BC CANCER LUNG SCREENING
Provincial Health Services Authority

BC Cancer Lung Screening
May 2022 - Dec 2023 Program Results

Lung Screening Program Data Extraction Date: July 11, 2025

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MESSAGE FROM DIRECTORS

Message from the Medical Director and Screening Operations Director

BC Cancer is proud to share the inaugural annual report for the first provincial lung screening program in Canada. This program is a result of countless contributors who have played a huge part in researching, advocating, organizing, implementing and operationalizing this program.

Lung cancer kills more people than colon, breast, and prostate cancers combined (CMAJ 2020 March 2). If lung cancer is detected in its earliest stage, the 5-year survival is 80% or more. Unfortunately, 70% of all lung cancers are diagnosed at advanced stages. At 22%, the five-year net survival for lung cancer is among the lowest of all types of cancer (Canadian Cancer Statistics, 2021).

On September 14, 2020, the Ministry of Health announced implementation of the province-wide lung cancer screening program in BC, the first in Canada. In early 2021, working group meetings began with partners in all the regional health authorities to plan for service delivery, development of policies, guidelines, standards and procedures, integration with the screening program information system, linkage with hospital systems, and production of referral, educational and promotional materials. By November 2022, through a phased approach, all BC health authorities were performing lung screenings.

The BC Cancer Lung Screening Program ("Program") has several unique features:

- It is a centralized program where all intake is completed by program navigators who assess client eligibility before referring for lung screening low dose computed tomography (LDCT).
- Eligibility is determined using a lung cancer risk prediction tool called PLCOm2012. Instead of screening everyone in a certain age group with a history of tobacco smoking, seven non-smoking parameters are used such that only those who would benefit most from screening is eligible. The risk prediction tool addresses disparity related to sex, race/ethnicity and socio-economic status rather than age and smoking history alone.
- An artificial intelligence computer-assisted reporting tool is used to automatically identify abnormal spots (nodules) in the lungs and determine the risk of lung cancer using the PanCan nodule malignancy risk prediction tool that was developed and validated in Canada. This allows individualization of the screening intervals. For example, individuals with lower risk can have routine screening every 2 years instead of annually. The AI system also allows comparison of LDCT scans at different time points and identifies changes in nodule volume instead of manual 2D measurements to guide nodule management decisions. The AI tool improves the consistency, standardization and accuracy of reporting of screening LDCT scans.

The Program would like to thank the primary care providers for their overwhelming support, and the radiologists, respirologists, thoracic surgeons, IT teams, Physicists, CT department clerical teams and technologists, health authority leadership teams and Indigenous Cancer team who have helped to make the launch a success. The BC Cancer Lung Screening Program is off to a great start in detecting lung cancer early, lowering burden of cancer and leading to better patient outcomes.

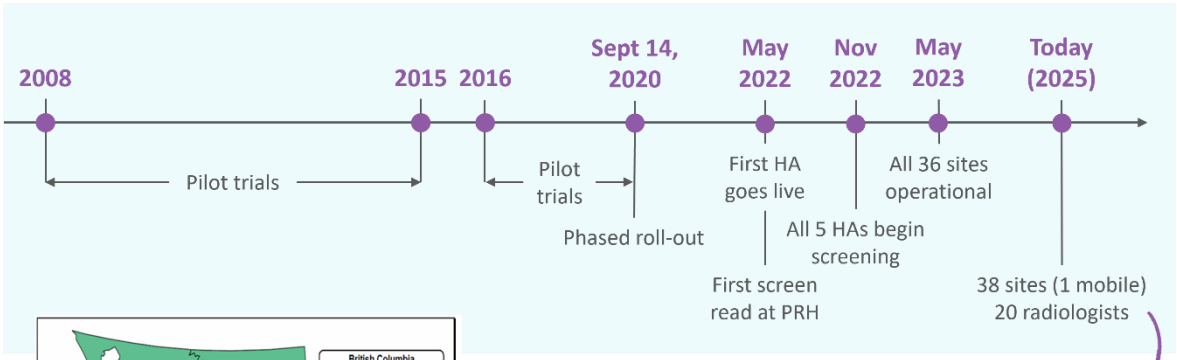
Dr. Stephen Lam, MD, FRCPC and Rableen Nagra, MA

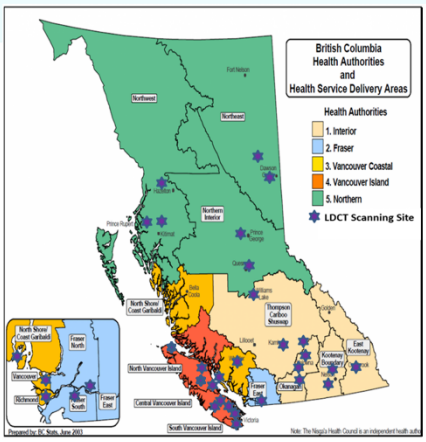
PROGRAM OVERVIEW

1. About the Lung Screening Program

Since its launch in May 2022, the Lung Screening Program ("Program") is now available at 38 screening centres (including 1 mobile unit) across BC. In an area of over 900,000 km², the Program provides screening for eligible participants between the ages of 55 and 74, who are at high-risk for developing lung cancer. The Program aims to address equity in sex and race/ethnicity.

