



# **BC Cancer Cervix Screening 2015 Program Results**

February 2018

# Table of Contents

BC Cancer Cervix Screening 2015 Program Results .....	1
Table of Contents .....	2
Program Overview .....	3
Program Results .....	5
a) Volume of Samples .....	5
b) Participation Rates.....	6
c) Retention Rate .....	9
d) Adequacy of Pap Test Samples .....	11
e) Screening Test Results .....	12
f) Follow-up of Abnormal Pap Test Results.....	13
g) Pre-Cancer Detection Rate.....	17
h) Cancer Incidence.....	18
i) Screening History in Cases of Invasive Cancer .....	21
Appendix – The 2014 Bethesda System.....	23

## PROGRAM OVERVIEW

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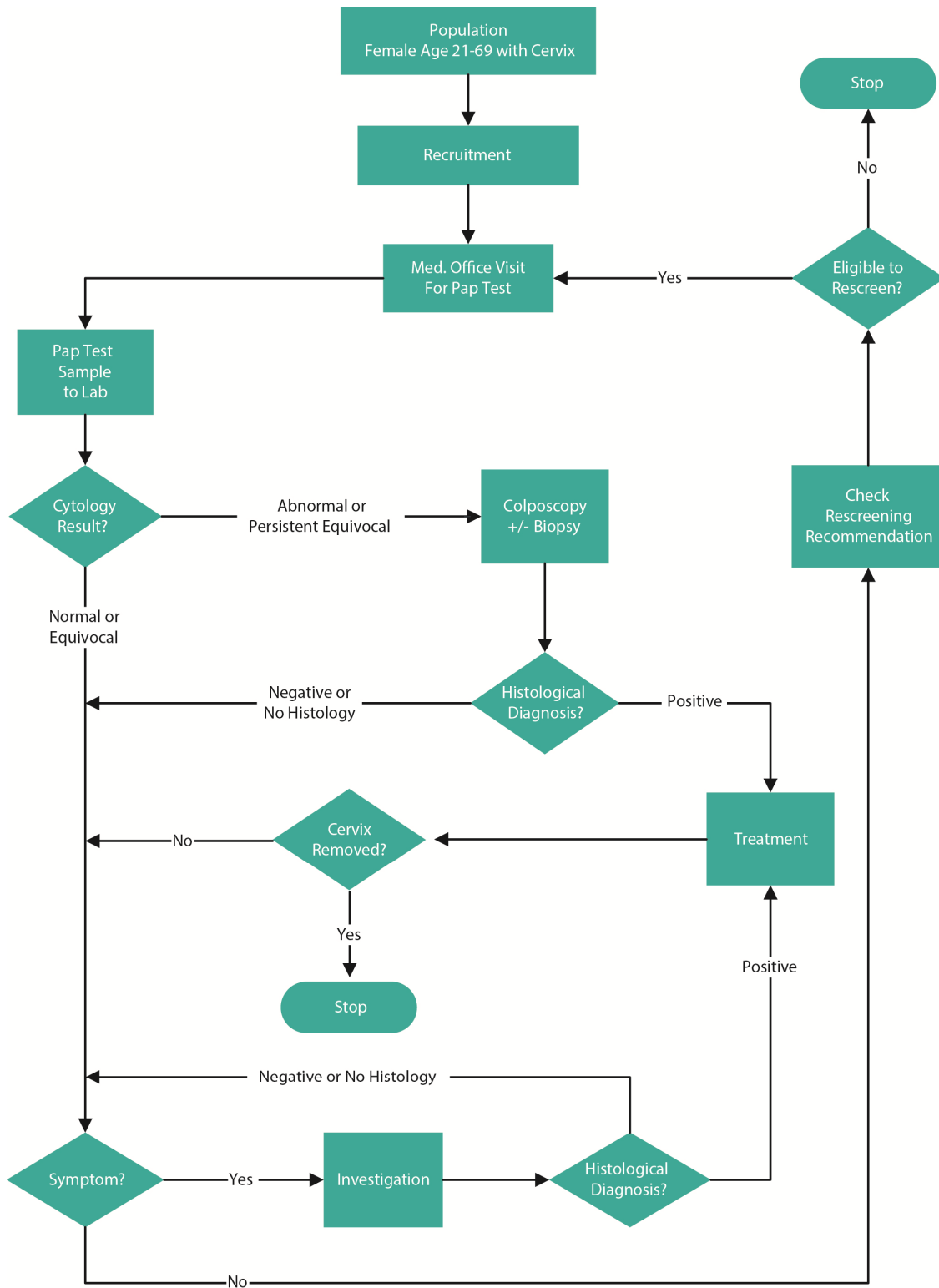
BC Cancer Cervix Screening has oversight responsibility for cervical cancer screening in BC. The program works in partnership with the Cervical Cancer Screening Laboratory (CCS Lab) of the Provincial Health Services Authority to ensure that appropriate screening tests are available to eligible women to reduce cervical cancer mortality and morbidity. The program reminds healthcare providers when their patients are due for 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 Figure 1 (Page 4). This process consists of four stages:

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

FIGURE 1: BC CANCER CERVIX SCREENING PROCESS OVERVIEW



For detailed information on the management of higher than average risk patients, see the BC Cancer Cervix Screening Office Manual for Health Care Providers

## PROGRAM RESULTS

### a) Volume of Samples

TABLE 1: NUMBER OF PATIENTS WITH CERVICAL/ENDOCERVICAL PAP TEST SAMPLES, 2015

	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
Number of Patients	7,266	90,763	109,170	100,406	98,733	63,651	2,803	472,792
With 1 Sample	6,980	86,095	104,543	97,642	96,794	62,871	2,762	457,687
(%)	96.1%	94.9%	95.8%	97.2%	98.0%	98.8%	98.5%	96.8%
With 2 Samples	281	4,528	4,513	2,681	1,883	763	39	14,688
(%)	3.9%	5.0%	4.1%	2.7%	1.9%	1.2%	1.4%	3.1%
With 3+ Samples	5	140	114	83	56	17	2	417
(%)	0.1%	0.2%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%
New Patients	4,288	18,658	8,760	3,956	2,324	1,423	144	39,553
(%)	59.0%	20.6%	8.0%	3.9%	2.4%	2.2%	5.1%	8.4%

