



# BC Cancer Cervix Screening 2016 Program Results

May 2018

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## PROGRAM OVERVIEW

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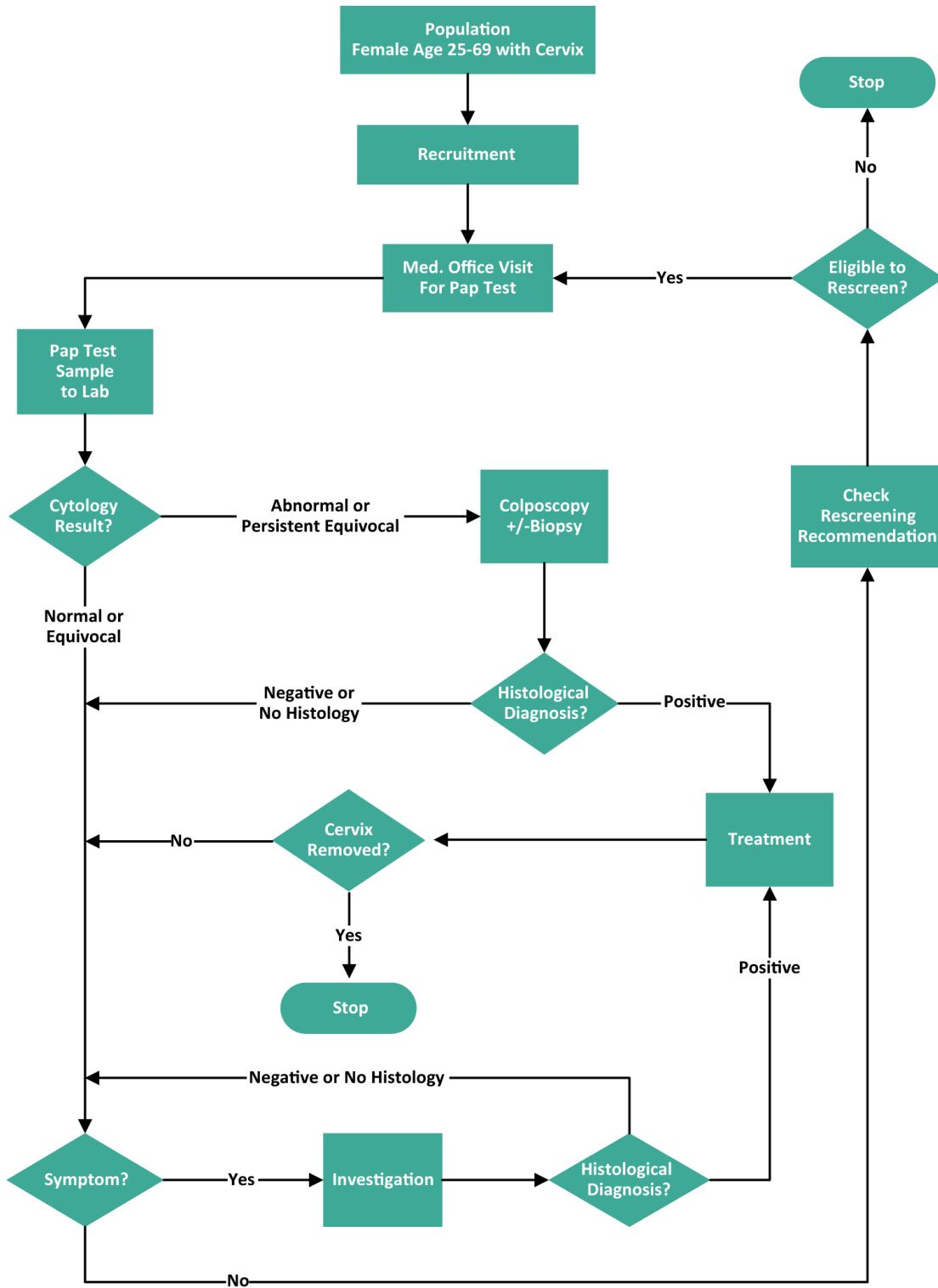
BC Cancer Cervix Screening has oversight responsibility for cervix screening in BC. The program reminds healthcare providers when their patients are due for screening, tracks adherence to screening recommendations, and monitors system performance and outcomes of cervix screening activities. In BC Pap tests are recommended every three years for 25-69 year olds. Pap tests are provided by primary care providers and trained nurses in the province and the tests are interpreted and reported by the Cervical Cancer Screening Laboratory (CCS Lab) of the Provincial Health Services Authority.

### **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

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### a) Volume of Samples

TABLE 1: NUMBER OF PATIENTS WITH CERVICAL/ENDOCERVICAL PAP TEST SAMPLES, 2016

	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
Number of Patients	5,119	83,124	107,635	94,804	93,809	61,668	2,985	449,144
Number of Smears	5,296	87,626	112,259	97,793	95,816	62,718	3,068	464,576
New Patients	3,131	18,221	10,116	4,253	2,554	1,682	162	40,119
(%)	61%	22%	9%	4%	3%	3%	5%	9%

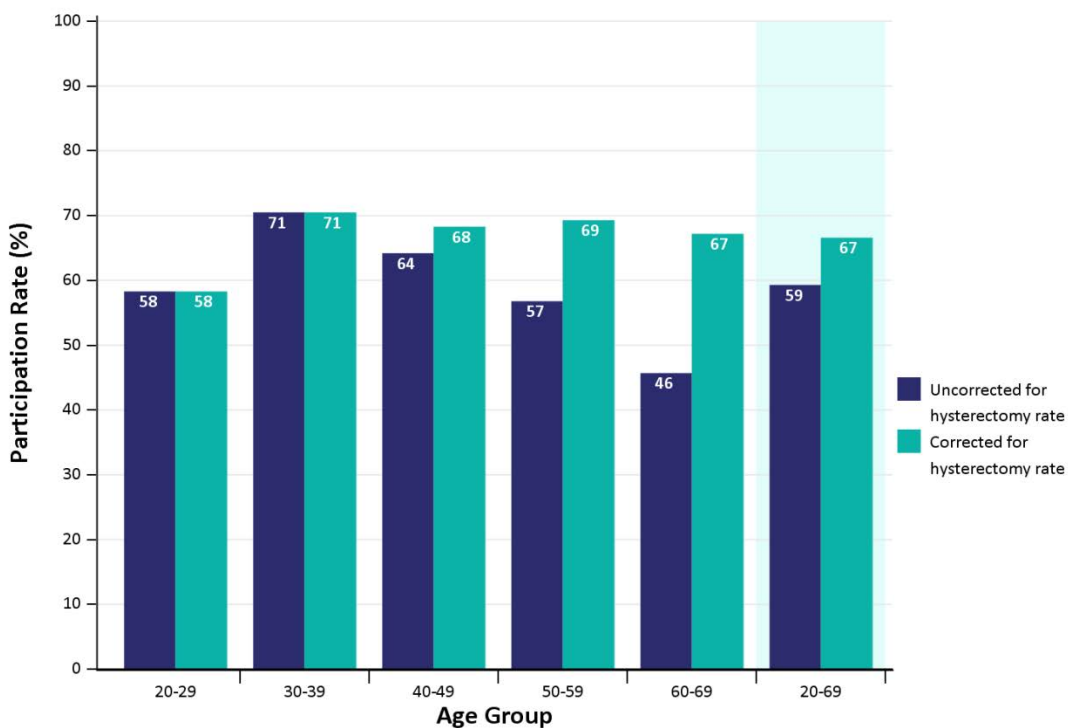
Notes:

