



BC Cancer Cervix Screening 2017 Program Results

January 2019

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PROGRAM OVERVIEW

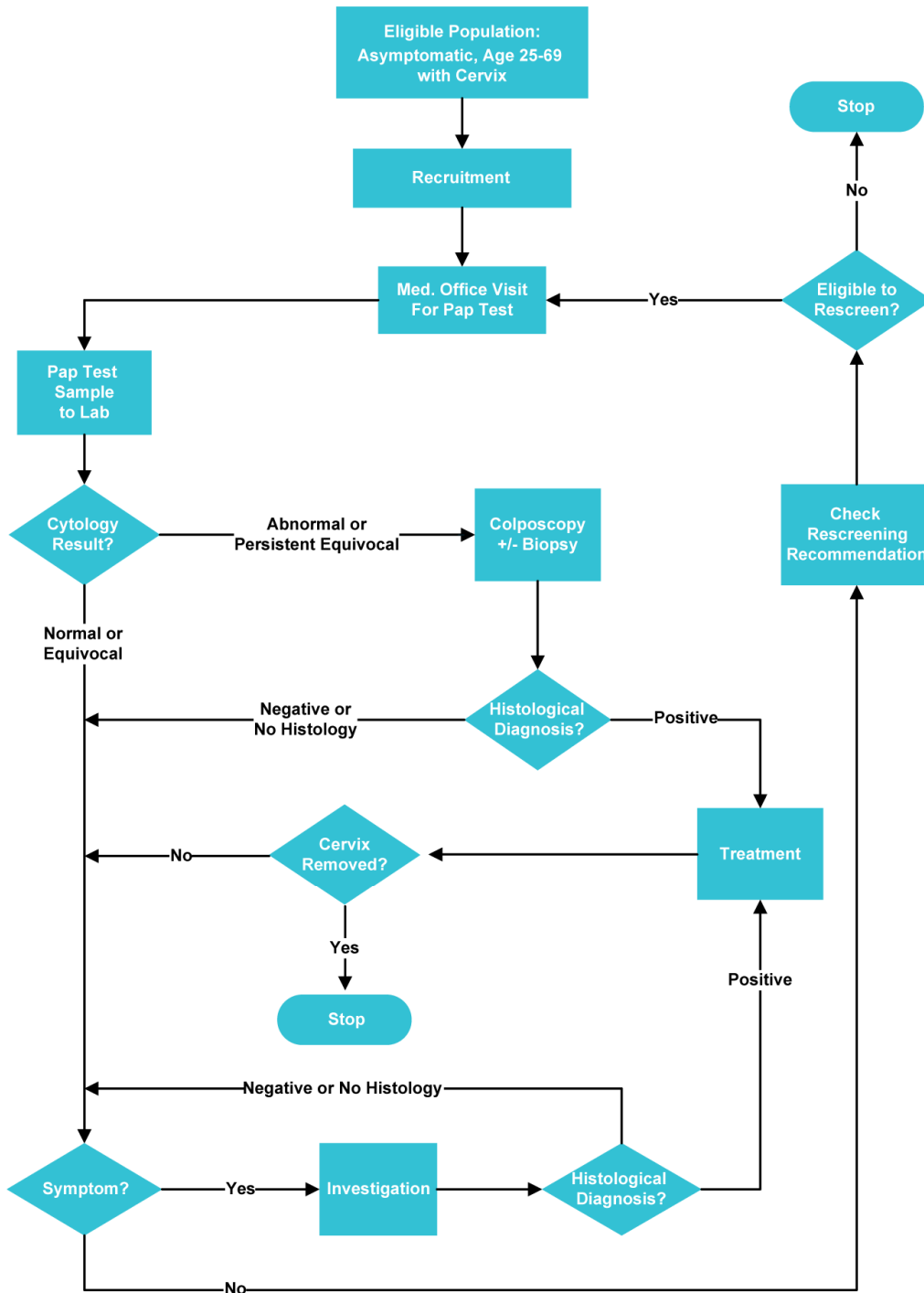
BC Cancer Cervix Screening has oversight responsibility for cervix screening in BC. The program reminds healthcare providers when their patients are due for screening, tracks adherence to screening recommendations, and monitors system performance and outcomes of cervix screening activities. In BC Pap 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. 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 Guidelines.

PROGRAM RESULTS

In order to prevent inappropriate disclosure of health-related information due to small counts in specific groupings, all integers presented in this report have been randomly rounded up or down to the nearest five using the methodology described by Statistics Canada in footnote 6 of the following link:

<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310011101>

a) Volume of Samples

TABLE 1: NUMBER OF PATIENTS WITH CERVICAL/ENDOCERVICAL PAP TEST SAMPLES, 2017

	<20	20-24	25-29	30-39	40-49	50-59	60-69	70+	All Ages
Number of Patients	1,500	13,590	39,560	84,605	73,755	71,710	48,355	2,525	335,600
Number of Smears	1,575	14,255	40,995	87,020	75,500	72,935	48,975	2,560	343,825
New Patients	790	3,220	8,380	9,235	3,635	2,165	1,565	145	29,140
(%)	53%	24%	21%	11%	5%	3%	3%	6%	9%