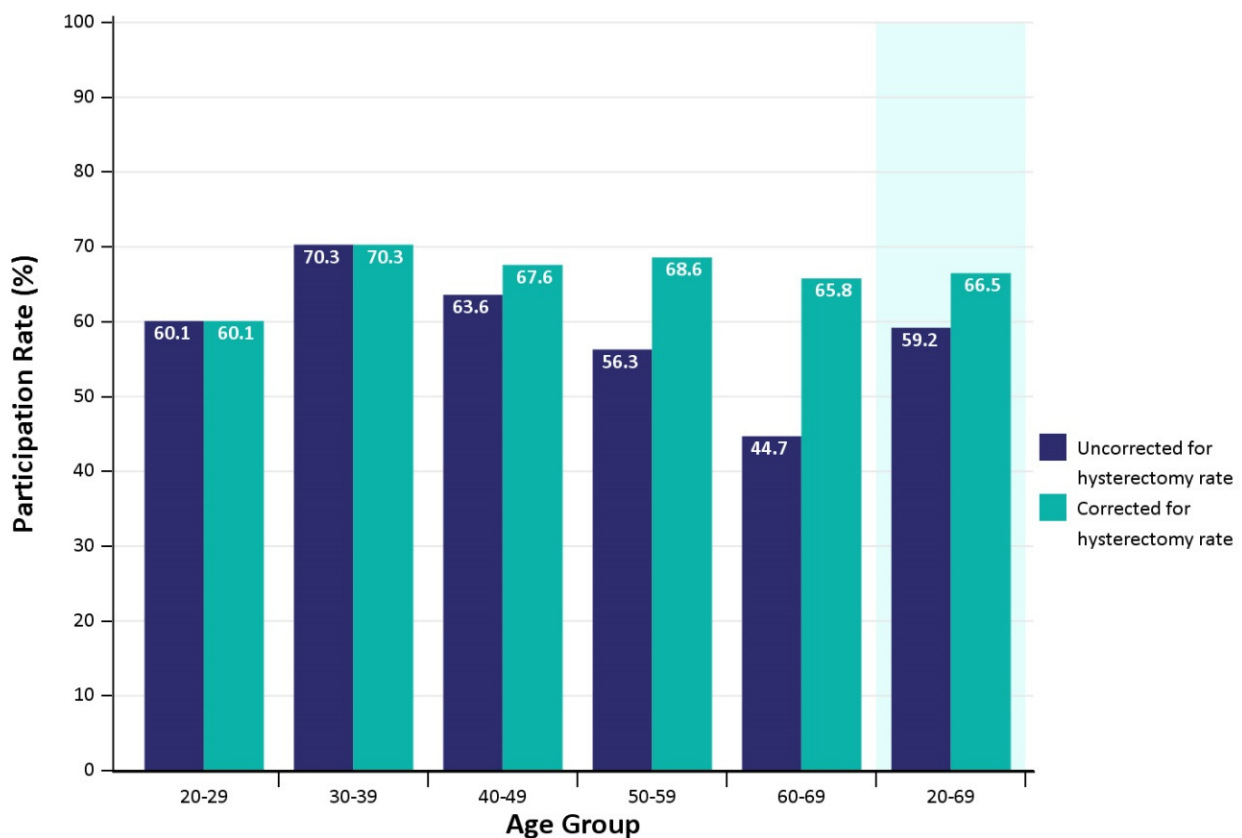
Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed on patient's last Pap test

## b) Participation Rates

Participation rate is defined as the percent of eligible women with at least one cervical/endocervical Pap test in a three-year period. Statistic Canada's Canadian Community Health Survey (CCHS) data is used to correct the denominator for hysterectomy rates in BC as most women who have had a total hysterectomy do not need routine screening. 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 2: PARTICIPATION RATES BY AGE GROUP, 2013 – 2015**



### Notes:

1. Based on weighted average of 2013, 2014 and 2015 female population estimates
2. Population data source: P.E.O.P.L.E. 2016 (Sept 2016), BC STATS, Service BC, BC Ministry of Citizen's Services
3. Hysterectomy adjustment calculated using 2012 Canadian Community Health Survey
4. BC Cancer Cervix Screening data extraction date: 11/27/2016
5. Age is computed based on patient's age in 2014

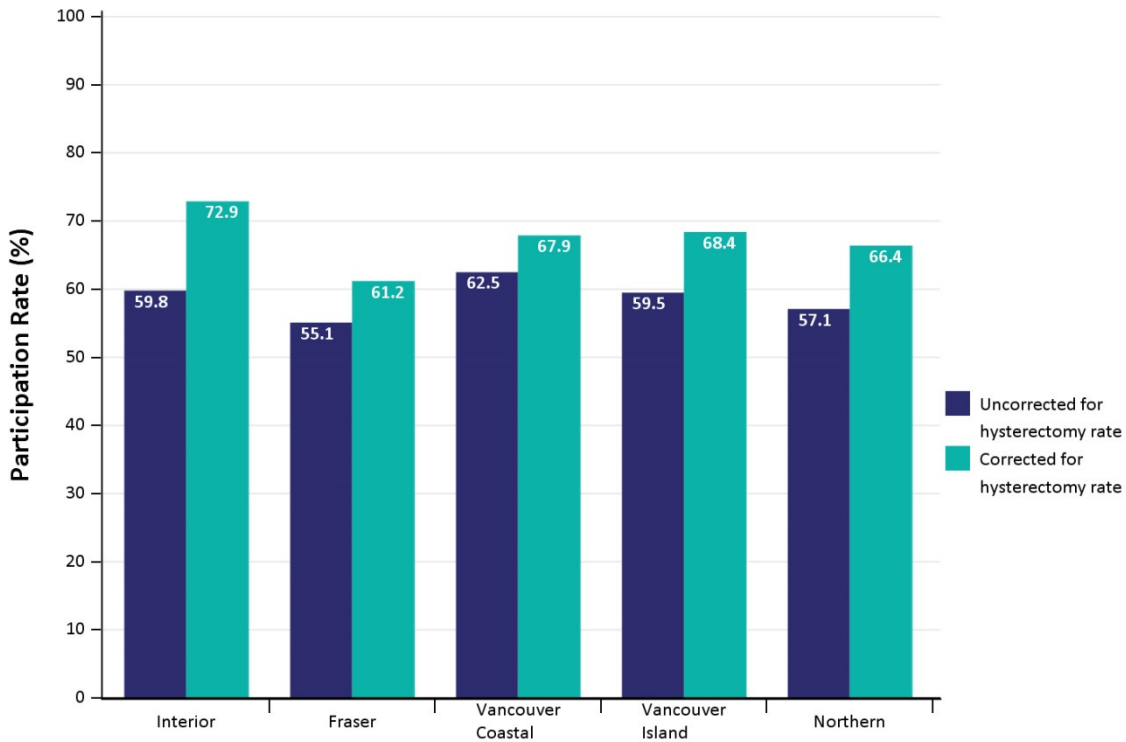
**TABLE 2: PARTICIPATION RATES OF WOMEN 20-29 AND 30-39 YEARS OF AGE BY HSDA, 2013-2015**

<b>Health Authority</b>	<b>Health Service Delivery Area</b>	<b>20-29</b>	<b>30-39</b>
Interior	East Kootenay	83.3%	81.8%
Interior	Kootenay Boundary	79.8%	73.5%
Interior	Okanagan	69.6%	74.8%
Interior	Thompson Cariboo Shuswap	72.3%	69.0%
Fraser	Fraser East	57.7%	65.3%
Fraser	Fraser North	49.6%	66.5%
Fraser	Fraser South	51.7%	65.2%
Vancouver Coastal	Richmond	44.1%	64.6%
Vancouver Coastal	Vancouver	53.8%	70.9%
Vancouver Coastal	North Shore/Coast Garibaldi	67.3%	82.0%
Vancouver Island	South Vancouver Island	60.1%	72.8%
Vancouver Island	Central Vancouver Island	68.3%	68.6%
Vancouver Island	North Vancouver Island	72.2%	69.6%
Northern	Northwest	76.0%	72.3%
Northern	Northern Interior	70.7%	68.8%
Northern	Northeast	68.6%	65.0%
<b>BC</b>		<b>60.1%</b>	<b>70.3%</b>

**Notes:**

1. Based on weighted average of 2013, 2014 and 2015 female population estimates
2. Population data source: P.E.O.P.L.E. 2016 (Sept 2016), BC STATS, Service BC, BC Ministry of Citizen's Services
3. HSDA data acquired from Research Data Access Services, BC Ministry of Health
4. BC Cancer Cervix Screening data extraction date: 11/27/2016
5. Age is computed based on patient's age in 2014