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
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 adjust 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 adjustment 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, 2014 – 2016**



### Notes:

1. Based on weighted average of 2014, 2015 and 2016 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: 8/14/2017
5. Age is computed based on patient's age in 2015

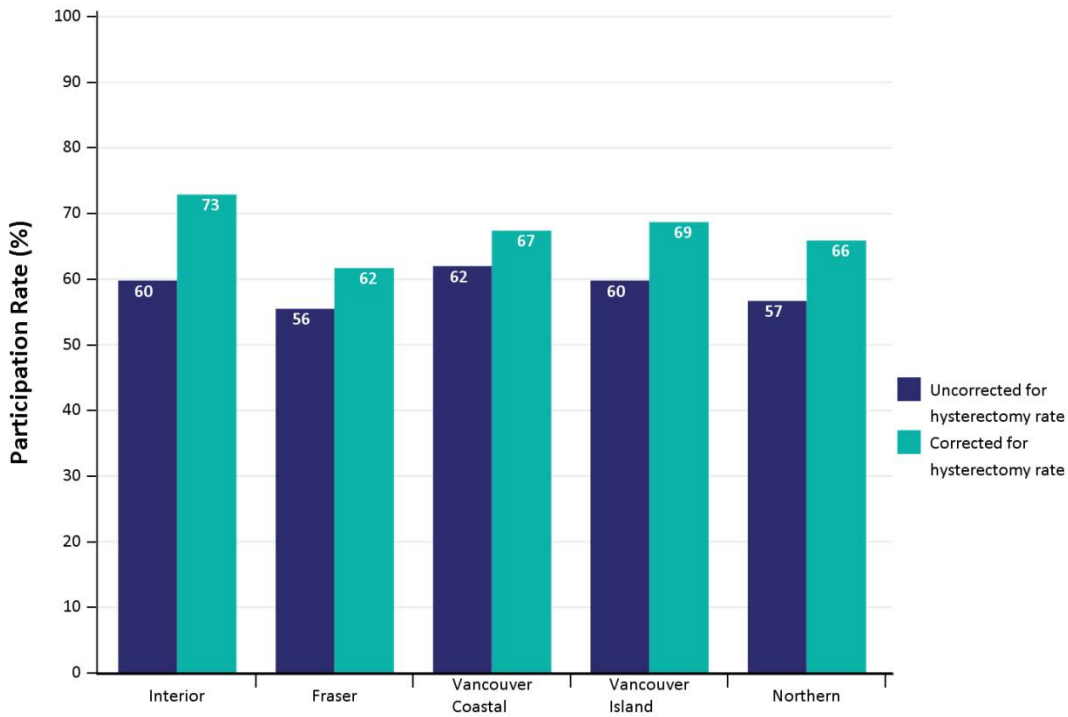
**TABLE 2: PARTICIPATION RATES OF WOMEN 20-29 AND 30-39 YEARS OF AGE BY HSDA, 2014-2016**

<b>Health Authority</b>	<b>Health Service Delivery Area</b>	<b>20-29</b>	<b>30-39</b>
Interior	East Kootenay	80%	83%
Interior	Kootenay Boundary	78%	73%
Interior	Okanagan	67%	75%
Interior	Thompson Cariboo Shuswap	71%	70%
Fraser	Fraser East	57%	65%
Fraser	Fraser North	48%	67%
Fraser	Fraser South	50%	65%
Vancouver Coastal	Richmond	42%	64%
Vancouver Coastal	Vancouver	51%	72%
Vancouver Coastal	North Shore/Coast Garibaldi	67%	82%
Vancouver Island	South Vancouver Island	57%	73%
Vancouver Island	Central Vancouver Island	67%	69%
Vancouver Island	North Vancouver Island	71%	69%
Northern	Northwest	77%	74%
Northern	Northern Interior	72%	69%
Northern	Northeast	64%	63%
<b>BC</b>		<b>58%</b>	<b>71%</b>

**Notes:**

1. Based on weighted average of 2014, 2015 and 2016 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: 8/14/2017
5. Age is computed based on patient's age in 2015