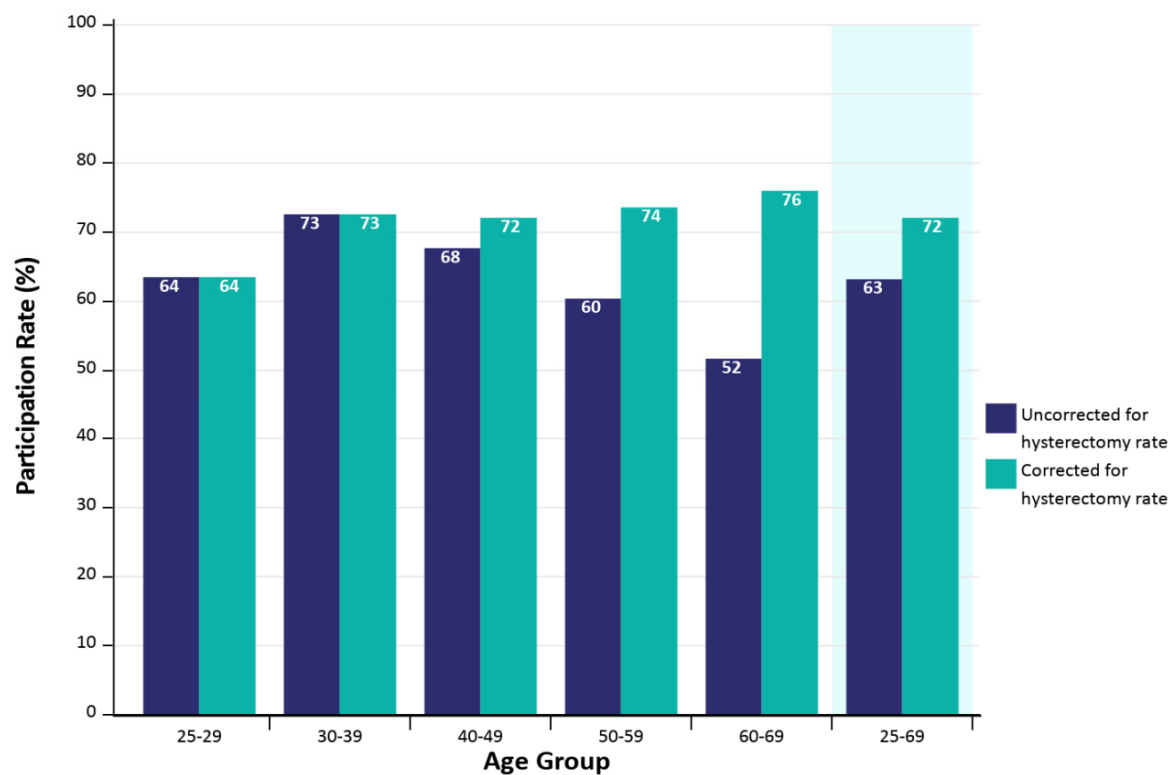
Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
2. Age is computed on patient's last Pap test
3. Integers have been rounded as per Statistics Canada methodology

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. Hysterectomy rates can be calculated from the CCHS and applied to 10 year age groups at the provincial level. However, due to small sample size and large variation in rate estimates, they can only be calculated at the level of Health Authority across the target age group (25-69).

FIGURE 2: PARTICIPATION RATES BY AGE GROUP, 2017



Notes:

1. Based on average of 2017 and 2018 female population estimates
2. Population data source: P.E.O.P.L.E. 2018 (Sept 2018), 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: 11/19/2018
5. Age is computed based on patient's age at end of 2017

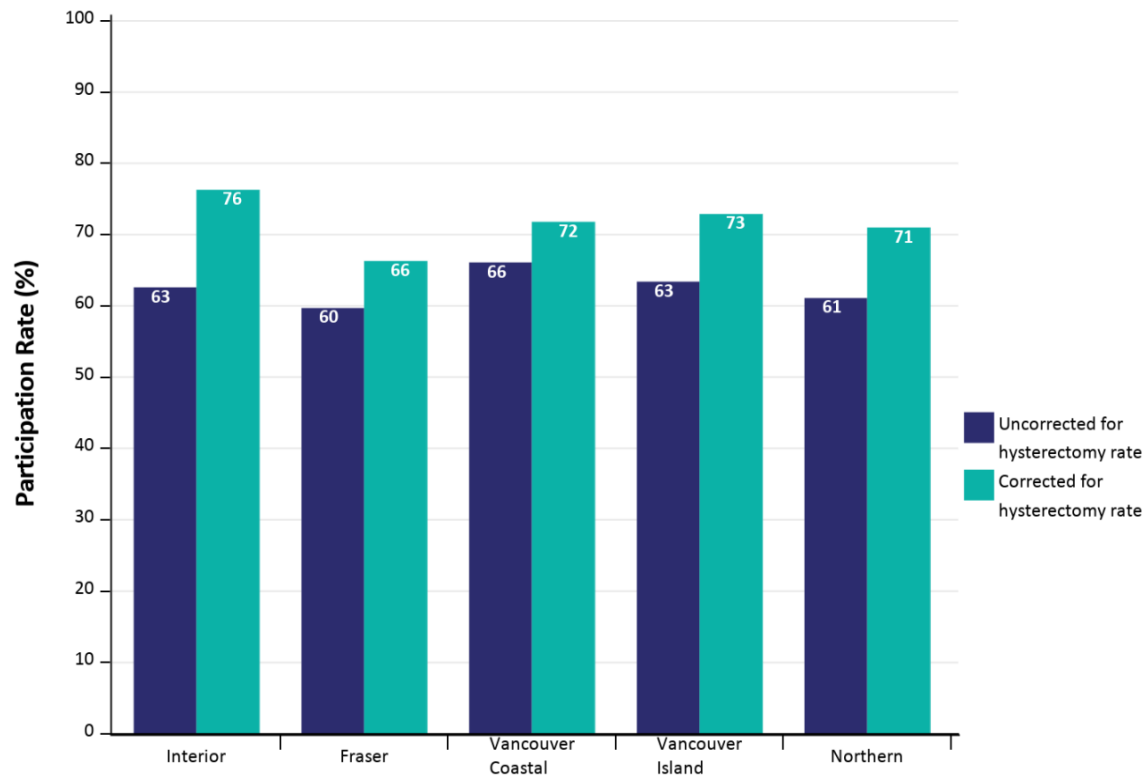
TABLE 2: PARTICIPATION RATES OF WOMEN 25-29, 30-34, AND 35-39 YEARS OF AGE BY HSDA, 2017

Health Authority	Health Service Delivery Area	25-29	30-34	35-39
Interior	East Kootenay	90%	93%	82%
Interior	Kootenay Boundary	88%	82%	72%
Interior	Okanagan	73%	80%	73%
Interior	Thompson Cariboo Shuswap	80%	78%	69%
Fraser	Fraser East	64%	69%	64%
Fraser	Fraser North	53%	67%	66%
Fraser	Fraser South	55%	66%	64%
Vancouver Coastal	Richmond	45%	61%	63%
Vancouver Coastal	Vancouver	52%	70%	78%
Vancouver Coastal	North Shore/Coast Garibaldi	77%	83%	79%
Vancouver Island	South Vancouver Island	67%	75%	73%
Vancouver Island	Central Vancouver Island	73%	72%	68%
Vancouver Island	North Vancouver Island	75%	76%	68%
Northern	Northwest	86%	80%	71%
Northern	Northern Interior	77%	76%	70%
Northern	Northeast	73%	77%	68%
BC		61%	72%	70%