**FIGURE 3: PARTICIPATION RATES BY HEALTH AUTHORITY, 2013 – 2015**



**Notes:**

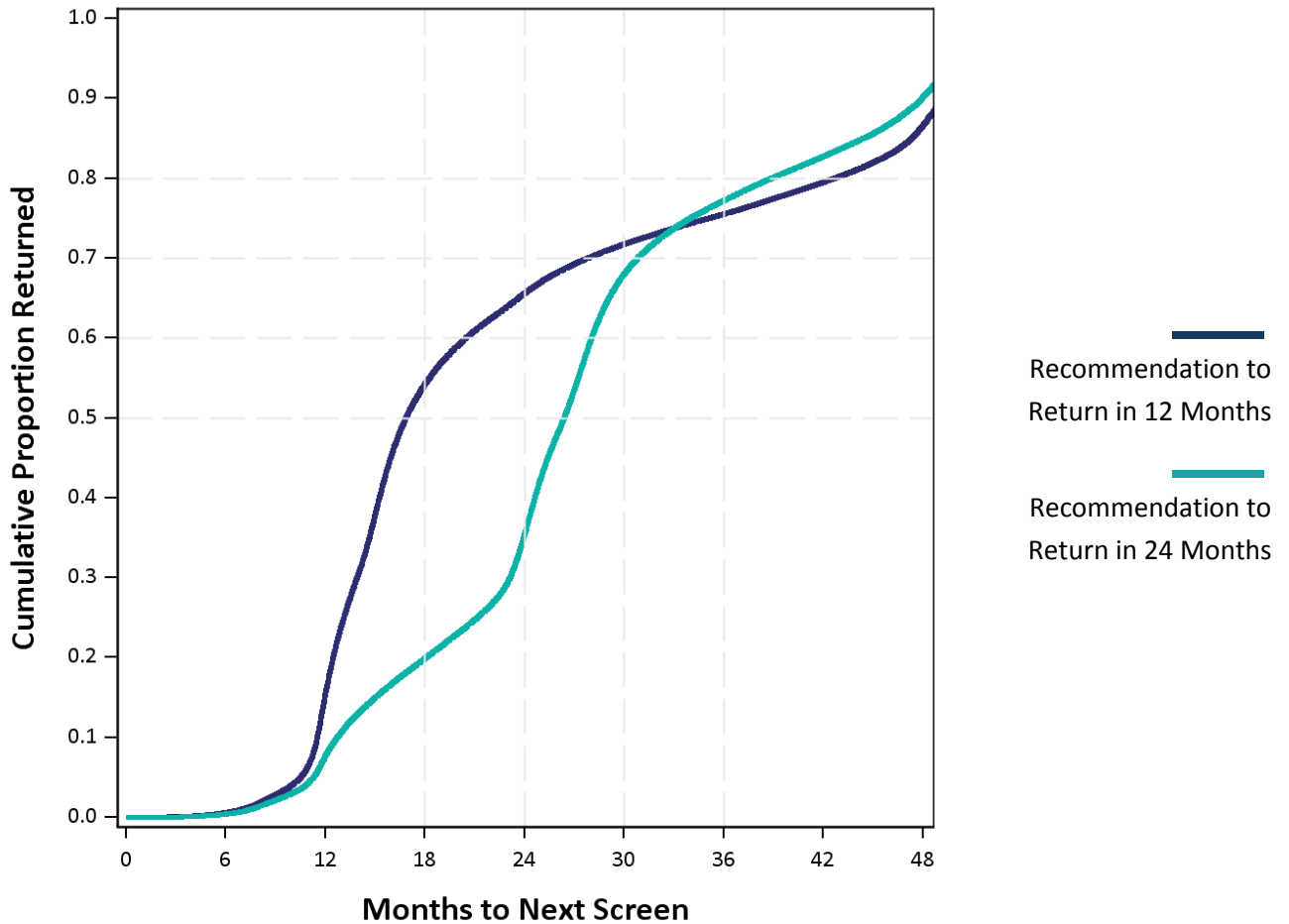
1. Based on weighted average of 2013, 2014 and 2015 female population estimates
2. Population data source: P.E.O.P.L.E. 2016 (Sept 2016), BC STATS, Service BC, BC Ministry of Citizen’s Services
3. Hysterectomy adjustment calculated using 2012 Canadian Community Health Survey
4. HA data acquired from Research Data Access Services, BC Ministry of Health
5. BC Cancer Cervix Screening data extraction date: 11/27/2016
6. Age is computed based on patient’s age in 2014



### c) Retention Rate

Retention rate is defined as the proportion of women with a negative sample who returned for Pap test.

**FIGURE 4: RETENTION RATES BY SCREENING INTERVAL RECOMMENDATION, 2012**



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016

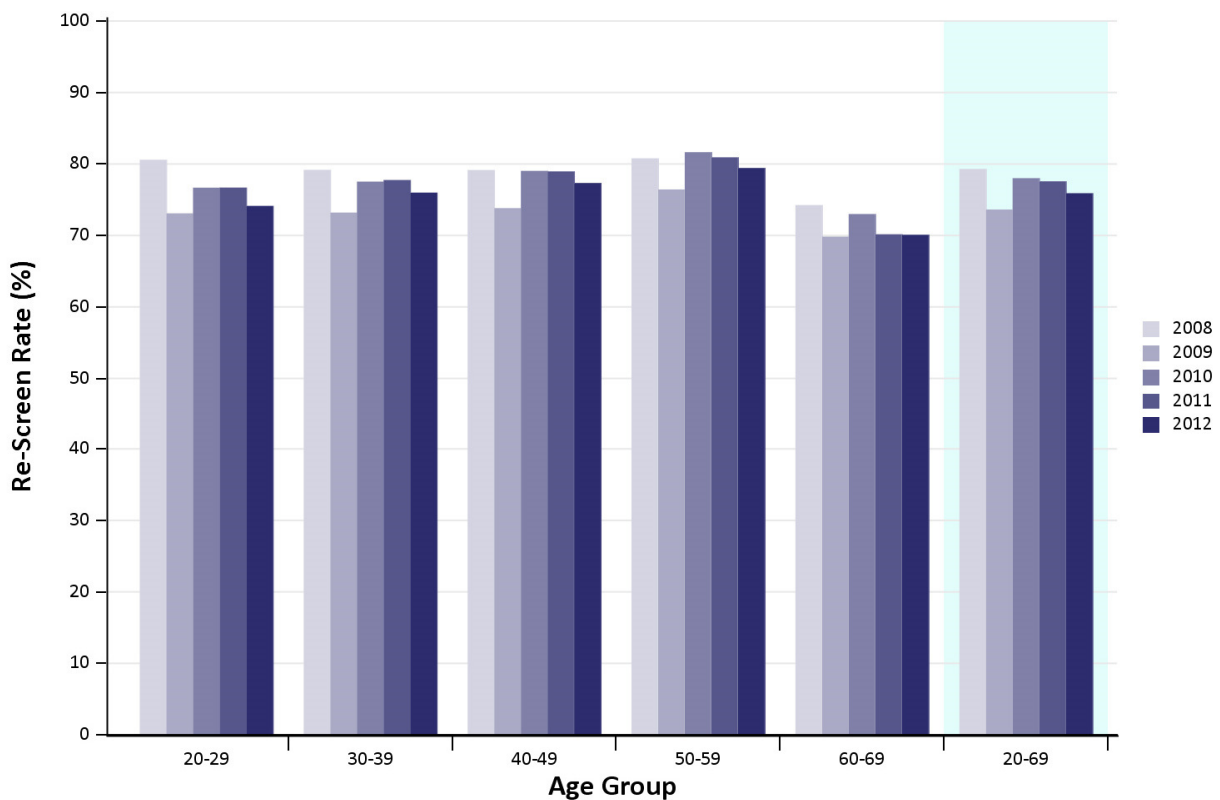
**TABLE 3: RETENTION RATES (%) BY AGE GROUP, 2012**

