practices to the hospital-based clinics. All participating individuals are certified and use a uniform reporting system with standardized terminology. Their results are incorporated into the CCSP database, and are summarized for the annual continuing medical education workshop in colposcopy, held by the Provincial Colposcopy Program.

In 2008, 11,881 colposcopy examinations were provided. A cytological abnormality was the most common reason for colposcopy referral (see Figure 4) and the primary site of investigation was the cervix (see Figure 5).

FIGURE 4: Reason for Referral to Colposcopy Clinic (2008)

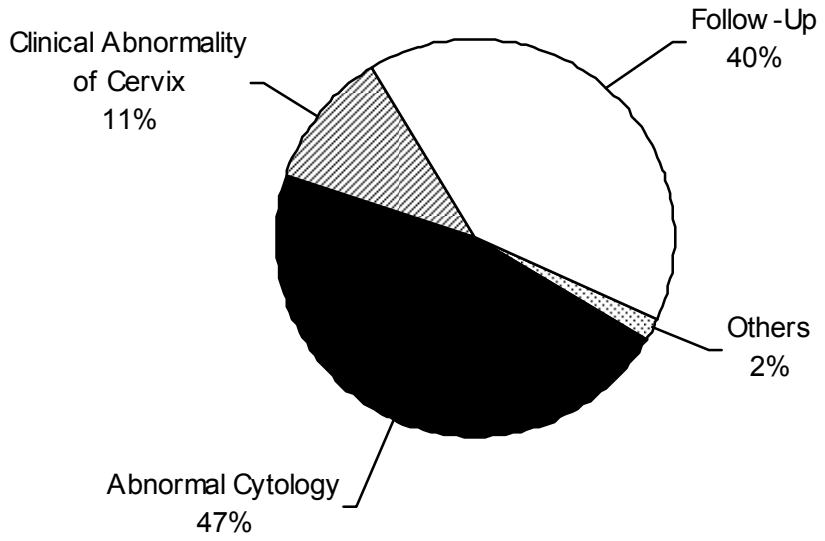
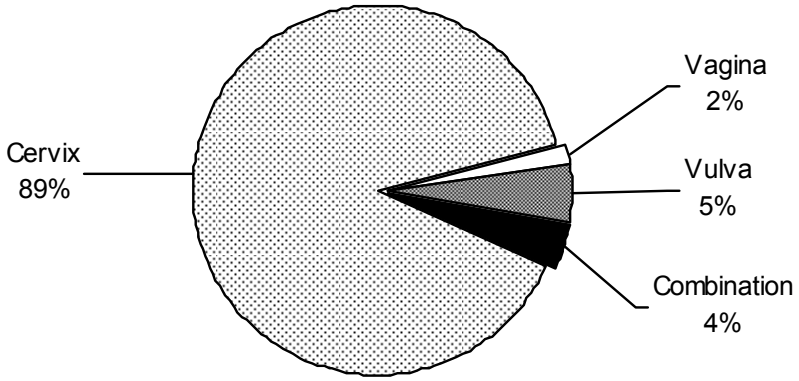


FIGURE 5: Site of Colposcopic Investigation (2008)



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. This data collection process forms the basis of a provincial quality assurance program.

In 2007, the BC Cancer Agency Colposcopy Program initiated the process of linking all provincial colposcopy clinics through a centralized colposcopy database. This project will facilitate communication between colposcopists, quality assurance, and research, and will be a world first. Through the centralized Pap smear screening and now also colposcopy diagnostics, women in BC will have state-of- the-art cervical cancer prevention available to them.

3.8 Pre-Cancer Detection Rate

Pap tests can identify pre-cancer 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-cancer 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.

Table XIII shows the number of women screened in 2007, and the pre-cancer detection rate for women ages 20-69 by 10-year age groups. The pre-cancer detection rate in 2007 for women ages 20-69 in BC is 5.9 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.

TABLE XIII: Pre-Cancer Detection Rate (per 1,000) (2007)

	Age* (years)						
	20-29	30-39	40-49	50-59	60-69	70+	20-69
Number of Women Screened	98,919	110,901	114,980	90,576	46,352	6,460	461,728
Pre-Cancer Detection Rate (per 1,000)	12.4	7.7	4.0	1.5	1.3	3.6	5.9

* Age is based on women's age in 2007.

3.9 Cancer Statistics

New invasive cervical cancers diagnosed in 2005 to 2007 were identified from the British Columbia Cancer Registry and data collected by the CCSP. The cancer counts and incidence rates for 2005-2007 are presented in Table XIV.