Notes:

1. Based on average of 2017 and 2018 female population estimates
2. Population data source: P.E.O.P.L.E. 2018 (Sept 2018), 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: 11/19/2018
5. Age is computed based on patient's age at end of 2017

FIGURE 3: PARTICIPATION RATES BY HEALTH AUTHORITY, 2017



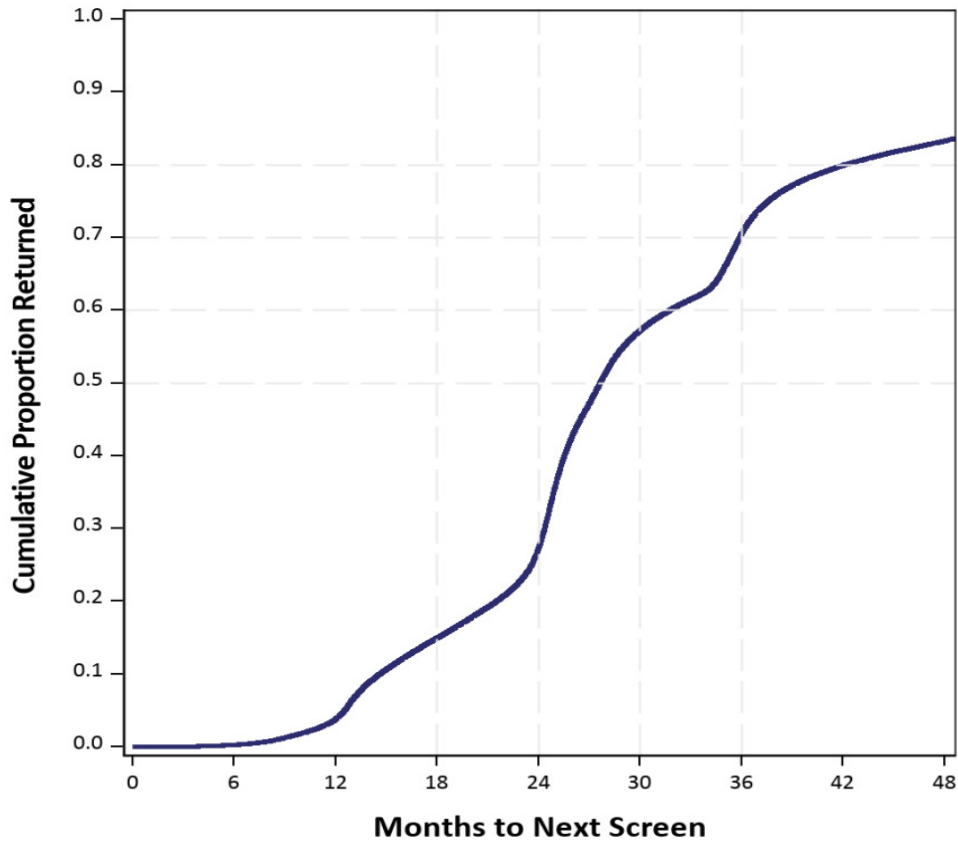
Notes:

1. Based on average of 2017 and 2018 female population estimates
2. Population data source: P.E.O.P.L.E. 2018 (Sept 2018), 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: 11/19/2018
6. Age is computed based on patient's age at end of 2017
7. Data includes patients between ages 25-69

c) Retention Rate

Retention rate is defined as the proportion of women with a negative sample who returned for a Pap test. Average risk women with a negative result are recommended to re-screen in 36 months.

FIGURE 4: CUMULATIVE RETURN RATE, 2014



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
2. Data includes patients between ages 25-69

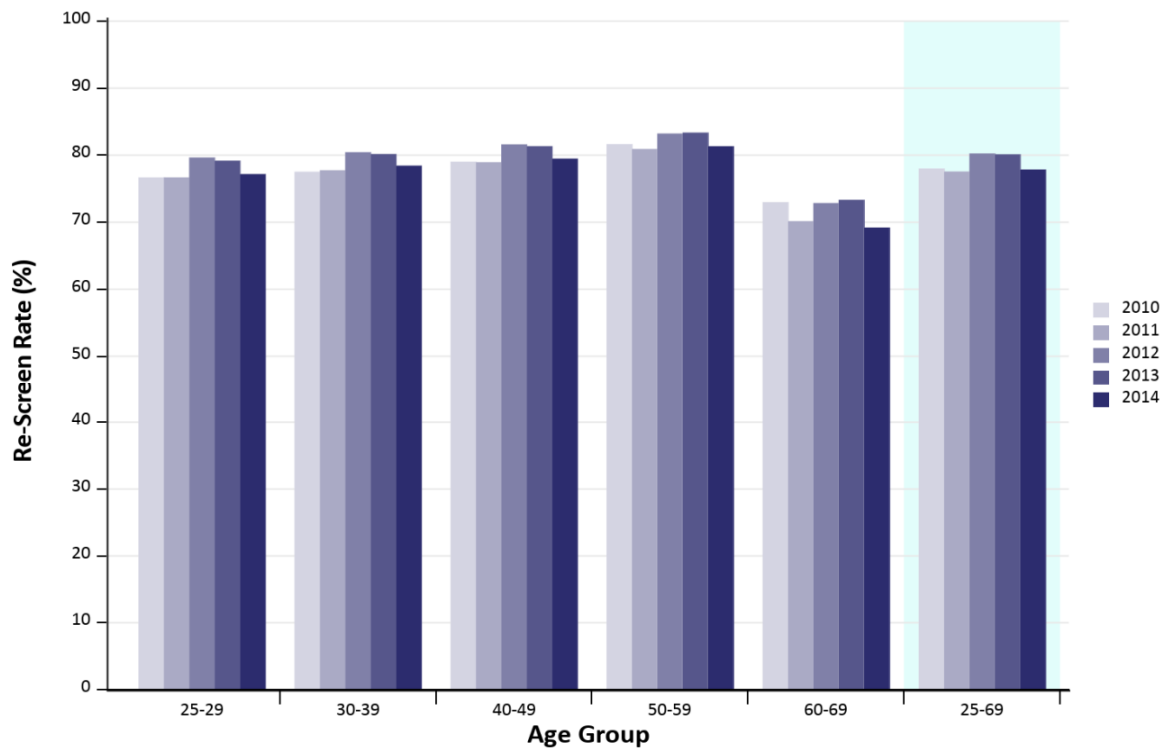
TABLE 3: RETENTION RATES (%) BY AGE GROUP, 2014