FIGURE 1: LUNG SCREENING PROGRAM TIMELINE





Screening Sites

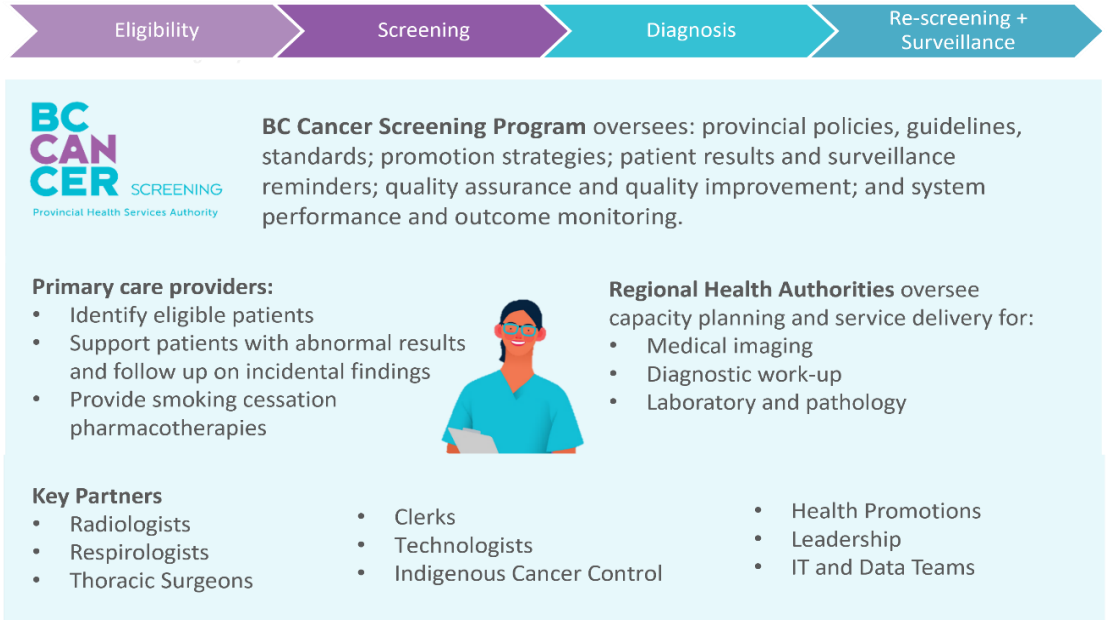
NHA	IHA	VIHA/ISLH	FHA	VCH
Prince George	Kelowna	Victoria General	Abbotsford	Vancouver (VGH)
Dawson Creek	Penticton	Victoria (Royal Jubilee)	Maple Ridge	Vancouver (UBC)
Fort St. John	Salmon Arm	Saanichton	New Westminster	North Vancouver
Prince Rupert	Williams Lake	Duncan	Surrey (JPOCC)	Sechelt
Quesnel	Kamloops	Comox Valley	Chilliwack	Whistler
Smithers	Vernon	Campbell River	Langley	Powell River
Terrace	Nelson	Nanaimo	Port Moody	
	Trail	Port Alberni		
	Cranbrook	Port Hardy		

BC Cancer Screening Programs oversee the provincial policies, guidelines, standards and protocols, and coordinates promotional strategies. The Programs' responsibilities include communicating screening results to participants and providers and ensuring screening reminders are sent in a timely manner when participants are due for their next routine screening.

The Program works with regional health authority physicists to ensure quality assurance tests are completed successfully each year. The Program collects and manages data to conduct quality improvement initiatives, system performance evaluations, and outcome monitoring and reporting.

The Program works closely alongside key partners such as primary care providers (PCPs) who identify eligible participants and support follow-up for their patients with abnormal results, incidental findings and smoking cessation. The Program also works in partnership with Regional Health Authorities who oversee capacity planning and service delivery for medical imaging, IT support, diagnostic work-up teams, pathology and cytology services.