TABLE XIV: Invasive Cervical Cancers (2005-2007)

		Age at Diagnosis (Years)						
		20-29	30-39	40-49	50-59	60-69	70+	Age 20+
2007	**Number of cases**							
	All cell types	6	43	37	37	15	19	157
	Squamous cell only	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 cell only	*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 cell only	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 cell only	*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 cell only	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 cell only	*2.8*	*8.5*	*5.3*	*7.7*	*7*	*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

Invasive Squamous Carcinoma

Screening history of women diagnosed with invasive squamous cell carcinomas in 2007 is summarized in Table XV. As Pap tests performed within six months prior to the invasive cancer diagnosis are less likely to be done for screening purpose, these Pap tests are disregarded in the categorization of screening history.

Table XV shows that 56.6% patients are "inactive" screening participants (>5 years or no screening history with CCSP), 8.8% are "under screened" (>3 to 5 years), and 34.5% are "active" screening participants (0.5 to 3 years).

TABLE XV: Screening History for Invasive Squamous Cell Cervical Cancer Patients (2007)

	Age at Diagnosis (years)						All Cancers
	20-29	30-39	40-49	50-59	60-69	70+	
No. of Invasive Squamous Cell Cancers	5	28	23	30	13	14	113
No Screening History (%)	1 (20.0%)	8 (28.6%)	7 (30.4%)	12 (40.0%)	5 (38.5%)	5 (35.7%)	38 (33.6%)
Last screened >5 years prior (%)	- -	5 (17.9%)	5 (21.7%)	7 (23.3%)	3 (23.1%)	6 (42.9%)	26 (23.0%)
3 to 5 years prior (%)	- -	2 (7.1%)	4 (17.4%)	2 (6.7%)	- -	2 (14.3%)	10 (8.8%)
Pap smear 0.5 to 3 year prior (%)	4 (80.0%)	13 (46.4%)	7 (30.4%)	9 (30.0%)	5 (38.5%)	1 (7.1%)	39 (34.5%)

Note: Pap tests performed within six months prior to the invasive cancer diagnosis are less likely to be done for screening purpose, thus these Pap tests are disregarded in the categorization of screening history.

Adenocarcinoma

Screening history of women diagnosed with adenocarcinoma in 2007 is summarized in Table XVI. As Pap tests performed within six months prior to the invasive cancer diagnosis are less likely to be done for screening purpose, these Pap tests are disregarded in the categorization of screening history.

Table XVI shows that 24% of patients are "inactive" screening participants (>5 years or no screening history with CCSP), 8% are "under screened" (>3 to 5 years), and 68% are "active" screening participants (0.5 to 3 years).

TABLE XVI: Screening History for Invasive Adenocarcinoma Cervical Cancer Patients (2007)

	Age at Diagnosis (years)						All
	20-29	30-39	40-49	50-59	60-69	70+	Cancers
No. of Invasive Adenocarcinoma	1	12	14	6	1	3	37
No Screening History (%)	-	1	1	2	1	1	6
	-	(8.3%)	(7.1%)	(33.3%)	(100.0%)	(33.3%)	(16.2%)
Last screened >5 years prior (%)	-	-	1	-	-	2	3
	-	-	(7.1%)	-	-	(66.7%)	(8.1%)
3 to 5 years prior (%)	-	1	2	-	-	-	3
	-	(8.3%)	(14.3%)	-	-	-	(8.1%)
Pap smear 0.5 to 3 year prior (%)	1	10	10	4	-	-	25
	(100.0%)	(83.3%)	(71.4%)	(66.7%)	-	-	(67.6%)

Note: Pap tests performed within six months prior to the invasive cancer diagnosis are less likely to be done for screening purpose, thus these Pap tests are disregarded in the categorization of screening history.

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 used 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.

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[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

APPENDIX 2:
CCSP Screening Recommendations

Criteria	Recommended Action
Onset of sexual activity or soon after	Start regular Pap smear screening
Negative or benign changes	Repeat smear in 12 months until there are three consecutive **normal** smears then continue at 24-month intervals
Mild dyskaryosis (squamous and/or glandular)	Repeat in six months Colposcopy examination is recommended, if mild atypia persists for two years
Moderate or higher dyskaryosis	Colposcopic examination is recommended
After age 69	Stop screening, if there are three or more **normal** smears in the last 10 years and no history of previous significant abnormality (moderate atypia or higher)
Pregnant Women	If no history of previous Pap smear, do Pap smear, otherwise follow guidelines as indicated in non-pregnant women
HIV Positive Women	Repeat smear in six months until there are two consecutive **normal** smears then continue at 12-month intervals

POST-HYSTERECTOMY SCREENING GUIDELINES

I. After Total Hysterectomy (uterus and cervix completely excised):

- Women with no history of moderate or higher abnormality and benign hysterectomy pathology can discontinue screening.
- If no previous Pap smear record is available and hysterectomy pathology is benign, the patient should have two consecutive negative smears one year apart before discontinuing screening.
- Women with a history of moderate or higher abnormality (CIN II, CIN III, or carcinoma in situ on histology), but no history of invasive cervical carcinoma should have three documented consecutive, technically satisfactory normal / negative vaginal smears one year apart over a three-year period before discontinuing screening.
- Women with a history of invasive cervical carcinoma should follow the recommendation provided by the BC Cancer Agency Gynecological Tumor Group.
- Women with a history of in utero DES exposure should continue screening as long as this is clinically feasible.