**FIGURE 3: PARTICIPATION RATES BY HEALTH AUTHORITY, 2014-2016**



**Notes:**

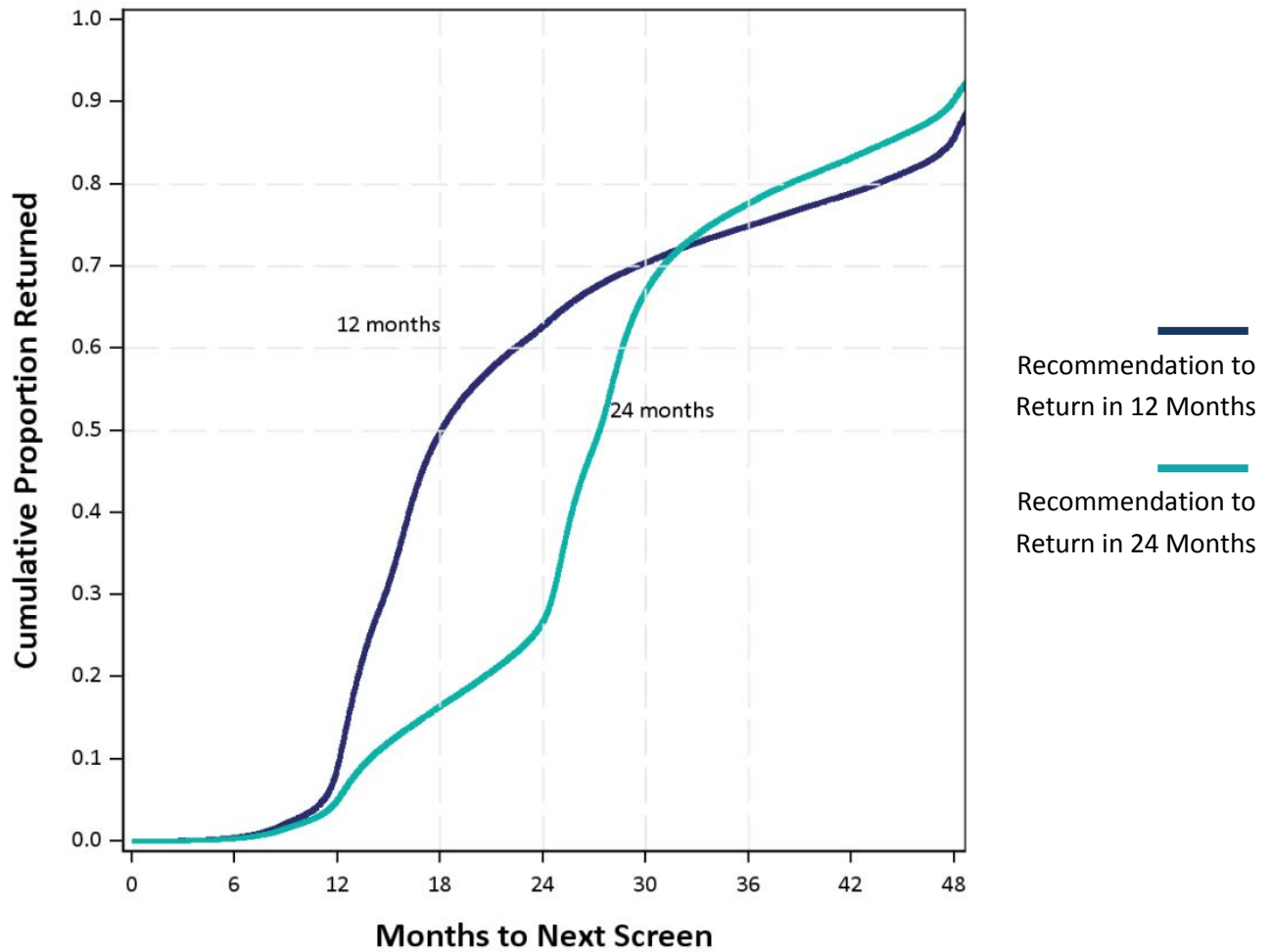
1. Based on weighted average of 2014, 2015 and 2016 female population estimates
2. Population data source: P.E.O.P.L.E. 2016 (Sept 2016), BC STATS, Service BC, BC Ministry of Citizen’s Services
3. Hysterectomy adjustment calculated using 2012 Canadian Community Health Survey
4. HA data acquired from Research Data Access Services, BC Ministry of Health
5. BC Cancer Cervix Screening data extraction date: 8/14/2017
6. Age is computed based on patient’s age in 2015



### 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, 2013**



Notes:

1. BC Cancer Cervix Screening data extraction date: 8/14/2017

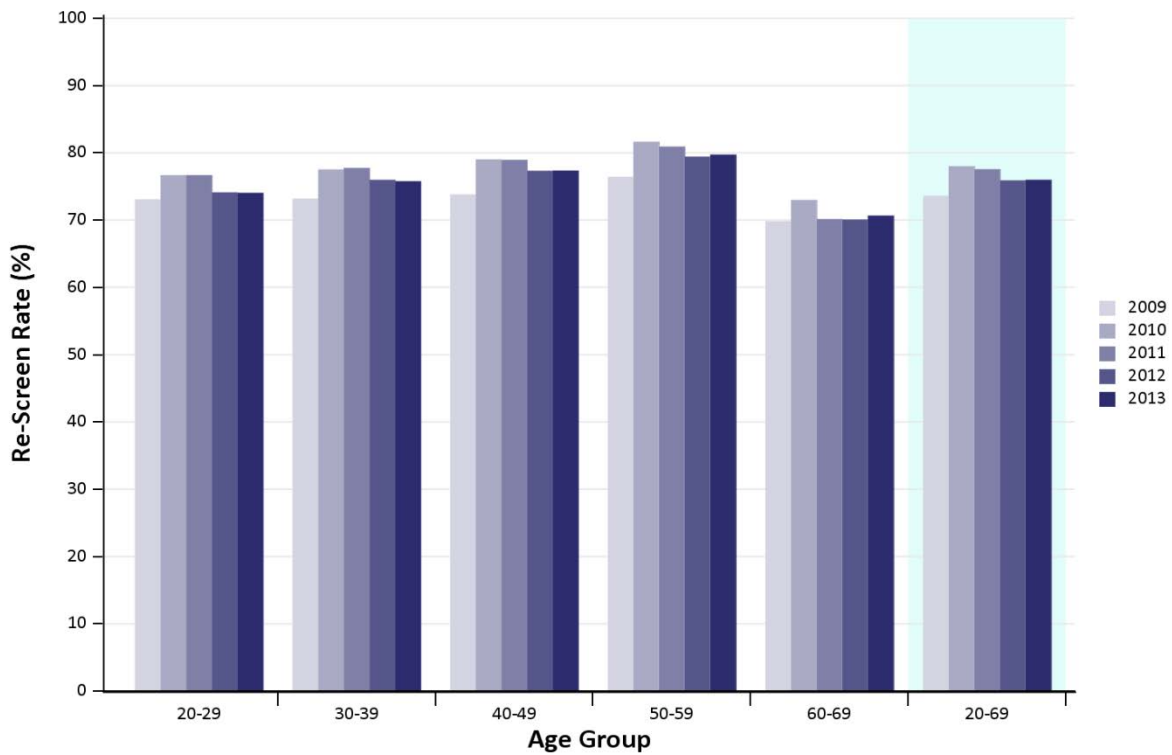
**TABLE 3: RETENTION RATES (%) BY AGE GROUP, 2013**

	20-29	30-39	40-49	50-59	60-69	20-69
Number of Patients	92,742	106,722	103,963	98,758	58,521	460,706
Re-Screened by						
18 Months	36%	32%	30%	29%	25%	31%
24 Months	49%	44%	41%	39%	34%	42%
30 Months	66%	67%	69%	72%	65%	68%
36 Months	74%	76%	77%	80%	71%	76%

Notes:

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
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, 2009 – 2013**