	25-29	30-39	40-49	50-59	60-69	25-69
Number of Patients	47,145	97,670	91,640	90,280	56,265	383,000
Re-Screened by						
18 Months	34%	31%	29%	27%	23%	29%
24 Months	48%	44%	41%	39%	34%	41%
30 Months	63%	63%	62%	63%	55%	62%
36 Months	71%	72%	72%	74%	64%	71%
42 Months	77%	78%	80%	81%	69%	78%

Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
2. Age is computed based on patient’s age on report date of the index Pap test
3. Integers have been rounded as per Statistics Canada methodology

FIGURE 5: 42-MONTH RETENTION RATE BY AGE GROUP OVER TIME, 2010 – 2014



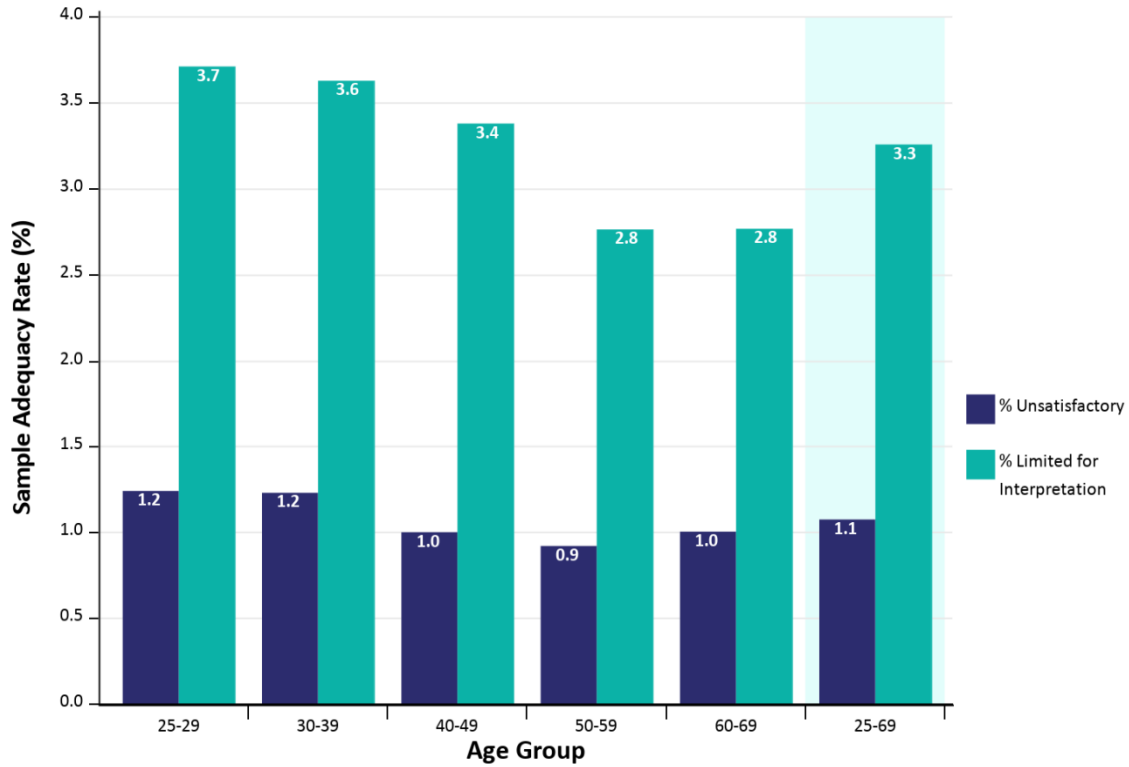
Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
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, 2017



Notes:

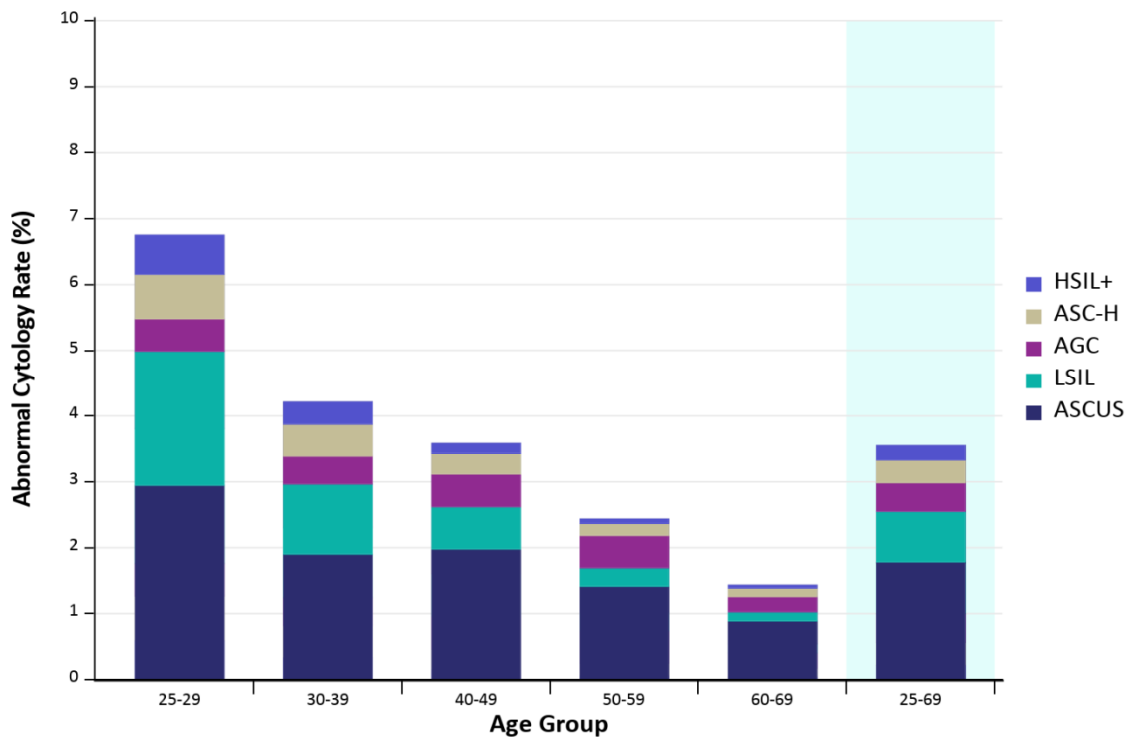
1. BC Cancer Cervix Screening data extraction date: 11/19/2018
2. Age is computed based on sample date