II. After Sub-Total Hysterectomy (uterine corpus removed, cervix in place):

- Women who have had a subtotal hysterectomy should continue cervical cancer screening as per Screening Program guidelines.

APPENDIX 3:
Colposcopy Clinic Locations and Personnel Staffing

ABBOTSFORD
MSA 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. D. Hartman, Dr. B.M. Bagdan

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, Dr. V.S. Malliah

KELOWNA
Kelowna General Hospital
2268 Pandosy Street
Kelowna, BC V1Y 1T2
Phone : 250-862-4000
Dr. P. Wilson, Dr. M. Jones

LANGLEY
Langley Memorial Hospital
22051 Fraser Highway
Langley, BC V3A 4H4
Phone: 604-534-4121
Dr. E. Mah

MAPLE RIDGE
Ridge Meadows Hospital & Health Care Centre
11666 Laity Street
Maple Ridge, BC V2X 7G5
Phone: 604-463-4111
Dr. W.H. Yeung

NANAIMO
Nanaimo Regional General Hospital
1200 Dufferin Crescent
Nanaimo, BC V9S 2B7
Phone: 250-754-2141
Dr. P. Mitchell, Dr. A. Hunt

NEW WESTMINSTER
Royal Columbian Hospital
330 East Columbia Street
New Westminster, BC V3L 3W7
Phone: 604-520-4253
Dr. D.S. Allan, Dr. S. Pedersen

NORTH VANCOUVER
Lions Gate Hospital
231 East 15th Street
North Vancouver, BC V7L 2L7
Phone: 604-988-3131
Dr. V. Scali, Dr. E. Hoyer, Dr. R. Goodall, Dr. J. Schouls

PENTICTON
Penticton Regional Hospital
550 Carmi Avenue
Penticton, BC V2A 3G6
Phone: 250-492-4000
Dr. K. Khan

POWELL RIVER
Powell River Regional Hospital
5000 Joyce Avenue
Powell River, BC V8A 5R3
Phone : 604-485-3211
Dr. P. du Plessis

Colposcopy Clinic Locations and Personnel Staffing – *Continued*

PRINCE RUPERT
Prince Rupert Regional Hospital
1305 Summit Avenue
Prince Rupert, BC V8J 2A6
Phone: 250-624-2171
Dr. M. Pienaar

RICHMOND
Richmond General Hospital
7000 Westminster Highway
Richmond, BC V6X 4A2
Phone: 604-278-9711
Dr. H. Mackoff, Dr. H. Robson

SECHELT
St. Mary's Hospital
Box 7777, 5544 Sunshine Coast Hwy
Sechelt, BC V0N 3A0
Phone: 250-885-2224
Dr. R. Kellett

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

TERRACE
Mills Memorial Hospital
4720 Haughland Avenue
Terrace, BC V8G 2W7
Phone: 250-635-2211
Dr. L. Almas

TRAIL
Kootenay Boundary Regional Hospital
1200 Hospital Bench
Trail, BC V1R 4M1
Phone: 250-368-3311
Dr. M. Barclay, Dr. K. Hale

VANCOUVER
BCCA/VHHSC
855 West 12th Avenue
Vancouver, BC V5Z 1M9
Phone: 604-875-4111
Dr. T. Ehlen, Dr. D. Miller, Dr. M. Heywood
Dr. S. Finlayson, Dr. J. Kwon, Dr. L. Sadownik,
Dr. J. McAlpine

VANCOUVER
St. Paul's Hospital
1081 Burrard Street
Vancouver, BC V6Z 1Y6
Phone: 604-682-2344
Dr. G. Kinney, Dr. Elisabet Joa

VERNON
Vernon Jubilee Hospital
2101 - 32nd Street
Vernon, BC V1T 5L2
Phone : 250-545-2211
Dr. C. Hatfield

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

WHITE ROCK
Peace Arch Memorial Hospital
15521 Russell Avenue
White Rock, BC V4B 2R4
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

APPENDIX 4:
Educational Materials

The following educational materials related to cervical cancer screening are available free of charge.