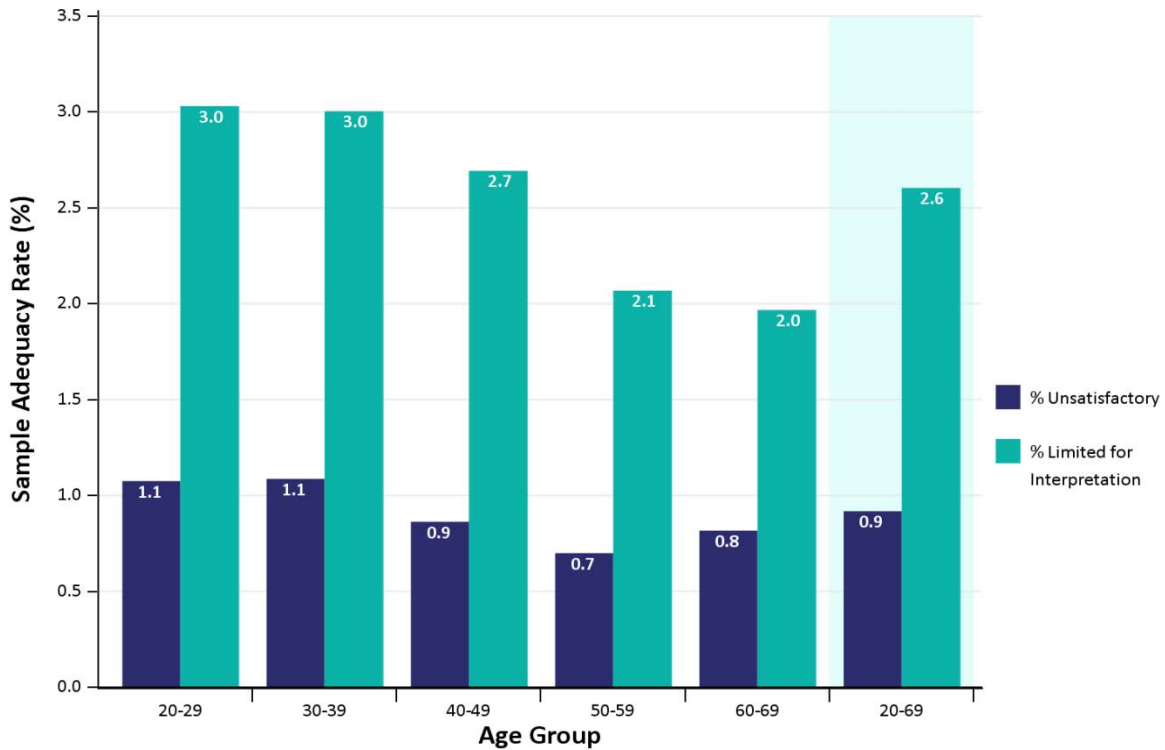
Notes:

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
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, 2016**



**Notes:**

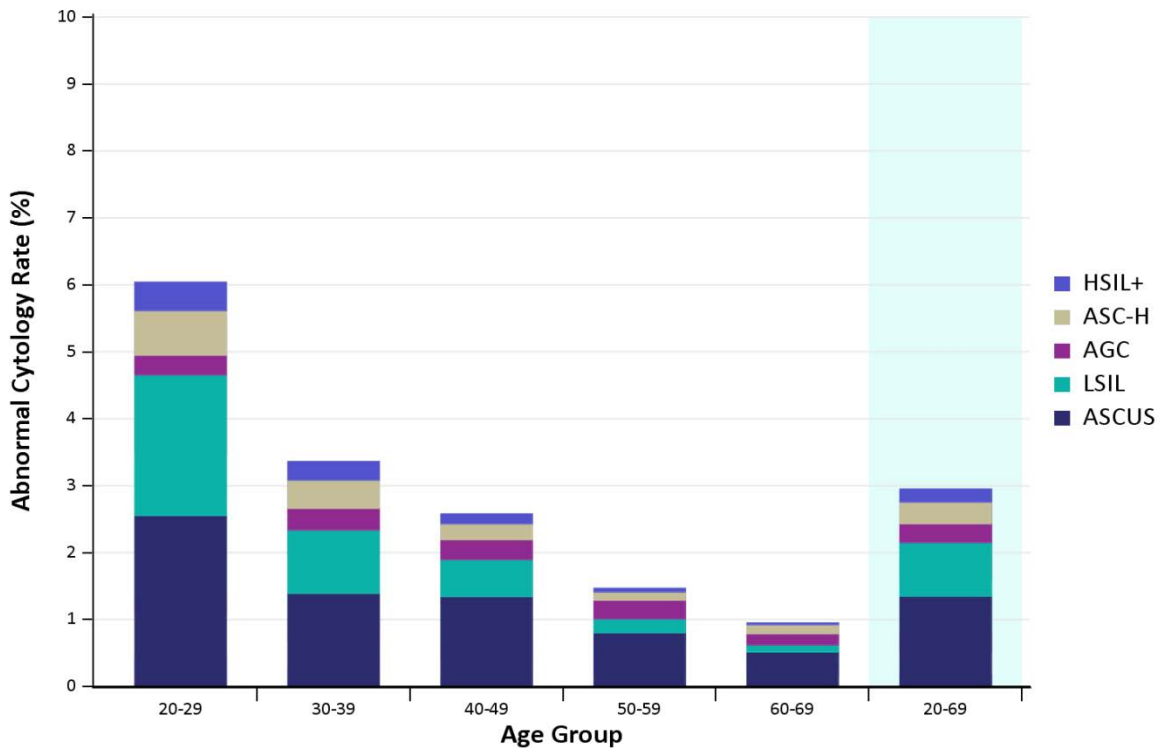
1. BC Cancer Cervix Screening data extraction date: 8/14/2017
2. Age is computed based on sample date

## 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 turn around time target is for 90% of reports to be issued in 28 days. In 2016, 90% of Pap tests were reported within 35 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, 2016**



**Notes:**

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
2. Age is computed based on sample date
3. HSIL+ includes HSIL, AIS and invasive carcinoma

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

### Follow-up Recommendation

The current screening guideline is to follow ASC-US or LSIL results with a repeat Pap test at six-month intervals for up to one year. Colposcopy is recommended for either persistent ASC-US or LSIL or an initial interpretation of AGC, ASC-H, HSIL, AIS or invasive carcinoma. “Other Investigations” are predominantly recommendations for further investigation for endometrial suspected abnormalities.