	20-29	30-39	40-49	50-59	60-69	20-69
Number of Patients	102,194	111,673	110,945	100,419	58,628	483,859
Re-Screened by						
18 Months	40.5%	36.8%	34.5%	32.6%	28.1%	35.1%
24 Months	53.8%	50.3%	47.8%	46.7%	40.7%	48.5%
30 Months	67.7%	68.9%	70.3%	72.8%	64.7%	69.2%
36 Months	74.1%	76.0%	77.4%	79.5%	70.1%	75.9%

Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on patient’s age on report date of the index Pap test

**FIGURE 5: 36-MONTH RETENTION RATE BY AGE GROUP OVER TIME, 2008 – 2012**



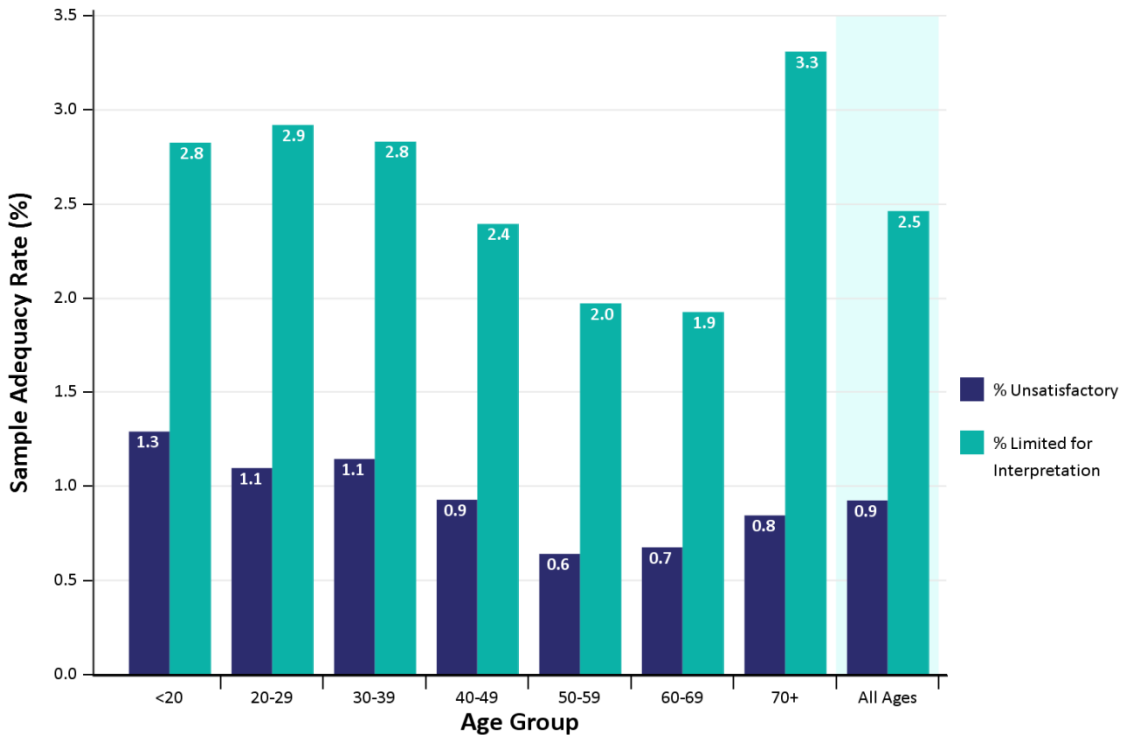
Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on patient’s age on report date of the index Pap test

### d) Adequacy of Pap Test Samples

The most commonly cited factor for inadequate sample is scanty sample material (89% of unsatisfactory samples and 71% of samples that are limited for interpretation). The next most cited reason is inflammatory exudates (7% in unsatisfactory samples and 19% in limited for interpretation samples). Multiple factors may be cited.

**FIGURE 6: CERVICAL SAMPLE ADEQUACY RATES BY AGE GROUP, 2015**



**Notes:**

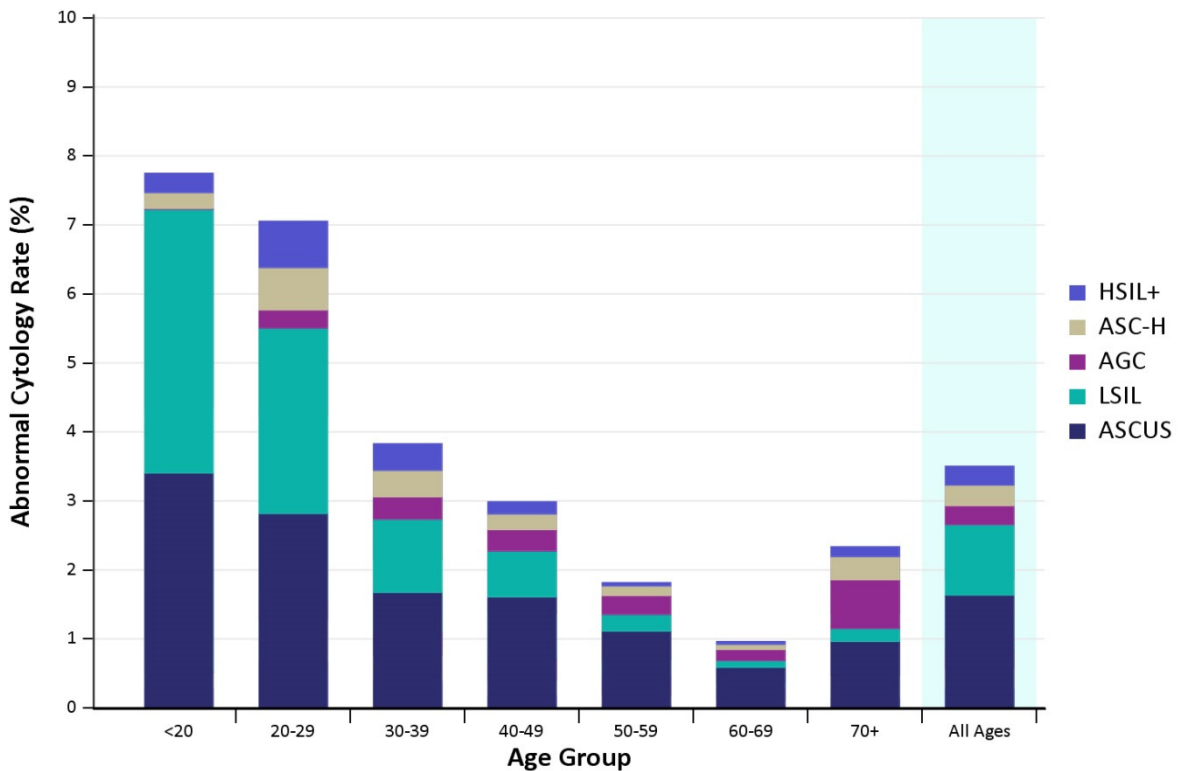
1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on sample date

## e) Screening Test Results

Cytology turnaround time is the average number of days from the date the sample is received in the CCS Lab to the date the finalized report is issued. The average turnaround time was 34 days in 2015. The target is 90% of Paps are reported in 28 days.

The CCS Lab uses the international standardized Bethesda nomenclature to report Pap test results (Appendix A).

**FIGURE 7: ABNORMAL SCREENING TEST RESULT DISTRIBUTION BY AGE GROUP, 2015**



**Notes:**

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on sample date

## f) Follow-up of Abnormal Pap Test Results

### Follow-up Recommendation

The current screening guideline is to follow ASCUS or LSIL results with a repeat Pap test at six-month intervals for up to two years. Colposcopy is recommended for either persistent ASCUS or LSIL or an initial interpretation of AGC, ASC-H or HSIL+. Other procedures may be recommended on the basis of a patient's clinical condition and cytology history.