FIGURE 2: OVERVIEW OF THE COLLABORATIVE ONGOING EFFORTS MADE WITH KEY PARTNERS

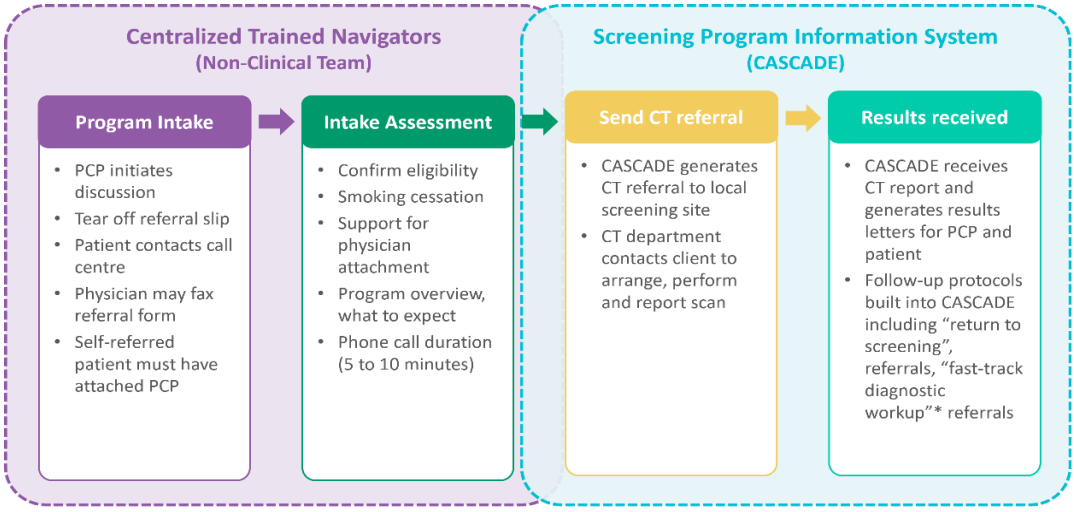


Screening Workflow

The lung screening pathway consists of six stages:

1. **Program Intake:** Primary screening population identified and referred to the Program (either through PCP or self-referral).
2. **Intake Assessment:** Individual must meet eligibility criteria.
3. **LDCT Referral:** Eligible individual receives a screening LDCT scan.
4. **Results Distribution:** Participant and their PCP receive results notices from Program.
5. **Facilitated Diagnostic Referral:** Participant with abnormal screen result is referred to a diagnostic facility for follow-up procedures and investigation; referral is facilitated by Program on behalf of participant's PCP. There is no need for the participant to visit their PCP for a requisition.
6. **Retention:** Screening reminder issued at appropriate interval; returning participant must meet eligibility criteria to continue with screening.