**TABLE 4: FOLLOW-UP RECOMMENDATIONS BY AGE GROUP, 2016**

	<20	20-29	30-39	40-49	50-59	60-69	70+	All Ages
ASC-US or LSIL	336	3,902	2,556	1,838	971	389	31	10,023
Repeat in 6 months	323	3,282	2,074	1,493	802	318	22	8,314
(%)	96%	84%	81%	81%	83%	82%	71%	83%
Colposcopy	8	584	441	328	149	58	6	1,574
(%)	2%	15%	17%	18%	15%	15%	19%	16%
AGC, ASC-H, HSIL, AIS or invasive carcinoma	23	1,217	1,227	759	526	245	43	4,040
Colposcopy	18	1,202	1,197	698	399	166	19	3,699
(%)	78%	99%	98%	92%	76%	68%	44%	92%
Other Investigation	5	15	30	61	127	79	24	341
(%)	22%	1%	2%	8%	24%	32%	56%	8%

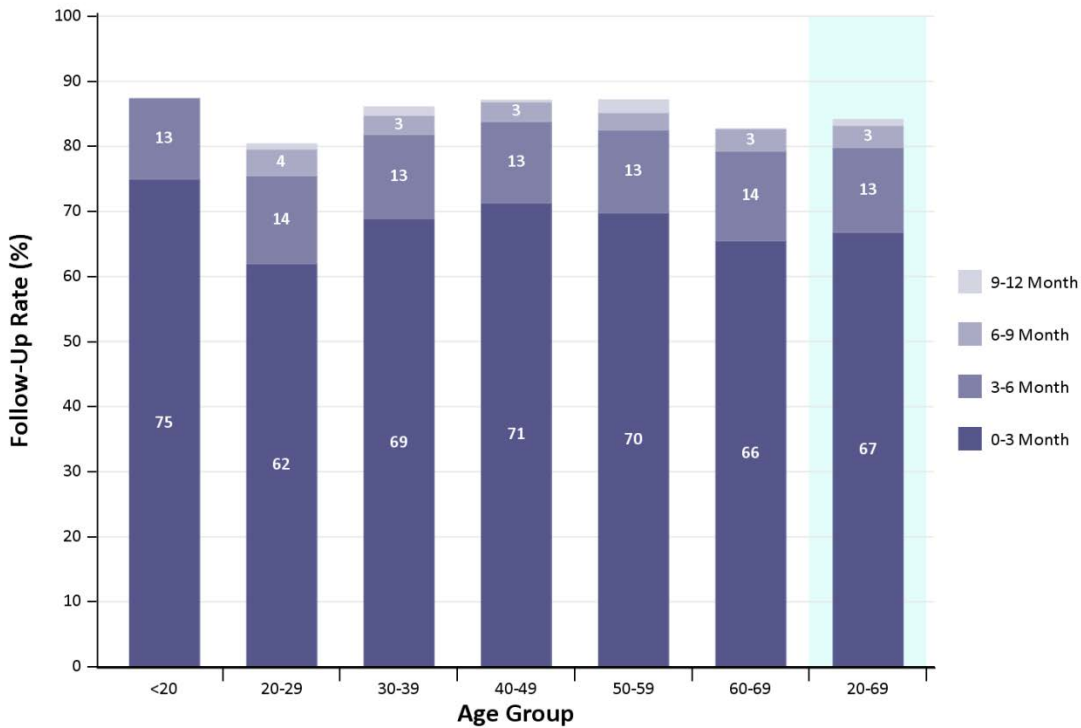
#### Notes:

1. CCSP data extraction date: 8/14/2017
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.

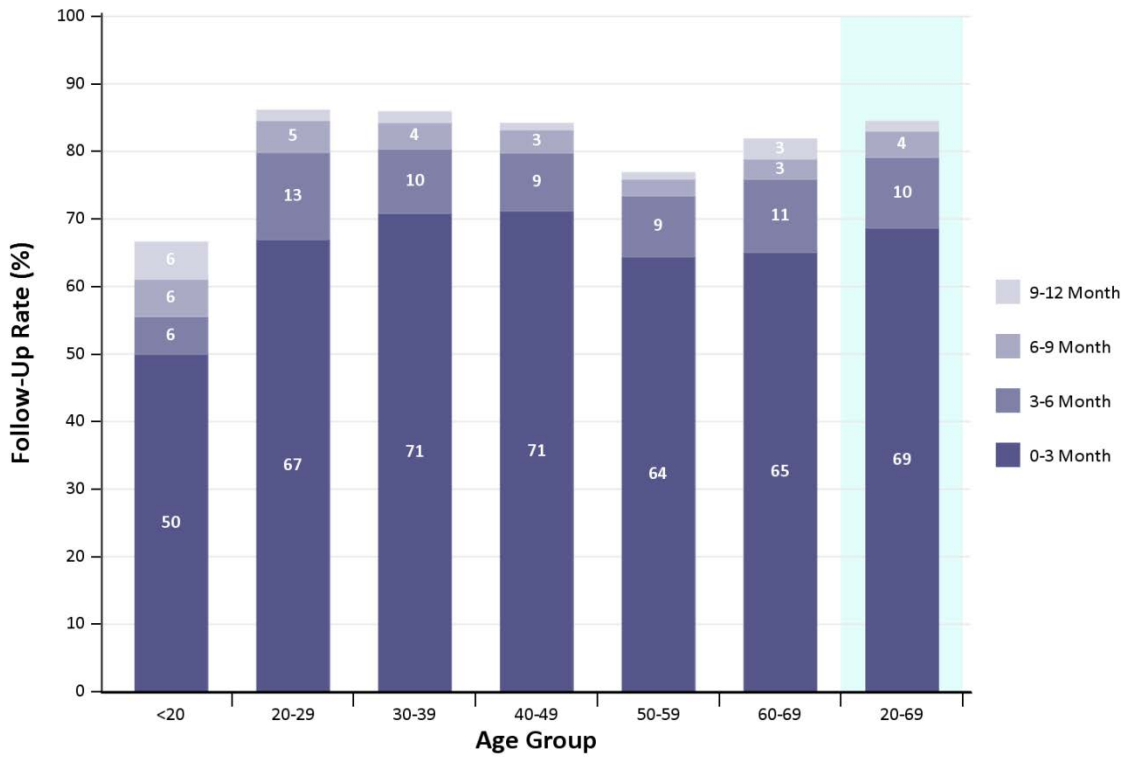
**FIGURE 8: COLPOSCOPY FOLLOW-UP RATES FOR WOMEN WITH PERSISTENT ASC-US OR LSIL PAP TEST RESULT BY AGE GROUP, 2016**



**Notes:**

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
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, 2016**



Notes:

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
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 the chance of having histologically confirmed pathology when significant cytology results are found and a follow-up investigation with biopsy is completed. For histology reporting cervical intraepithelial neoplasia (CIN) terminology is used.