For Women

- Cervical cancer – protect yourself with regular Pap tests *(brochure – blue)*
- HPV & cervical cancer – what you should know, and do *(brochure – pink)*
- Preventing cervical cancer *(booklet – orange)*
- Abnormal Pap smear – causes and proper follow-up *(booklet – green)*

Please note: Brochures are also available in Traditional and Simplified Chinese and Punjabi. Booklets are for health care providers to use in discussions with women *(limited distribution)*.

Promotional posters, postcards and stickers are also available.
Visit www.bccancer.bc.ca/cervicalscreening and click on **Resources** to view all promotional materials.

For Health Care Providers

- Technique for obtaining cervical smears *(laminated card)*
- A women-centered approach to cervical screening *(educational video)*
- Screening for cancer of the cervix: an office manual for health professionals *(office manual)*

Continuing Medical Education

Continuing Medical Education (CME) rounds or workshops can be arranged for groups through the Cervical Cancer Screening Program by calling 604-877-6200.

Website: www.bccancer.bc.ca

Information for a general audience:

- About BCCA
- Patient/Public Info
  - Screening
    - Cervical Cancer Screening Program

Information for smear takers:

- About BCCA
- Health Professionals Info
  - Cancer Management Guidelines
    - Gynecology
      - Uterine Cervix (1 of 2)
        - 4.2 Screening/Early Detection

APPENDIX 5:
Educational Material Order Form

Please call or fax this form to CCSP to receive copies of the following free of charge:

Resources for a General Audience:

Number of Copies	Description
_____	Cervical cancer – protect yourself with regular Pap tests (brochure - blue)*
_____	HPV & cervical cancer – what you should know, and do (brochure - pink)*
_____	Postcards (answers to common questions about cervical screening)
_____	Posters (four designs available)
_____	Stickers (Pap test reminder calendar stickers)
_____	Motivational message for Cantonese & Mandarin speaking women to attend for screening (video)

* *Also available in Traditional and Simplified Chinese and Punjabi.*

To view the resources, visit: www.bccancer.bc.ca → Patient/Public Info → Screening Programs → Cervical Cancer Screening Program (CCSP) →Resources

Resources for Health Care Providers:

Number of Copies	Description
_____	Preventing Cervical Cancer (booklet - orange)*
_____	Abnormal Pap smear – causes and proper follow-up (booklet - green)*
	** Please note: Booklets are for health care providers' use in discussions with patients.*
_____	Technique for Obtaining Cervical Smears (laminated card)
_____	A Women-Centered Approach to Cervical Screening (new educational video)
_____	Screening for Cancer of the Cervix – Office Manual for Health Professionals**
	** Available on website at: www.bccancer.bc.ca → HealthProfessionalsInfo → CancerManagementGuidelines → Gynecology → UterineCervix → Screening/Early Detection

Your name: _____

Your address: _____

_____

_____

Return this form to: **Cervical Cancer Screening Program**
8th Floor, 686 West Broadway
Vancouver, BC V5Z 1G1
Phone: 604-877-6200
Fax: 604-877-6113

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.

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

  Where Ca_i is the number of cervical cancer 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.

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

  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 smear 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 smear 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 a population sample of an epidemiological study conducted in 1995.

- **Positive Predictive Value**

Proportion of smears with significant cytology findings and have histological confirmation of cervical abnormality out of those smears with significant cytology and had follow-up investigation with pathological result. Surveillance with repeat Pap smears only are not regarded as follow-up investigation.

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

- **Pre-Cancer Detection Rate**

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

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

- **Re-screen Rate**

Proportion of women with a negative Pap smear returned for Pap test.

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

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 smears (Pap smear 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:

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- All BC Regional Health Authorities
- BC Centre for Disease Control
- BC College of Family Physicians
- BC College of Physicians and Surgeons
- BC College of Registered Nurses
- BC Medical Association
- BC Ministry of Health Services
- BC Naturopathic Association
- BC Women's Hospital and Health Centre
- Canadian Cancer Society
- First Nations Health Council
- Options for Sexual Health
- Provincial Health Services Authority
- SFU Faculty of Health Sciences
- UBC Faculty of Medicine
- Women's Health Bureau

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APPENDIX 8:
Publications and Presentations

Publications:

1. Melnikow J, McGahan C, Sawaya GF, Ehlen T, **Coldman A**. Cervical intraepithelial neoplasia outcomes after treatment: long-term follow-up from the British Columbia Cohort Study. J Natl Cancer Inst 2009;101:721-728

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3. Performance Monitoring for Cervical Cancer Screening Programs in Canada. Report from the Screening Performance Indicators Working Group, Cervical Cancer Prevention and Control Network. Public Health Agency of Canada: Jan 2009. **L. Kan** (co-chair), **T. Ehlen** (member) et al.

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