**TABLE 4: FOLLOW-UP RECOMMENDATIONS BY AGE GROUP, 2015**

	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
Patients with ASCUS or LSIL	523	5,033	3,027	2,314	1,365	449	33	12,744
Repeat in 6 months	497	4,544	2,711	2,077	1,234	414	31	11,508
(%)	95.0%	90.3%	89.6%	89.8%	90.4%	92.2%	93.9%	90.3%
Other Investigation	26	489	316	237	131	35	2	1,236
(%)	5.0%	9.7%	10.4%	10.2%	9.6%	7.8%	6.1%	9.7%
Patients with AGC, ASC-H or HSIL+	39	1,461	1,282	808	513	203	47	4,353
Colposcopy and/or Endocervical Curettage	32	1,449	1,259	717	372	134	26	3,989
(%)	82.1%	99.2%	98.2%	88.7%	72.5%	66.0%	55.3%	91.6%
Other Investigation	7	12	23	91	141	69	21	364
(%)	17.9%	0.8%	1.8%	11.3%	27.5%	34.0%	44.7%	8.4%

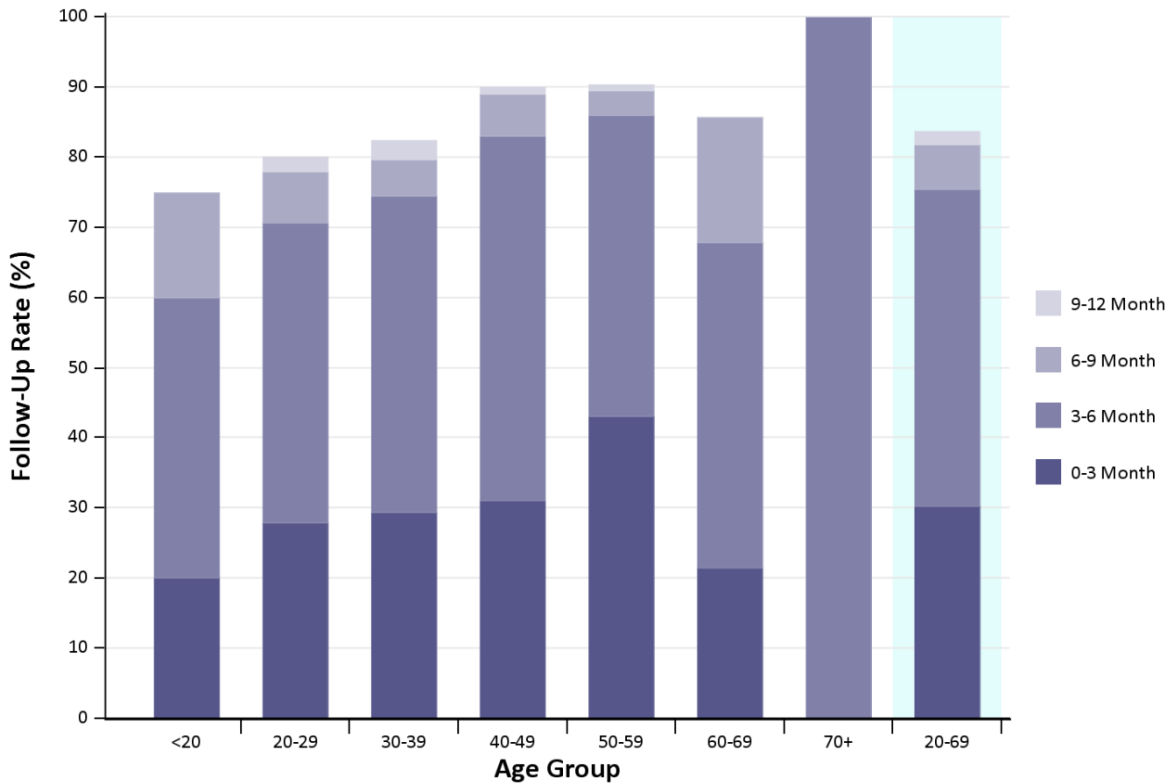
### Notes:

1. CCSP data extraction date: 11/27/2016
2. Age is computed based on the date of the patient's most severe Pap test in the year

### 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.

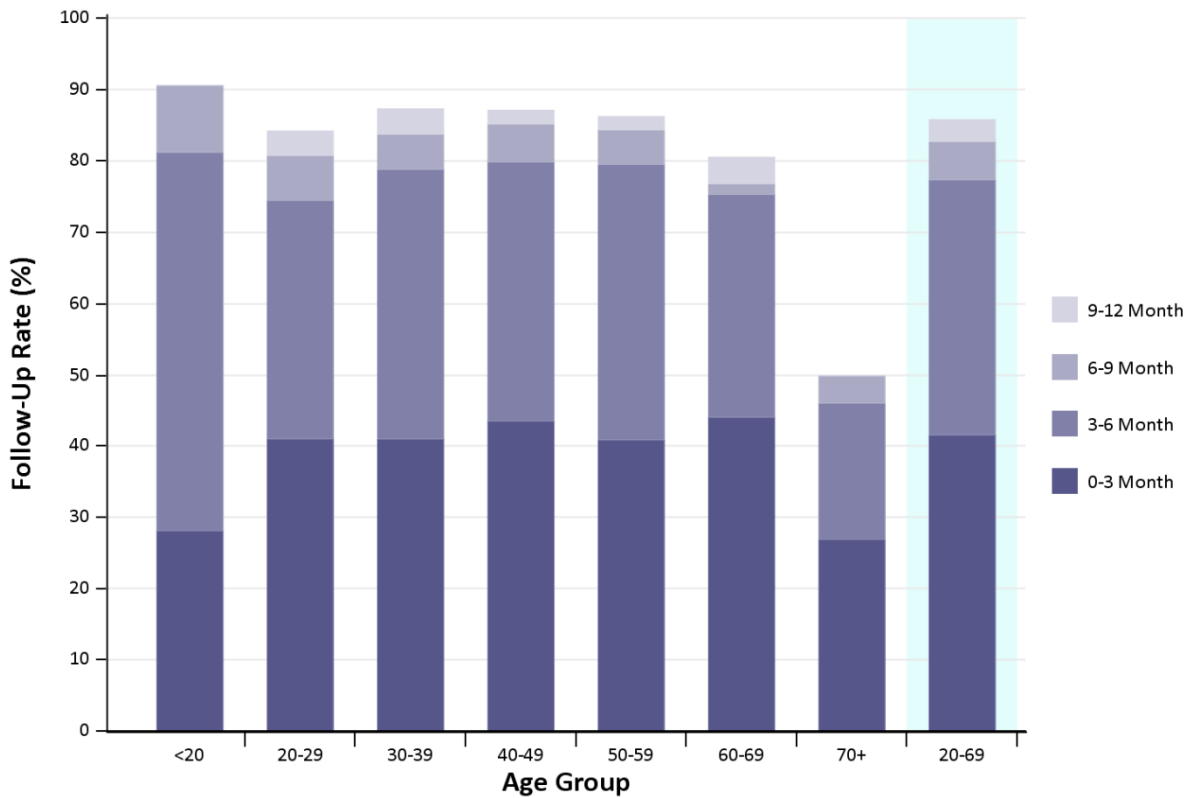
**FIGURE 8: COLPOSCOPY FOLLOW-UP RATES FOR WOMEN WITH PERSISTENT ASCUS OR LSIL PAPER TEST RESULT BY AGE GROUP, 2015**



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on patient’s age on report date of the index Pap test

**FIGURE 9: COLPOSCOPY FOLLOW-UP RATES FOR WOMEN WITH HIGH GRADE OR AGC PAP TEST RESULT BY AGE GROUP, 2015**



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on patient's age on report date of the index Pap test

## Positive Predictive Value

The positive predictive value (PPV) is defined as the proportion of Pap test samples with significant cytology findings and histological confirmation of pathology out of those samples with significant cytology that had follow-up investigation with histology. In 2015 there were 1,044 (80.4%) patients with ASCUS or LSIL cytology results that went on to have biopsies and 3,814 (85.6%) patients with AGC, ASC-H or HSIL+ cytology results that went on to have biopsies.