**TABLE 5: HISTOLOGIC CONFIRMATION RATE, 2016**

	<b>ASC-US or LSIL</b>	<b>AGC, ASC-H or HSIL Moderate</b>	<b>AGC-FN, AIS or HSIL Marked</b>
Recommended for Colposcopy	1,813	3,465	676
Samples with Histological Confirmation	1,492 (82%)	2,902 (84%)	568 (84%)

Notes:

1. BC Cancer Cervix Screening data extraction date: 8/14/2017

**TABLE 6: POSITIVE PREDICTIVE VALUE, 2016**

	<b>ASC-US or LSIL</b>	<b>AGC, ASC-H or HSIL Moderate</b>	<b>AGC-FN, AIS or HSIL Marked</b>
CIN II or More Severe	357 (24%)	1,622 (56%)	495 (87%)
CIN III or More Severe	147 (10%)	1,061 (37%)	428 (75%)
Invasive Carcinoma	2 (<1.0%)	39 (1%)	35 (6%)

Notes:

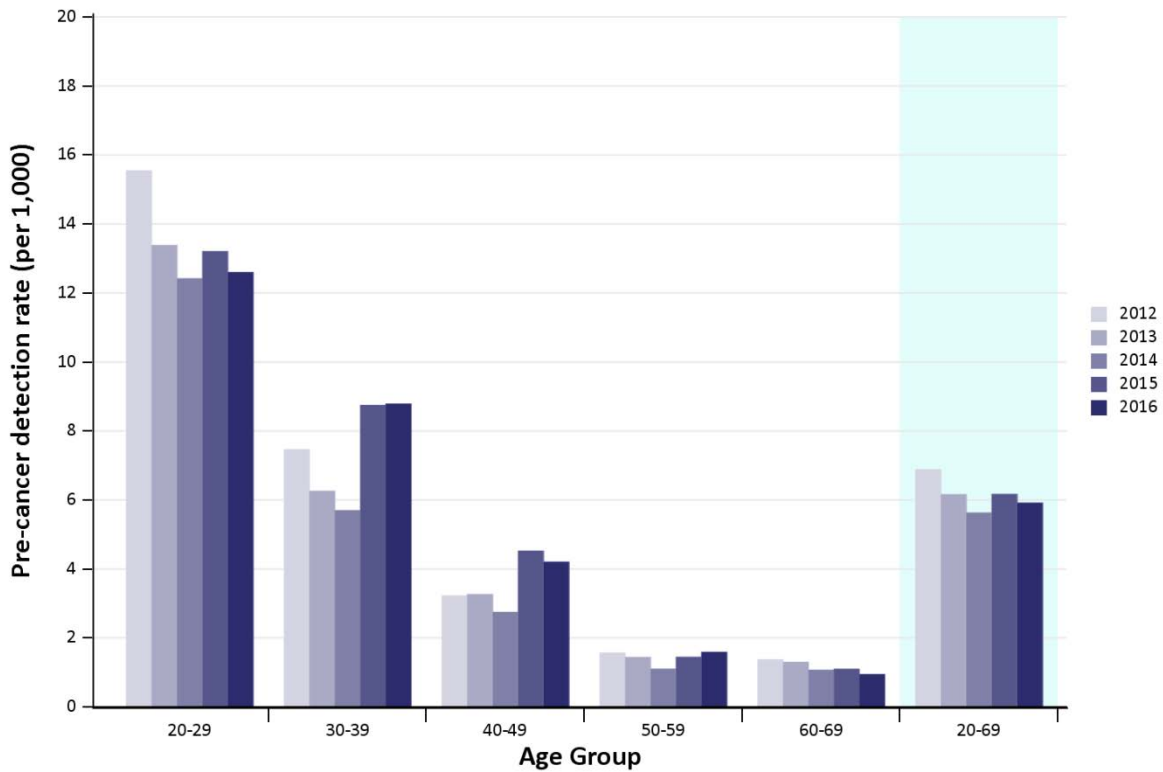
1. BC Cancer Cervix Screening data extraction date: 8/14/2017



### g) Pre-Cancer Detection Rate

Pre-Cancer Detection Rate is defined as the number of pre-cancerous lesions detected per 1,000 women screened in a 12-month period. Pre-cancerous lesions are histologically confirmed CIN 2, CIN 3 or adenocarcinoma in situ (AIS).

**FIGURE 10: PRE-CANCER DETECTION PER 1,000 WOMEN SCREENED BY AGE GROUP, 2016**



**Notes:**

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
2. Age is computed based on the date of the patient’s most severe Pap result in the year

## h) Cancer Incidence

New invasive cervical cancers diagnosed in 2011-2015 were identified from the British Columbia Cancer Registry and the data collected by BC Cancer Cervix Screening. The age-specific cancer incidence rates for 2011-2015 are presented in Figure 12, and the cancer counts are shown in Table 7.

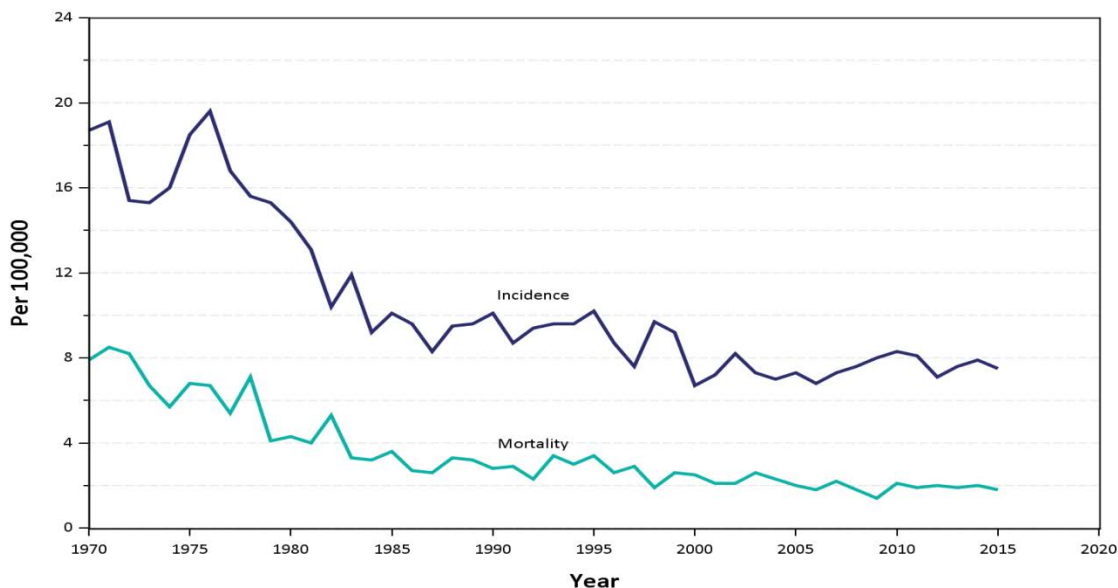
**Age-Standardized Incidence Rate:** weighted average of the age-range specific incidence rates, where the weights are the proportions of people in the corresponding age groups of the 2011 Canadian population (7.0/100,000, 2015).