FIGURE 3: LUNG SCREENING WORKFLOW



*Screening Program initiates fast-track referral to a designated diagnostic team

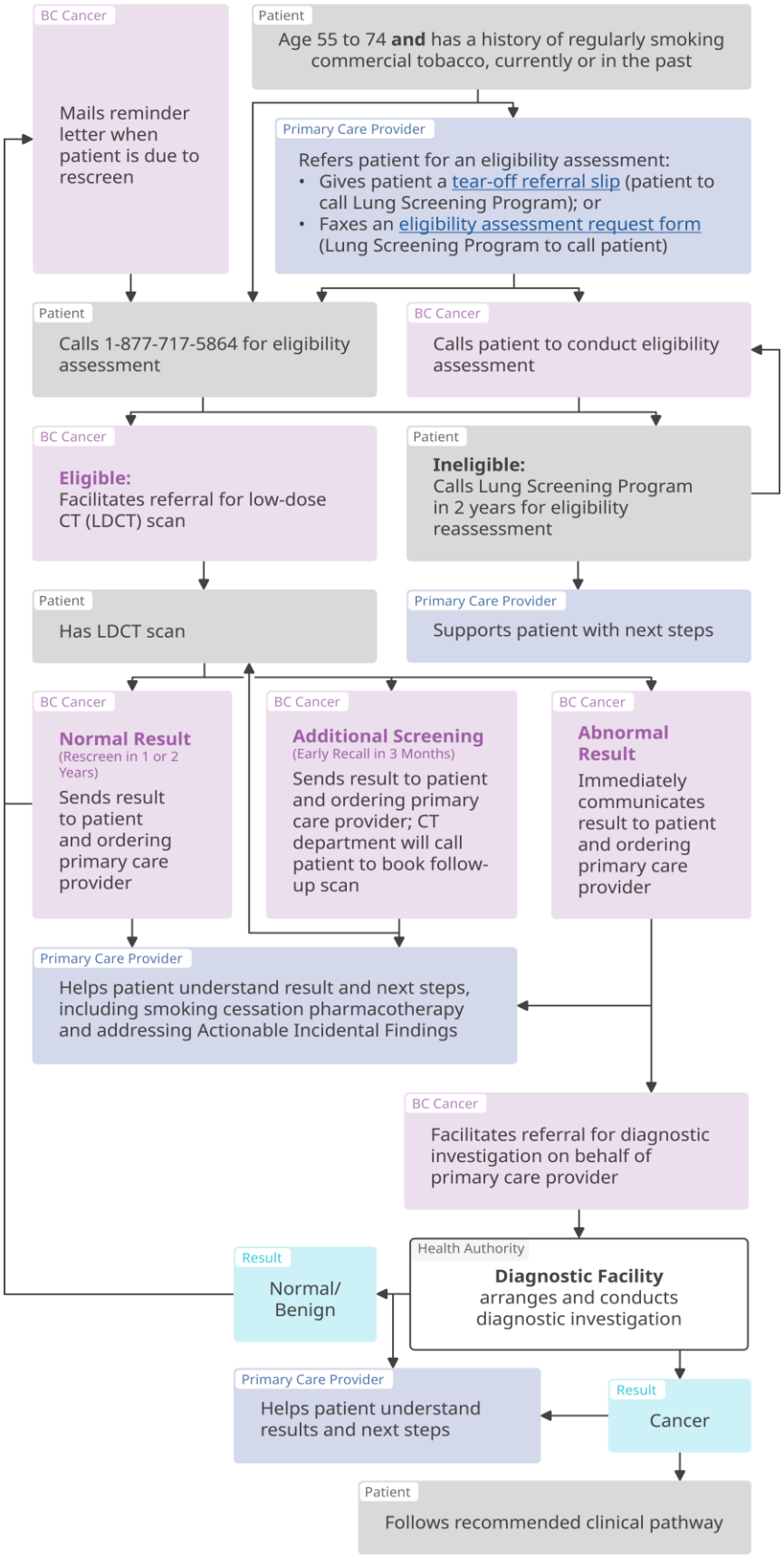
"FAST TRACK" – Facilitated Referral to Diagnostic Imaging for Work-Up of Lesions Suspicious for Lung Cancer

On average, approximately 4% of participants will require a referral to a respirologist and or a thoracic surgeon for diagnostic work-up and about half of them will require a biopsy procedure. The Program facilitates a fast track referral on behalf of their PCPs who will be asked to forward relevant medical history to the diagnostic work-up team. The term "Fast Track" refers to the reduced time it takes for a referral to be sent to a diagnostic facility; there is no need for the screening participant to visit their PCP after an abnormal result to receive a requisition as the referral is facilitated by the Program.

Fast Track Overview

- At the time of screening, participants are informed that if further tests are required, they will be contacted directly to book their appointment
- If further testing is required, a referral is sent to a Fast Track diagnostic facility to arrange the work-up
- The Program notifies the participant's PCP of the results and where their patient has been referred for additional testing
- The diagnostic facility makes every effort to provide an appointment within two weeks of receiving the referral
- Standardization of the Fast Track referral system ensures that all participants benefit from the shortened time between an initial abnormal screening result and the first appointment for diagnostic assessment

FIGURE 4: LUNG SCREENING PATHWAY



2. Quality Assurance

CT Scanners and Image Acquisition Protocol

As of 2023, health authority medical physicists have been required to conduct annual quality assurance (QA) testing on all CT scanners that are used in lung screening to ensure scanner settings are optimal and can produce high quality images and accurate measurements of nodules.

The Program has supplied each health authority with a Quantitative Imaging Biomarkers Alliance (QIBA) CTLX1 Phantom unit to be used in testing and calibration of scanners. Accumetra, LLC, the QA testing partner who created the Phantom, provides recommended kernel reconstruction settings for different brands and models of scanners. The Phantom tests verify that images are high resolution, and that the measurements performed on all lung screening CT scans are accurate throughout the full field of view: in the centre and periphery of the lungs. Medical physicists conduct tests annually with each scanner using the Phantom unit. The test images are evaluated by Accumetra who produces a report showing pass or fail on aspects such as 3D spatial resolution, 3D reconstruction slice thickness, noise, and spatial warping based on the images. Reports are sent to the Program for tracking.