**TABLE 5: POSITIVE PREDICTIVE VALUE, 2015**

	ASCUS or LSIL	PPV %	AGC, ASC-H or HSIL+	PPV %
CIN 2 or More Severe	233	22.32%	2,286	59.9%
CIN 3 or More Severe	109	10.44%	1,577	41.3%
Other Histology Findings	0	0.00%	1	0.0%
Adenocarcinoma in Situ or Higher	2	0.19%	118	3.1%

### Notes:

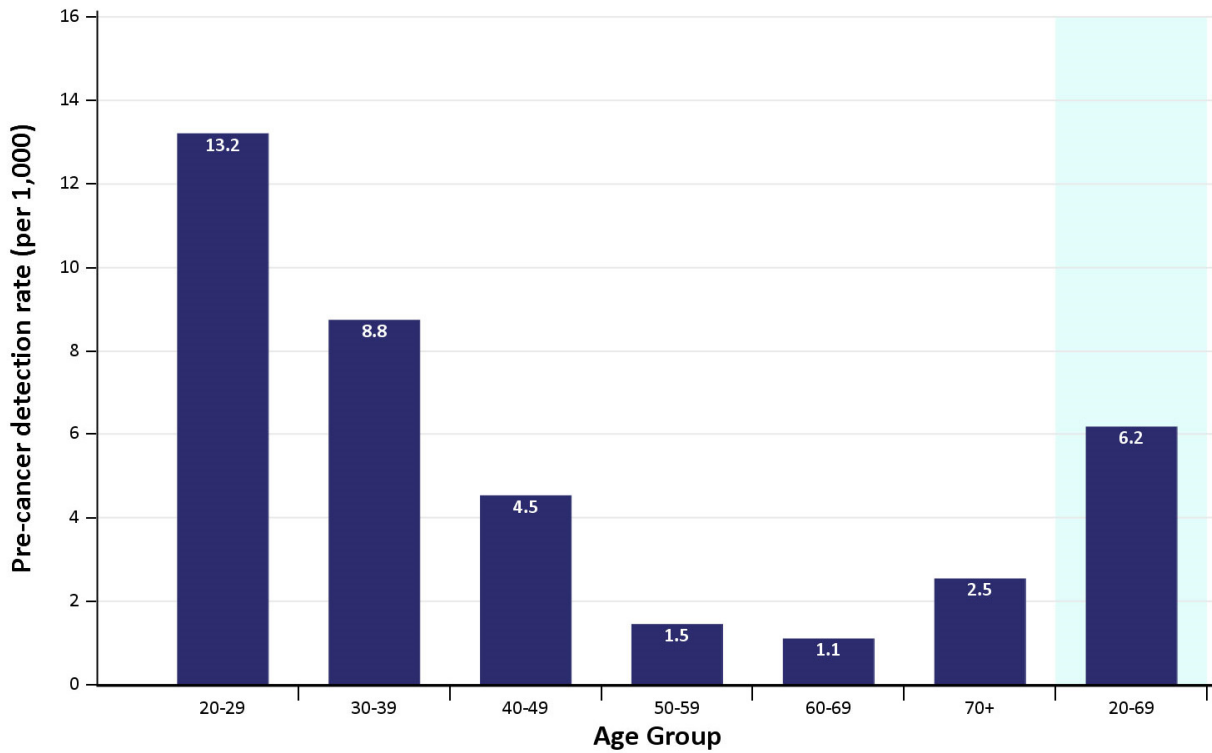
1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Cervical intraepithelial neoplasia (CIN) result reporting terminology is used



## g) Pre-Cancer Detection Rate

Pre-Cancer Detection Rate is defined as the number of pre-cancerous lesions detected per 1,000 women who had a Pap test in a 12-month period. Pre-cancerous lesions are histological confirmed CIN 2 or more severe lesions.

**FIGURE 10: PRE-CANCER DETECTION PER 1,000 WOMEN SCREENED BY AGE GROUP, 2015**



### Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on the date of the patient's severe Pap result in the year

## h) Cancer Incidence

New invasive cervical cancers diagnosed in 2010-2014 were identified from the British Columbia Cancer Registry and the data collected by BC Cancer Cervix Screening. The age-specific cancer incidence rates for 2010-2014 are presented in Figure 12, and the cancer counts are shown in Table 7.

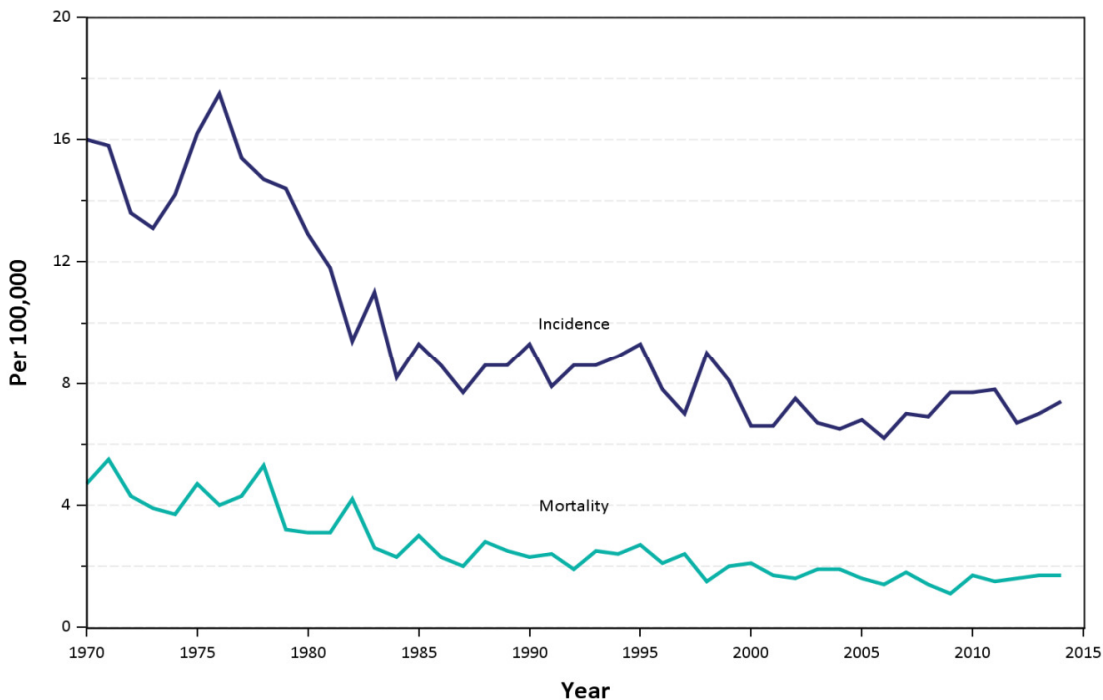
**Age-Standardized Incidence Rate:** weighted average of the age-range specific incidence rates, where the weights are the proportions of people in the corresponding age groups of the 1991 Canadian population (7.4/100,000, 2014).