**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 2011 Canadian population (1.3/100,000, 2015).

**Incidence Rate:** proportion of women in the population who develop cervical cancer in a given year, expressed as the number of cancer cases 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.

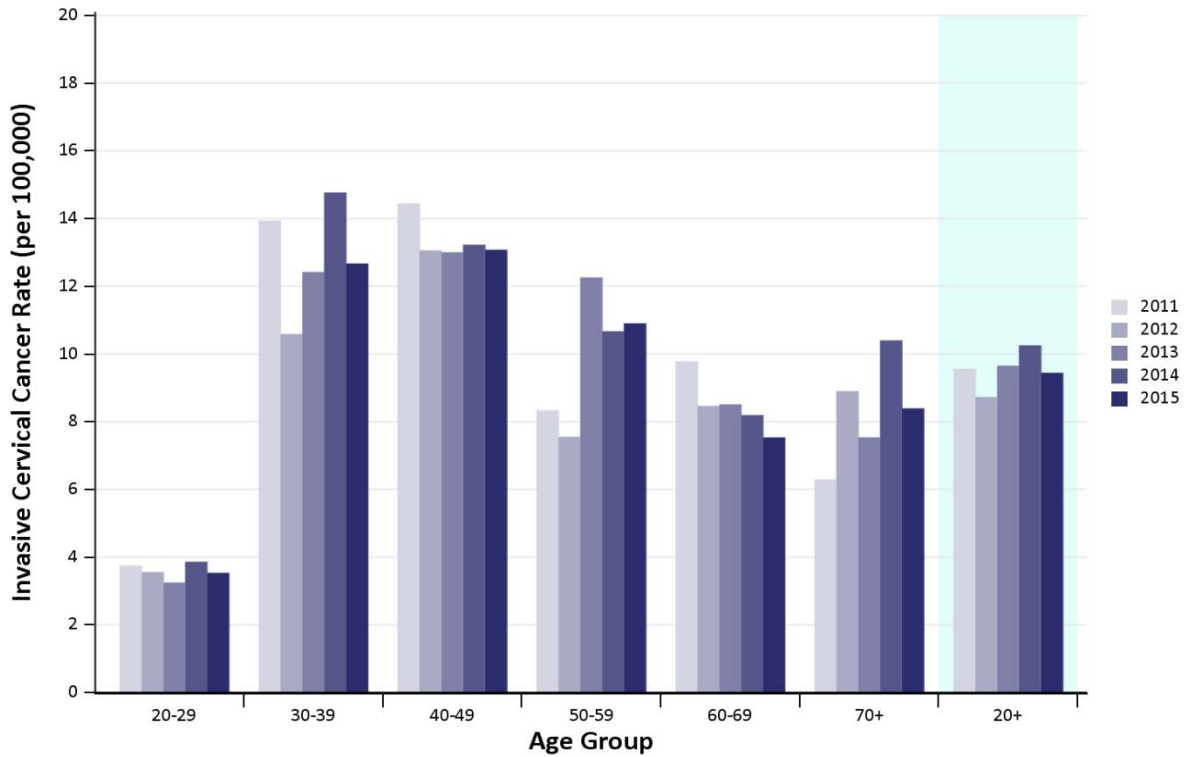
**FIGURE 11: AGE STANDARDIZED INCIDENCE & MORTALITY RATE OF INVASIVE CERVICAL CANCER IN BC OVER TIME**



Notes:

1. Rates are standardized to the 2011 Canadian Population

FIGURE 12: INVASIVE CERVICAL CANCER INCIDENCE PER 100,000 BY AGE GROUP, 2011 – 2015



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: 8/14/2017
3. Age is computed based on date of diagnosis

TABLE 7: NUMBER OF INVASIVE CERVICAL CANCERS BY AGE GROUP, 2011 – 2015

		20-29	30-39	40-49	50-59	60-69	70+	20+
2015	<b>Number of cases</b>							
	All cell types	11	40	42	39	22	25	179
	Squamous cell only	8	30	30	22	15	19	124
	<b>Incidence rate (per 100,000)</b>							
	All cell types	3.54	12.67	13.08	10.91	7.54	8.40	9.45
Squamous cell only	2.57	9.51	9.34	6.15	5.14	6.38	6.55	
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	