Screening Radiologist Standards

Prior to reading and reporting screening LDCTs for the Program, program radiologists are required to review training modules:

1. Nodule Types, Measurement and Documentation
2. Management Recommendation and Standardized Reporting of Screen Detected Lung Nodules
3. Reporting of Incidental Findings

Following in-service training for the AI computer-assisted reporting tool, a radiologist must report 11 test cases. The reports are reviewed by the Program Medical Imaging Lead and Program Medical Director. Once all training and testing is complete, the radiologist will then become a program screener.

A multi-disciplinary case review is conducted quarterly to examine difficult cases and exchange knowledge on LDCT interpretation and management recommendation.

Annually, each program screener receives a screening statistics report highlighting key metrics to guide practice optimization. Metrics include annual screen volume, normal vs abnormal call rate, and cancer detection rate.

3. Promotion and Education Activities

2022

The Health Promotion team communicated the launch of the Lung Screening Program through a series of tactics tailored to the intended screening population/public and primary care providers.

The Program's launch was promoted through:

- Media outreach;
- An added section for Lung Screening on screeningbc.ca with brochures, animated explanation videos, and patient testimonial videos;

- Social media on platforms such as Facebook and Twitter, including digital advertising based on user's location and age; and
- BC Cancer-led and Health Authority-specific campaigns (e.g., First Nations Health Authority campaign directed at First Nations populations).

To raise awareness among health care providers about the Program, eligibility criteria, and referral process, information was shared through:

- A health care provider mailing, where information packages enclosed with a cover letter, resource guide, and brochures were mailed to health care providers;
- News stories and articles via:
    - BC Medical Journal;
    - Family Practice Oncology Network (FPON);
    - Doctors of BC;
    - Divisions of Family Practice; and
    - Internal PHSA and BC Cancer newsletters.
- Webinars and presentations.

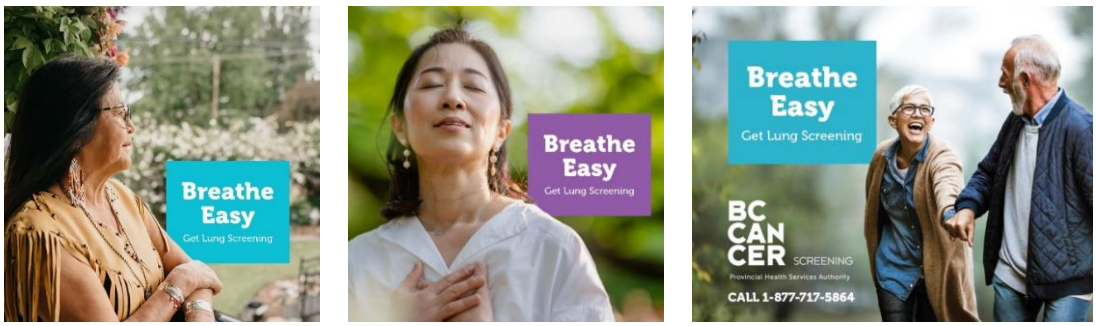
2023

In addition to continuing to share the materials developed in 2022, new promotional activities in 2023 included:

- Partnering with community organizations to develop customized presentations and culturally-sensitive approaches to increase understanding and interest in lung screening;
- Leveraging the BC Cancer Screening and Prevention Facebook page to promote relevant information about lung screening, including an open platform for information sharing; and
- Developing and publishing a Screening Guidelines resource for health care providers, with a section outlining lung screening guidelines and management of LDCT results.

In celebration of Lung Cancer Awareness Month in November 2023, a "Breathe Easy" campaign consisting of digital and print media was launched to encourage British Columbians to get lung screening. Figure 5 features examples of the campaign assets.

FIGURE 5: LUNG CANCER AWARENESS MONTH 2023 CAMPAIGN ASSETS



PROGRAM RESULTS

Program Evaluation Data is collected and analyzed on an ongoing basis to monitor the Program's effectiveness and to identify areas for improvement. Lung Screening Program performance indicators, quality standards and systems evaluation are based on national and international guidelines and recommendations. Age-specific lung cancer incidence and mortality rates are provided by the BC Cancer Registry.

This section provides outcomes for various indicators including coverage, participation, follow-up, quality of screening, detection, and disease extent at diagnosis. The indicators used are adapted from the Canadian Partnership Against Cancer guidelines (Lung Cancer Screening Indicators: Data Specifications. July 2024).