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 2017, 90% of Pap tests were reported within 15 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, 2017



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
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, 2017

	25-29	30-39	40-49	50-59	60-69	25-69
Patients with ASC-US or LSIL	1,995	2,550	1,985	1,230	505	8,265
Repeat in 6 months	1,615	2,140	1,635	1,040	425	6,855
(%)	81%	84%	82%	85%	84%	83%
Colposcopy	360	390	315	175	65	1,305
(%)	18%	15%	16%	14%	13%	16%
AGC, ASC-H, HSIL, AIS or carcinoma	755	1,195	835	629	235	3,650
Colposcopy	740	1,170	750	500	175	3,335
(%)	98%	98%	90%	79%	74%	91%
Other Investigation	15	20	80	135	60	315
(%)	2%	2%	10%	21%	26%	9%

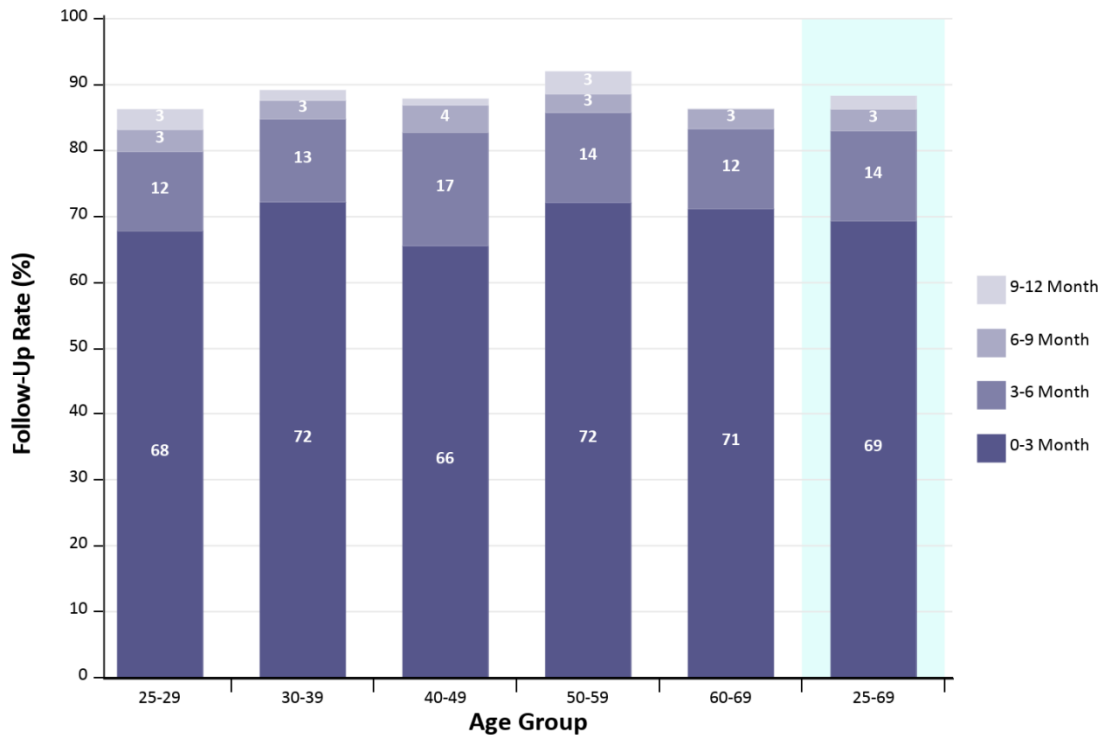
Notes:

1. CCSP data extraction date: 11/19/2018
2. Age is computed based on the date of the patient’s most severe Pap test in the year
3. Integers have been rounded as per Statistics Canada methodology

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.

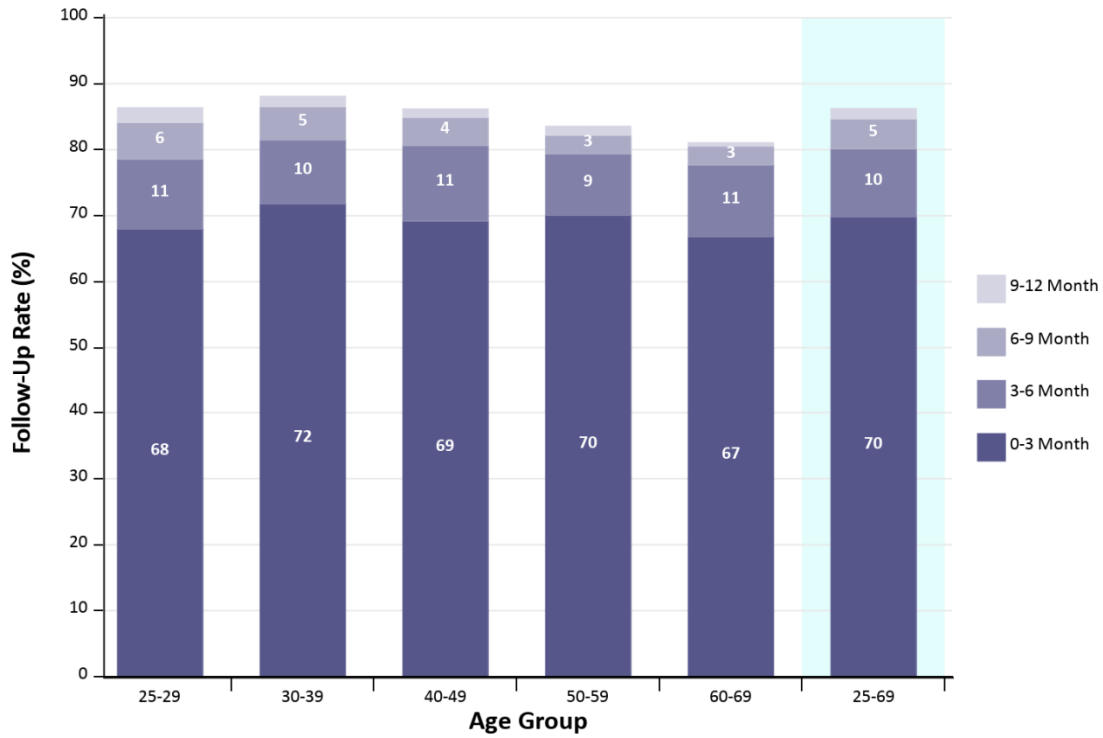
FIGURE 8: COLPOSCOPY FOLLOW-UP RATES FOR WOMEN WITH PERSISTENT ASC-US OR LSIL PAP TEST RESULT BY AGE GROUP, 2017