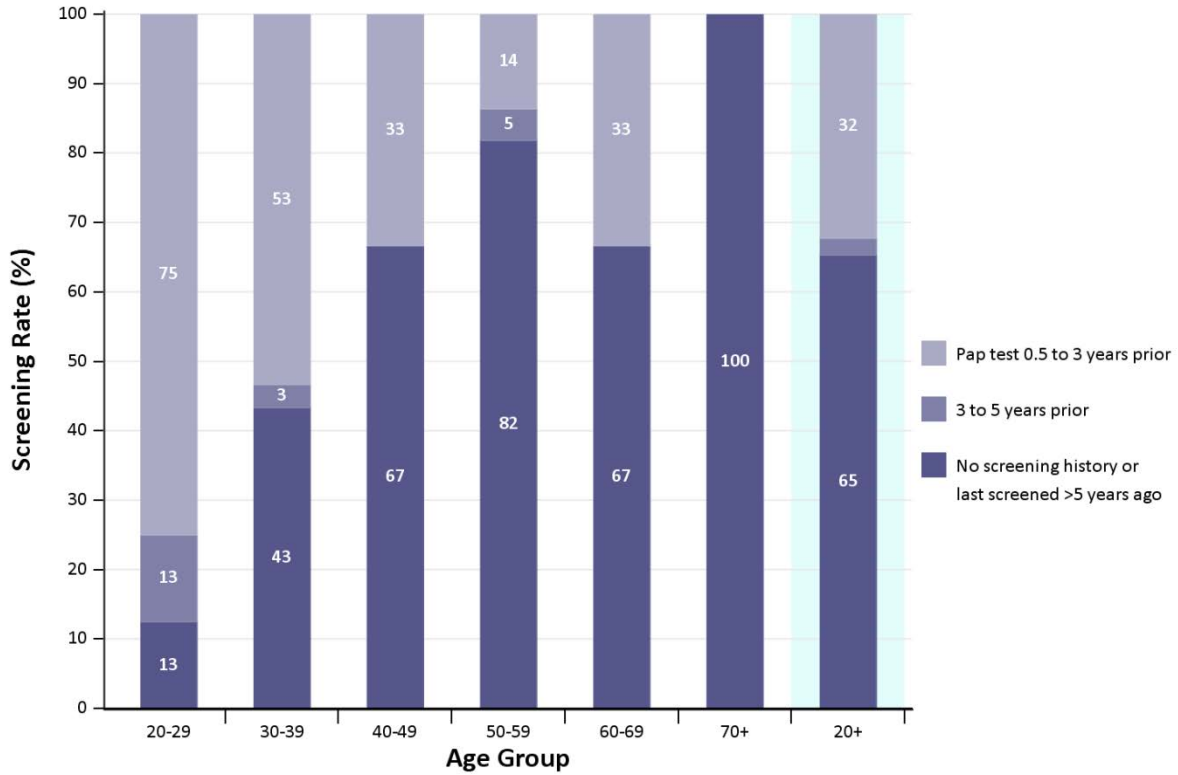
## Notes:

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: 8/14/2017
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.

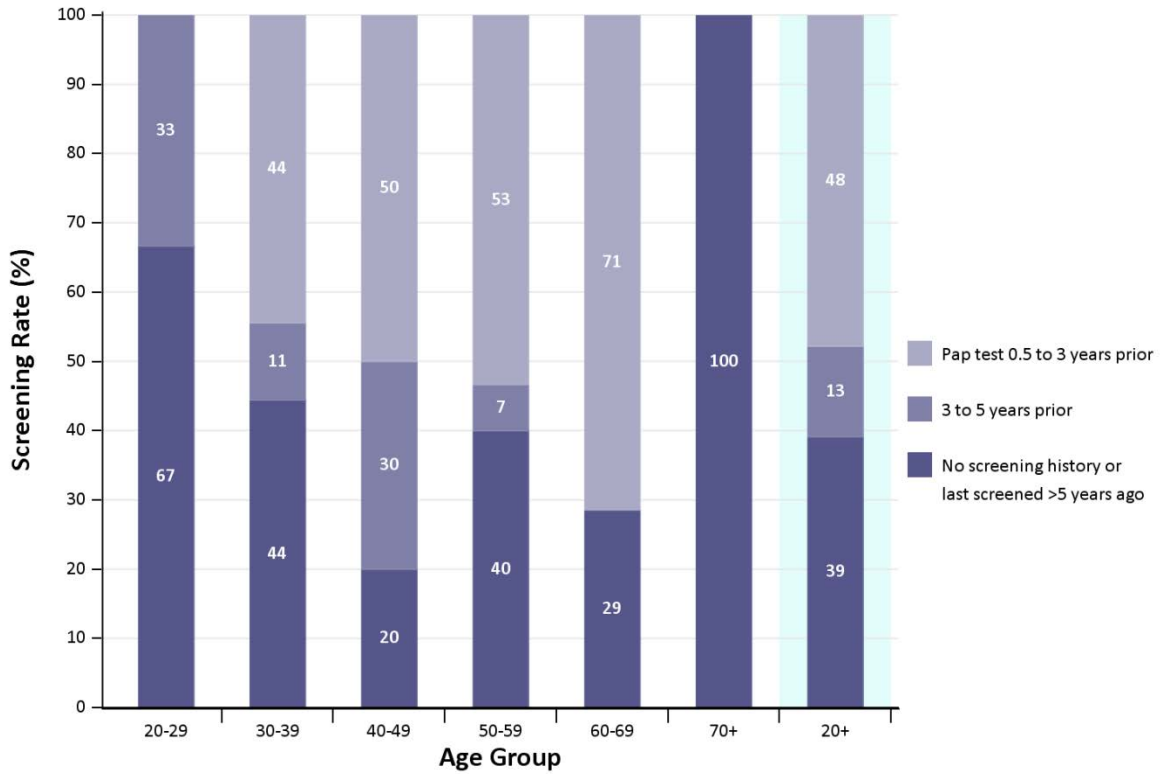
**FIGURE 13: SCREENING HISTORY OF WOMEN DIAGNOSED WITH SQUAMOUS CELL CARCINOMA, 2015**



**Notes:**

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
2. Age is computed based on date of diagnosis

FIGURE 14: SCREENING HISTORY OF WOMEN DIAGNOSED WITH ADENOCARCINOMA, 2015



Notes:

1. BC Cancer Cervix Screening data extraction date: 8/14/2017
2. Age is computed based on date of diagnosis

## APPENDIX – THE 2015 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 (specified)

May 2018



Provincial Health Services Authority

## BC Cancer Centres:

### Abbotsford Centre

32900 Marshall Road  
Abbotsford, BC V2S 1K2  
604.851.4710 or toll-free 1.877.547.3777

### Centre for the North

1215 Lethbridge Street  
Prince George, BC V2N 7E9  
250.645. 7300 or toll-free 1.855.775.7300

### Fraser Valley Centre

13750 96th Avenue  
Surrey, BC V3V 1Z2  
604.930.2098 or toll-free 1.800.523.2885

### Sindi Ahluwalia Hawkins Centre for the Southern Interior

399 Royal Avenue  
Kelowna, BC V1Y 5L3  
250.712.3900 or toll-free 1.888.563.7773

### Vancouver Centre

600 West 10th Avenue  
Vancouver, BC V5Z 4E6  
604.877.6000 or toll-free 1.800.663.3333

### Vancouver Island Centre

2410 Lee Avenue  
Victoria, BC V8R 6V5  
250.519.5500 or toll-free 1.800.670.3322

### BC Cancer Agency Research Centre

675 West 10th Avenue  
Vancouver, BC V5Z 1L3  
604.675.8000 or toll-free 1.888.675.8001

### BC Cancer Foundation

150 - 686 W. Broadway  
Vancouver, BC V5Z 1G1  
604.877.6040 or toll-free 1.888.906.CURE/ 2873

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