1. Program Uptake

Key Highlights

- Of all candidates aged 55 to 74 who underwent eligibility assessments between May 2022 and Dec 2023, 80% were either directly referred or recommended to participate in screening by their PCP; the remaining candidates found out about lung screening through friends and family, the BC Cancer website, advertisements, or social media.
- Of the total assessed, 77% were found eligible and referred to a screening centre for a screening LDCT scan, and 78% of this group received their scan.
- Average age of the eligible participants is around 65 years of age
- 50% of them have an education level, a proxy for socioeconomic status, of high school or less
- Smoking prevalence rate at time of assessment was 55%

TABLE 1: ELIGIBILITY ASSESSMENT BREAKDOWN

Total Individuals Assessed	**15,229**
Provider-referred	12,215 (80%)
Self-referred	3,014 (20%)
Total Individuals Eligible	**11,660 (77%)**
Average Age	65 years
High School Education or Less	50%
Smoking at Assessment Time	55%
Total Individuals Screened	**9,057 (78%)**

Breakdown	Eligible	BC Population
Indigenous	**6%**	2%
Non-Indigenous	**94%**	98%
Male	**54%**	48%
Female	**46%**	52%

Table 2 shows the **eligibility rate** (the percentage of BC individuals assessed and deemed eligible to receive a LDCT scan) by sex, age, and geography.

TABLE 2: ELIGIBILITY RATE

	Assessed	Eligible
All	15,229	**11,660 (77%)**
By Sex		
Female	7,178	**5,344 (74%)**
Male	8,049	**6,315 (78%)**
Other	2	**1 (50%)**
By Age		
55-59	2,851	**1,712 (60%)**
60-64	4,379	**3,299 (75%)**
65-69	4,665	**3,818 (82%)**
70-74	3,334	**2,831 (85%)**
By Geography		
Urban	12,650	**9,620 (76%)**
Rural	2,483	**1,968 (79%)**
Unknown	96	**72 (75%)**

Screen Rate (the percentage of BC individuals who were eligible for lung screening and received at least one screening LDCT scan) by sex, age, and geography is presented in Table 3.

TABLE 3: SCREEN RATE 2022-2023

	Eligible	Screened
All	11,660	**9,057 (78%)**
By Sex		
Female	5,344	**4,139 (77%)**
Male	6,315	**4,917 (78%)**
Other	1	**1 (100%)**
By Age		
55-59	1,712	**1,311 (77%)**
60-64	3,299	**2,550 (77%)**
65-69	3,818	**2,974 (78%)**
70-74	2,831	**2,222 (78%)**
By Geography		
Urban	9,620	**7,465 (78%)**
Rural	1,968	**1,536 (78%)**
Unknown	72	**56 (78%)**

Retention Rate is the percentage of BC individuals who were recommended for an annual routine screen in 2022 and completed a subsequent LDCT scan by end of 2023[1]. Table 4 summarizes the retention rate by sex, age, and geography in 2023.

TABLE 4: RETENTION RATE 2023

	Recommended Annual Screen	Subsequent Screen Completed
All	290	**228 (79%)**
By Sex		
Female	138	**112 (81%)**
Male	152	**116 (76%)**
Other	0	
By Age		
55-59	21	**18 (86%)**
60-64	75	**6 (80%)**
65-69	103	**77 (75%)**
70-74	91	**73 (80%)**
By Geography		
Urban	232	**184 (79%)**
Rural	58	**44 (76%)**
Unknown	0	

[1] *Subsequent scan completed within 1-month pre- and 6-month post-recommended screening due date*

Of individuals who reported they were smoking at previous assessment, the percentage who reported having quit smoking since previous screening assessment, reported as the **smoking abstinence rate**, is presented in Table 5.

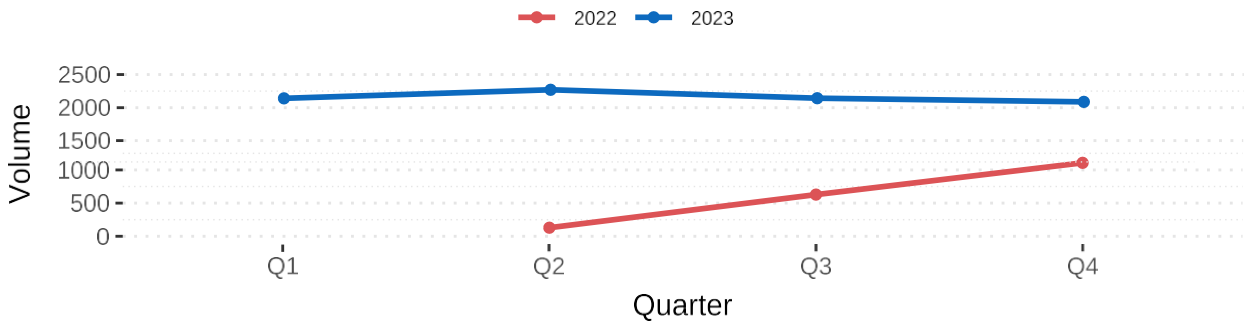
TABLE 5: SMOKING ABSTINENCE RATE

	Smoking at Previous Screening Assessment	Quit Smoking at Subsequent Screening Assessment
All	456	**125 (27%)**
By Sex		
Female	238	**63 (26%)**
Male	218	**62 (28%)**
Other	0	
By Age		
55-59	34	**5 (15%)**
60-64	128	**35 (27%)**
65-69	182	**58 (32%)**
70-74	112	**27 (24%)**
By Geography		
Urban	417	**115 (28%)**
Rural	39	**10 (26%)**
Unknown	0	**0**