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
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, 2017



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
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, 2017

	ASC-US or LSIL	AGC	ASC-H or HSIL Moderate	AGC-FN, AIS or HSIL Severe
Recommended for Colposcopy	1,725	1,205	2,195	605
- with Histological Confirmation	1455 (84%)	920 (76%)	1,965 (90%)	525 (87%)

Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
2. Integers have been rounded as per Statistics Canada methodology

TABLE 6: POSITIVE PREDICTIVE VALUE, 2017

	ASC-US or LSIL	AGC	ASC-H or HSIL Moderate	AGC-FN, AIS or HSIL Severe
CIN 2 or More Severe	330 (23%)	140 (15%)	1,285 (65%)	455 (87%)
CIN 3 or More Severe	160 (11%)	120 (13%)	860 (44%)	385 (73%)
Carcinoma	0 (0%)	20 (2%)	20 (1%)	30 (6%)

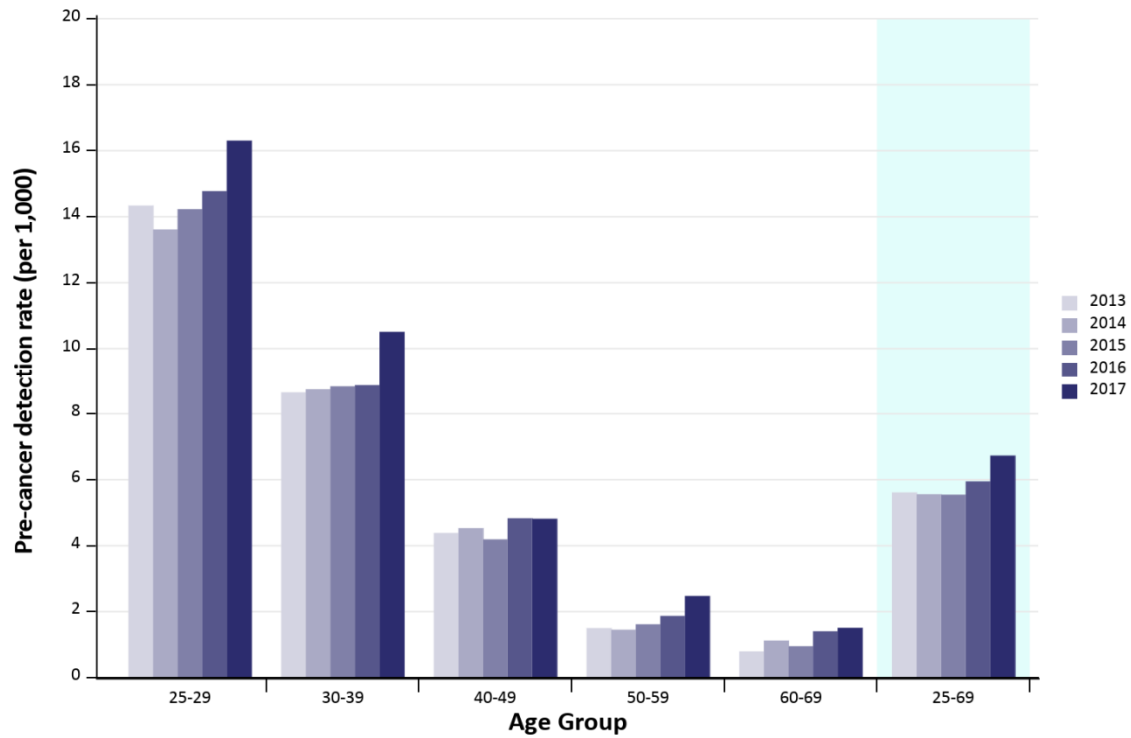
Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
2. Integers have been rounded as per Statistics Canada methodology

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 insitu (AIS).

FIGURE 10: PRE-CANCER DETECTION PER 1,000 WOMEN SCREENED BY AGE GROUP, 2017



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
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.

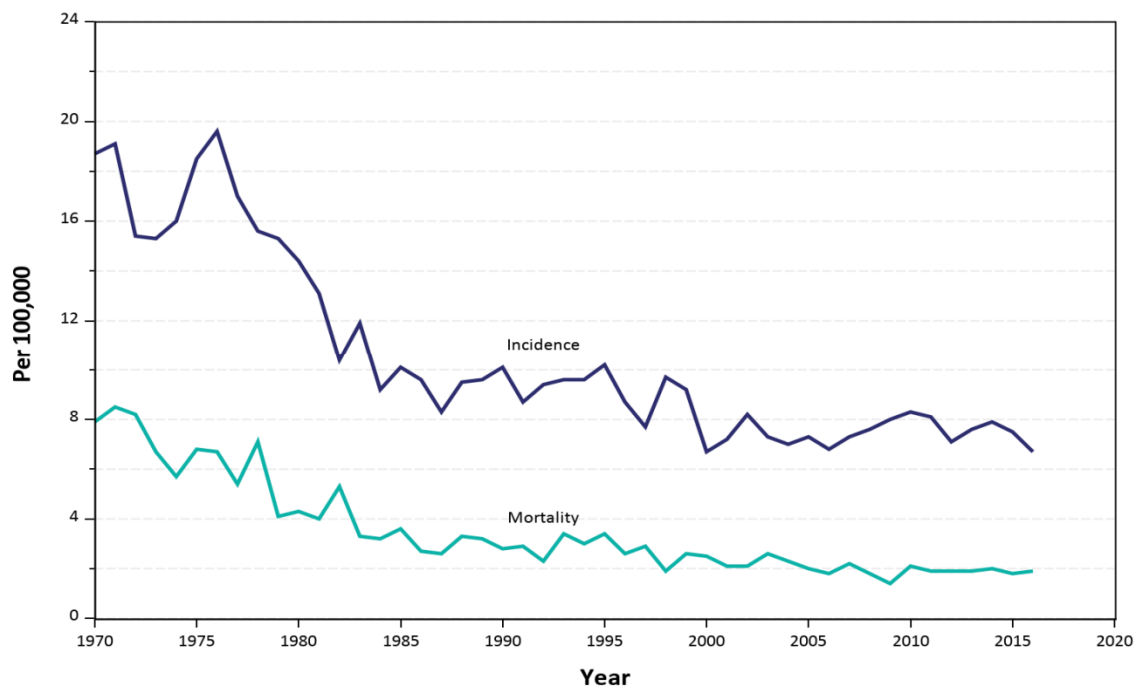
Age-Standardized Incidence Rate: weighted average of the age-range specific incidence rates, where the weights are the proportions of people in the corresponding age groups of the 2011 Canadian population (7.0/100,000, 2015).