**Age-Standardized Mortality Rate:** 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 (1.7/100,000, 2014).

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

**Mortality Rate:** 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.

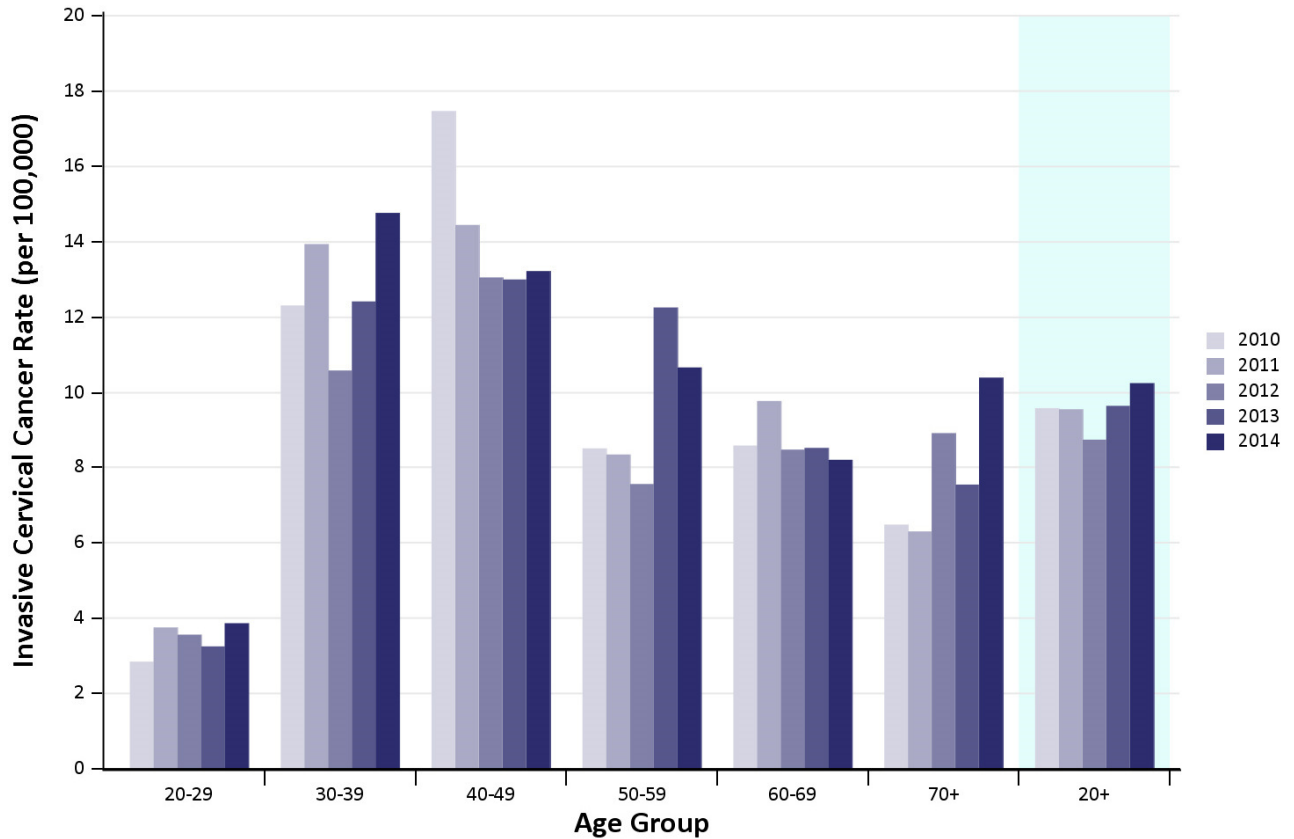
**FIGURE 11: AGE STANDARDIZED INCIDENCE & MORTALITY RATE OF INVASIVE CERVICAL CANCER IN BC OVER TIME**



Notes:

1. Rates are standardized to the 1991 Canadian Population  
February 2018

FIGURE 12: INVASIVE CERVICAL CANCER INCIDENCE PER 100,000 BY AGE GROUP, 2010 – 2014



Notes:

1. Population data source: P.E.O.P.L.E. 2015 (Sept 2015), BC STATS, Service BC, BC Ministry of Citizens' Services
2. BC Cancer Cervix Screening data extraction date: 11/27/2016
3. Age is computed based on date of diagnosis

TABLE 7: NUMBER OF INVASIVE CERVICAL CANCERS BY AGE GROUP, 2010 – 2014

		20-29	30-39	40-49	50-59	60-69	70+	20+
2014	<b>Number of cases</b>							
	All cell types	12	46	43	38	23	30	192
	Squamous cell only	8	32	26	24	18	21	129
	<b>Incidence rate (per 100,000)</b>							
	All cell types	3.87	14.77	13.23	10.67	8.20	10.41	10.26
Squamous cell only	2.58	10.28	8.00	6.74	6.42	7.28	6.89	
2013	<b>Number of cases</b>							
	All cell types	10	38	43	43	23	21	178
	Squamous cell only	9	26	25	31	17	11	119
	<b>Incidence rate (per 100,000)</b>							
	All cell types	3.25	12.42	13.01	12.26	8.52	7.54	9.66
Squamous cell only	2.93	8.50	7.56	8.84	6.29	3.95	6.46	
2012	<b>Number of cases</b>							
	All cell types	11	32	44	26	22	24	159
	Squamous cell only	6	25	30	19	17	19	116
	<b>Incidence rate (per 100,000)</b>							
	All cell types	3.56	10.59	13.06	7.56	8.47	8.91	8.73
Squamous cell only	1.94	8.28	8.91	5.52	6.54	7.05	6.37	
2011	<b>Number of cases</b>							
	All cell types	12	42	50	29	25	17	176
	Squamous cell only	9	30	33	21	20	14	127
	<b>Incidence rate (per 100,000)</b>							
	All cell types	3.75	13.95	14.45	8.34	9.78	6.30	9.57
Squamous cell only	2.82	9.96	9.54	6.04	7.83	5.19	6.90	
2010	<b>Number of cases</b>							
	All cell types	9	37	61	29	21	17	174
	Squamous cell only	5	24	44	22	14	12	121
	<b>Incidence rate (per 100,000)</b>							
	All cell types	2.85	12.32	17.47	8.50	8.58	6.48	9.59
Squamous cell only	1.58	7.99	12.60	6.45	5.72	4.57	6.67	