2. Screening Volume

The Program performed 1,864 LDCT scans in its first year (2022) and increased to 8,642 scans in 2023 when the 36 lung screening centres were fully operational.

FIGURE 6: SCREENING VOLUME BY YEAR



The screen types are defined as:

- **Baseline:** First reported screen
- **Early Recall:** Follow-up screen recommended for 3-months after last LDCT (surveillance)
- **Return to Screen 1-year:** Subsequent routine screen recommended for 1 year after last LDCT (low risk)
- **Return to Screen 2-years[1]:** Subsequent routine screen recommended for 2 years after last LDCT (very low risk)

FIGURE 7: SCREENING VOLUME BY SCREEN TYPE[2]

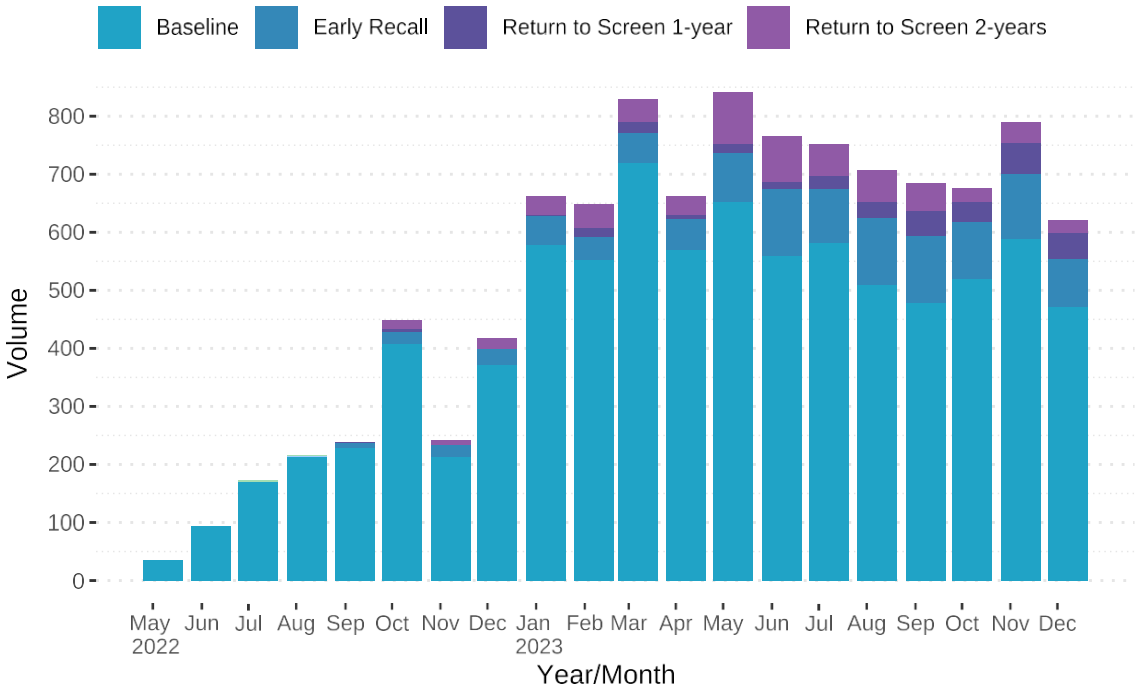


TABLE 6: SCREENING VOLUME BY SCREEN TYPE[2]

Screen Type	2022	2023	Total
Baseline	1,736	6,785	8,521
Early Recall	78	1,008	1,086
Return to Screen 1-year	7	299	306
Return to Screen 2-years	43	550	593
Total	**1,864**	**8,642**	**10,506**

[1] *Includes participants that rolled into the Program from the Lung Screening Trials*

[2] *Volume represents total LDCT scans (baseline, routine annual and biennial screens, and early recalls) completed on the total eligible*

FIGURE 8: SCREENING VOLUME BY HEALTH AREA[1]