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

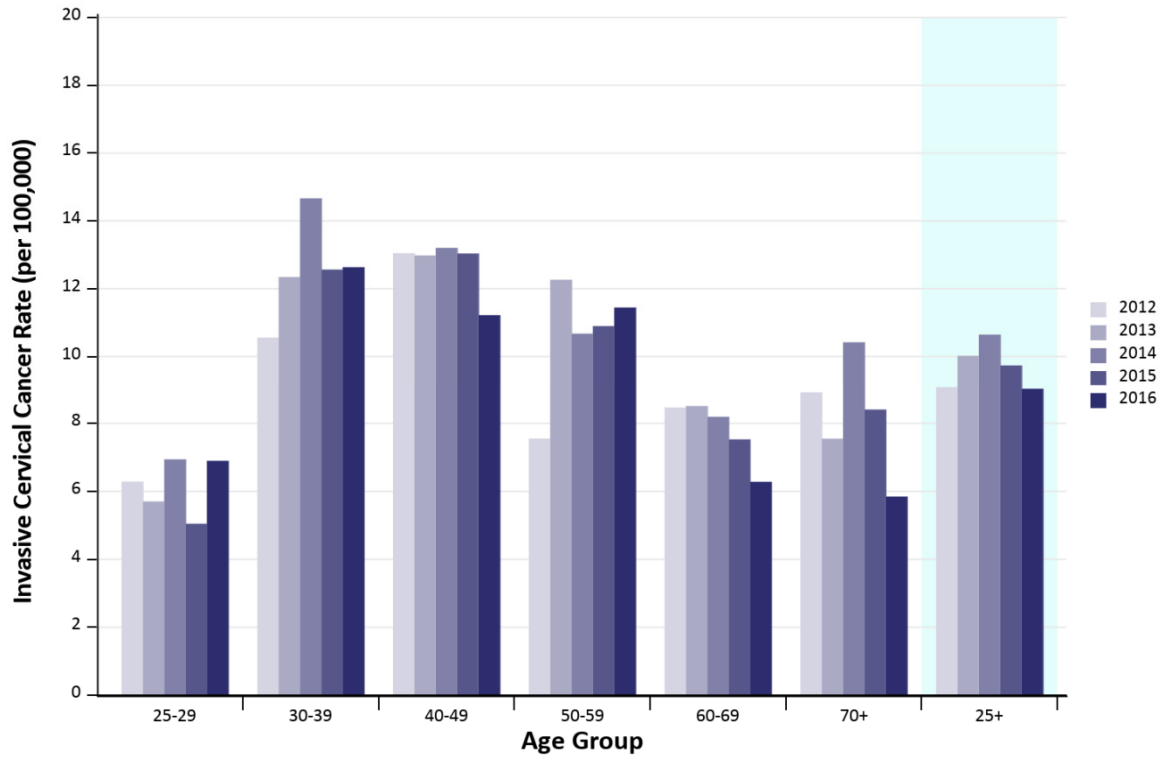


Notes:

1. Rates are standardized to the 2011 Canadian Population

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FIGURE 12: INVASIVE CERVICAL CANCER INCIDENCE PER 100,000 BY AGE GROUP, 2012 – 2016



Notes:

1. Population data source: P.E.O.P.L.E. 2018 (Sept 2018), BC STATS, Service BC, BC Ministry of Citizens' Services
2. BC Cancer Cervix Screening data extraction date: 11/19/2018
3. Age is computed based on date of diagnosis

TABLE 7: NUMBER OF INVASIVE CERVICAL CANCERS BY AGE GROUP, 2012 – 2016

		20-24	25-29	30-39	40-49	50-59	60-69	70+	20+
2016	Number of cases								
	All cell types	0	10	40	35	40	20	20	170
	Squamous cell only	0	10	30	25	25	10	10	110
	Incidence rate (per 100,000)								
	All cell types	1.28	6.90	12.64	11.22	11.45	6.28	5.85	8.71
Squamous cell only	1.28	4.39	9.55	8.73	6.98	2.98	3.25	5.81	
2015	Number of cases								
	All cell types	0	10	40	45	40	25	25	180
	Squamous cell only	5	5	30	30	25	15	15	120
	Incidence rate (per 100,000)								
	All cell types	1.95	5.05	12.57	13.04	10.90	7.53	8.41	9.42
Squamous cell only	1.30	3.79	9.42	9.31	6.15	5.14	6.39	6.53	
2014	Number of cases								
	All cell types	0	10	45	40	40	20	30	195
	Squamous cell only	0	10	30	30	25	20	25	125
	Incidence rate (per 100,000)								
	All cell types	0.65	6.94	14.67	13.21	10.68	8.20	10.42	10.24
Squamous cell only	0.65	4.42	10.20	7.99	6.74	6.41	7.30	6.88	
2013	Number of cases								
	All cell types	0	10	40	45	45	20	20	175
	Squamous cell only	5	10	25	25	30	15	10	120
	Incidence rate (per 100,000)								
	All cell types	0.66	5.70	12.35	12.98	12.27	8.51	7.55	9.64
Squamous cell only	0.66	5.07	8.45	7.55	8.84	6.29	3.96	6.44	
2012	Number of cases								
	All cell types	5	10	30	40	25	25	20	160
	Squamous cell only	0	5	25	30	20	15	20	115
	Incidence rate (per 100,000)								
	All cell types	0.66	6.29	10.56	13.05	7.56	8.47	8.92	8.72
Squamous cell only	0.00	3.77	8.25	8.90	5.52	6.54	7.06	6.36	