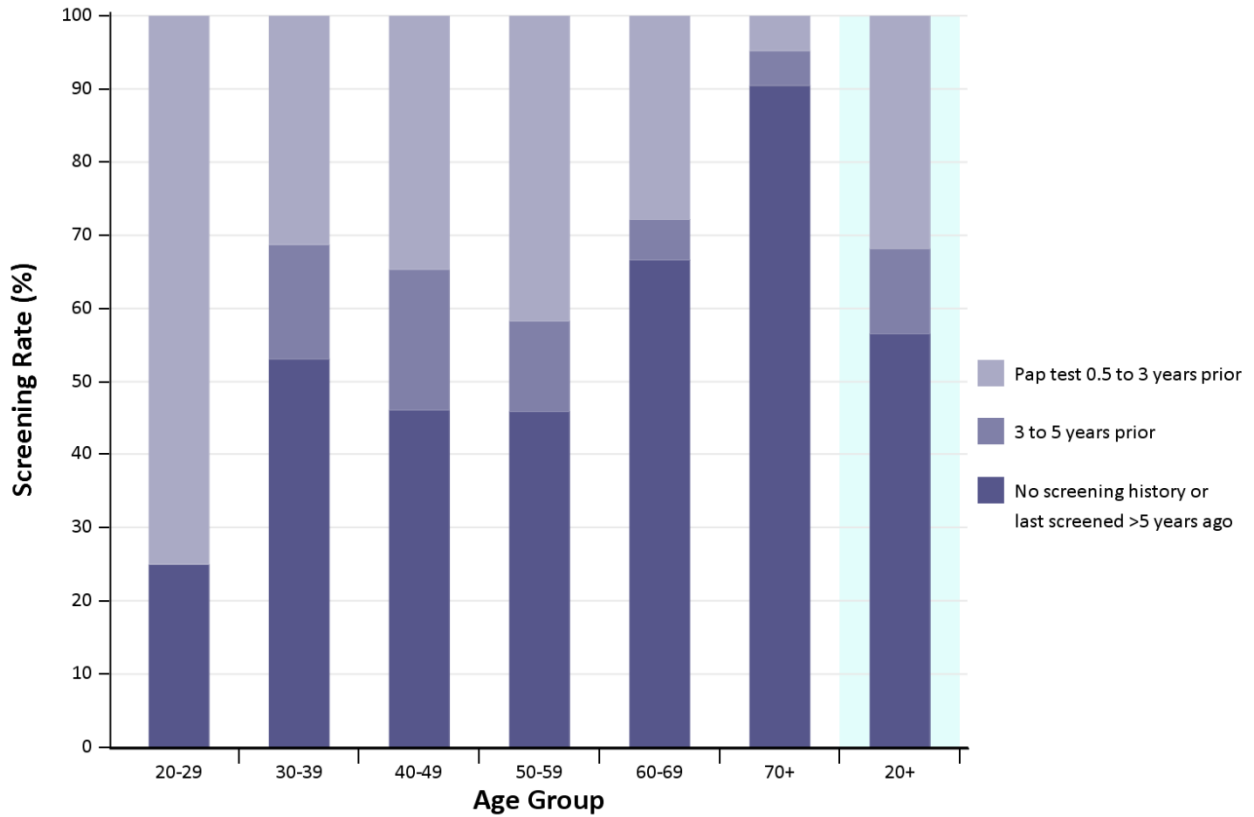
## Notes:

1. Population data source: P.E.O.P.L.E. 2016 (Sept 2016), BC STATS, Service BC, BC Ministry of Citizens' Services
2. BC Cancer Cervix Screening data extraction date: 11/27/2016
3. Age is computed based on date of diagnosis

### i) Screening History in Cases of Invasive Cancer

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

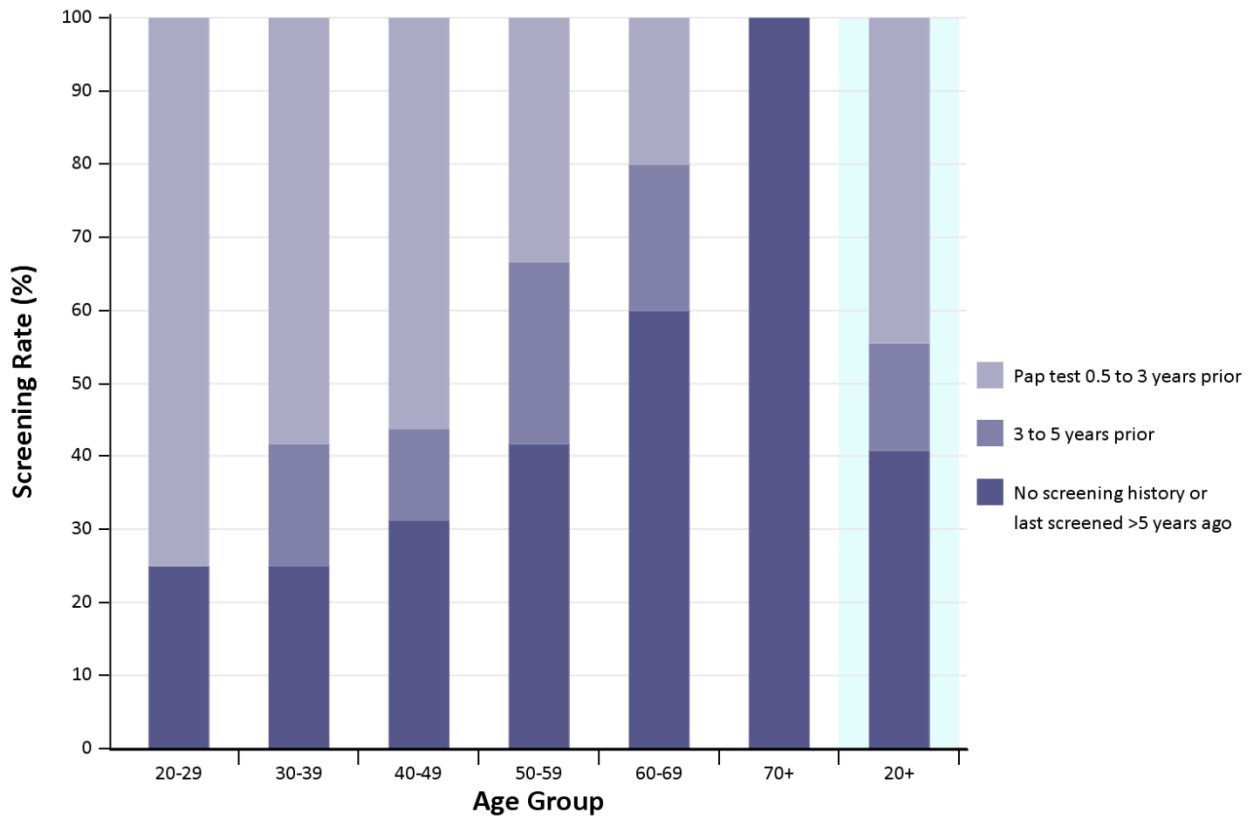
**FIGURE 13: SCREENING HISTORY OF WOMEN DIAGNOSED WITH SQUAMOUS CELL CARCINOMA, 2014**



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on date of diagnosis

**FIGURE 14: SCREENING HISTORY OF WOMEN DIAGNOSED WITH ADENOCARCINOMA, 2014**



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/27/2016
2. Age is computed based on date of diagnosis

## APPENDIX – THE 2014 BETHESDA SYSTEM

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### SPECIMEN ADEQUACY

- Satisfactory for evaluation
- Unsatisfactory for evaluation

### INTERPRETATION/RESULT

#### NEGATIVE FOR INTRAEPITHELIAL LESION OR MALIGNANCY

*(When there is no cellular evidence of neoplasia, state this in the General Categorization above and/or in the Interpretation/Result section of the report--whether or not there are organisms or other non-neoplastic findings)*

#### **Non-Neoplastic Findings (optional to report)**

##### **Organisms**

##### **OTHER**

- Endometrial cells (in a woman 45 years of age)  
(Specify if “negative for squamous intraepithelial lesion”)

### EPITHELIAL CELL ABNORMALITIES

#### SQUAMOUS CELL

- Atypical squamous cells
  - of undetermined significance (ASC-US)
  - cannot exclude HSIL (ASC-H)
- Low-grade squamous intraepithelial lesion (LSIL)  
*(encompassing: HPV/mild dysplasia/CIN 1)*
- High-grade squamous intraepithelial lesion (HSIL)  
*(encompassing: moderate and severe dysplasia, CIS; CIN 2 and CIN 3)*
  - with features suspicious for invasion (if invasion is suspected)
- Squamous cell carcinoma (SCC)

### GLANDULAR CELL

- Atypical (AGC)
  - endocervical cells (NOS or specify in comments)
  - endometrial cells (NOS or specify in comments)
  - glandular cells (NOS or specify in comments)
- Atypical
  - endocervical cells, favor neoplastic (AEC-FN)
  - glandular cells, favor neoplastic (AGC-FN)
- Endocervical adenocarcinoma in situ (AIS)
- Adenocarcinoma
  - endocervical
  - endometrial
  - extrauterine
  - not otherwise specified (NOS)

### OTHER MALIGNANT NEOPLASMS: (specify)

February 2018