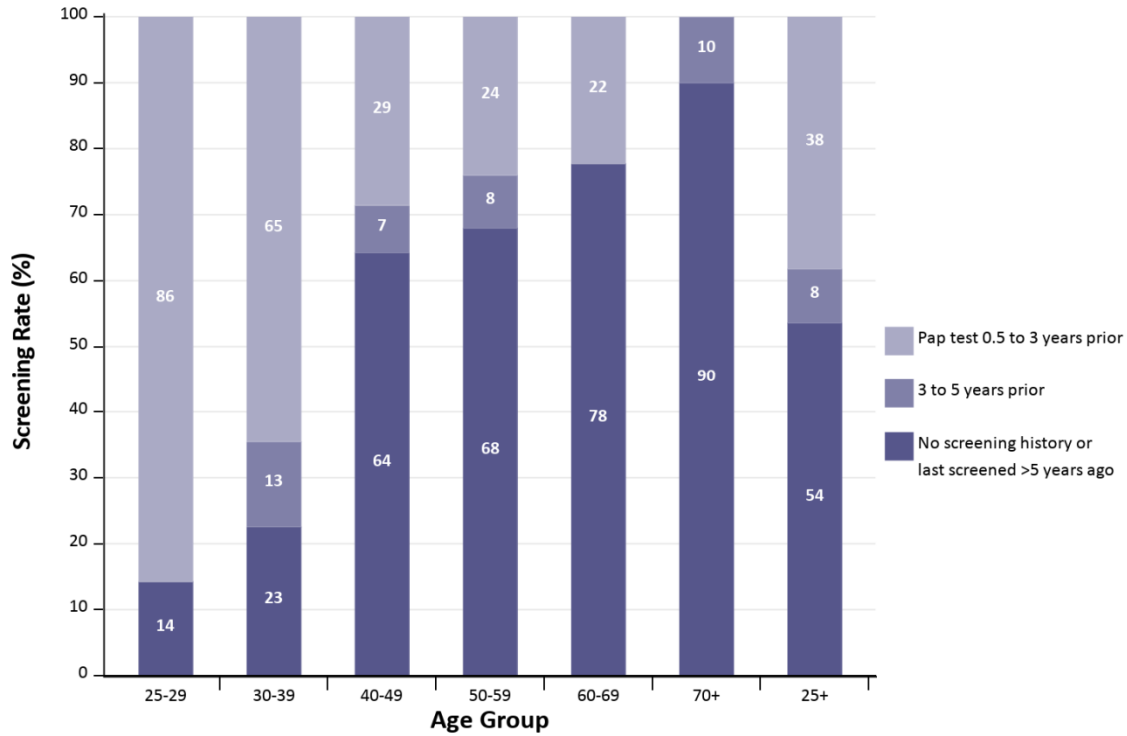
Notes:

1. Population data source: P.E.O.P.L.E. 2018 (Sept 2018), BC STATS, Service BC, BC Ministry of Citizens' Services
2. BC Cancer Cervix Screening data extraction date: 11/19/2018
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.

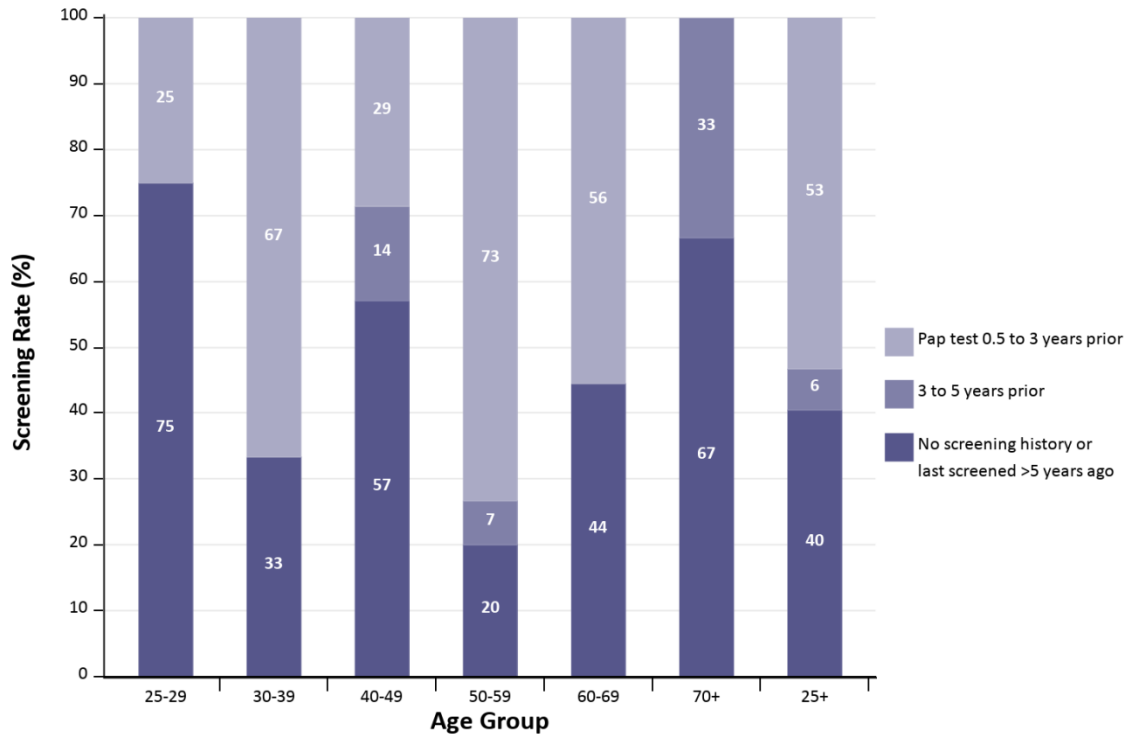
FIGURE 13: SCREENING HISTORY OF WOMEN DIAGNOSED WITH SQUAMOUS CELL CARCINOMA, 2016



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
2. Age is computed based on date of diagnosis

FIGURE 14: SCREENING HISTORY OF WOMEN DIAGNOSED WITH ADENOCARCINOMA, 2016



Notes:

1. BC Cancer Cervix Screening data extraction date: 11/19/2018
2. Age is computed based on date of diagnosis

APPENDIX – THE 2016 BETHESDA SYSTEM

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)