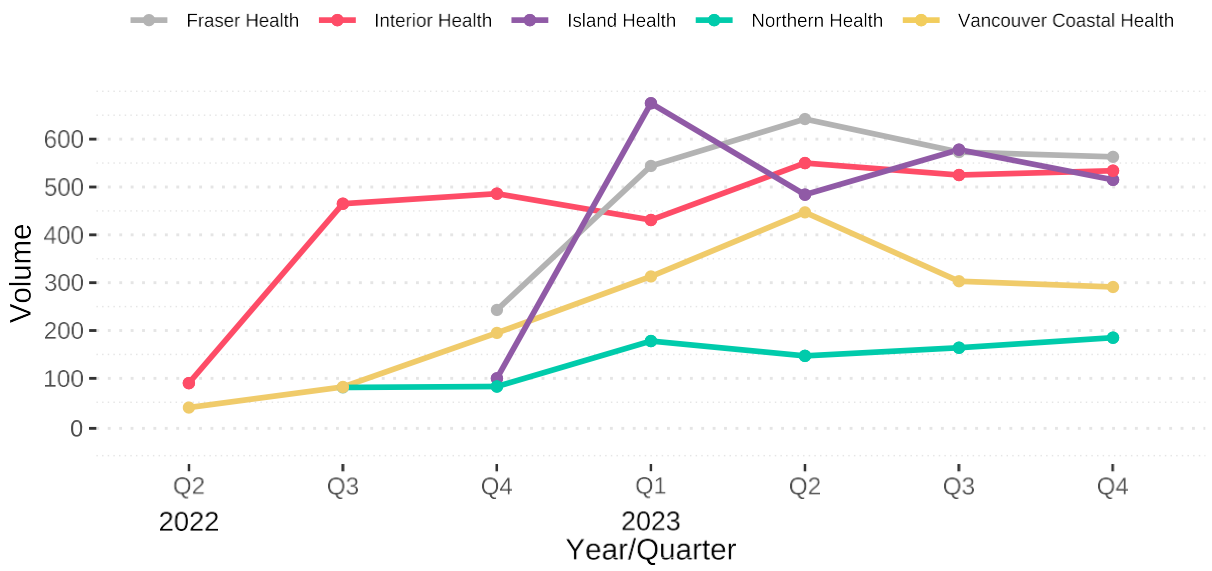


TABLE 7: SCREENING VOLUME BY HEALTH AREA[1]

Health Area	2022	2023	Total
Fraser Health	243	2,322	2,565
Interior Health	1,041	2,040	3,081
Island Health	100	2,252	2,352
Northern Health	164	674	838
Vancouver Coastal Health	316	1,354	1,670
Total	**1,864**	**8,642**	**10,506**

[1] *Volume represents total LDCT scans (baseline, routine annual and biennial screens, and early recalls) completed on the total eligible*

3. Individual LDCT Outcomes

The possible reported outcomes after an LDCT scan are:

- **Normal:** Routine LDCT scan recommended
  - ***No Concerning Findings:*** Biennial Routine (Return to Screen in 2-years)
  - ***Low Chance of Cancer:*** Annual Routine (Return to Screen in 1-year)
- **Additional Screening Required**: Scan shows findings that may be related to inflammation, infection or a need to monitor an area more closely
  - **Early Recall**: Return to Screen in 3 months. Following a baseline LDCT, approximately 13% of participants require an early recall LDCT for findings mostly related to infection or inflammation with a small chance of malignancy. The Program facilitates early recall referrals on behalf of PCPs for their patients who require monitoring.
- **Abnormal/Suspicious**: A nodule(s) requires further investigation
  - **Follow-up Required:** Diagnostic work-up recommended which may include more scans or a biopsy

TABLE 8: INDIVIDUAL LDCT OUTCOME

	Total Screened	Test Outcomes Breakdown			
		Biennial Routine	Annual Routine	Early Recall	Follow-up Required
All	**9,422**	6,419 (68%)	1,450 (15%)	1,190 (13%)	363 (4%)
By Sex					
Female	**4,327**	2,806 (65%)	691 (16%)	629 (15%)	201 (5%)
Male	**5,094**	3,612 (71%)	759 (15%)	561 (11%)	162 (3%)
Other	**1**	1 (100%)			
By Age					
55-59	**1,277**	970 (76%)	153 (12%)	129 (10%)	25 (2%)
60-64	**2,603**	1,852 (71%)	375 (14%)	300 (12%)	76 (3%)
65-69	**3,135**	2,094 (67%)	504 (16%)	403 (13%)	134 (4%)
70-74	**2,407**	1,503 (62%)	418 (17%)	358 (15%)	128 (5%)
By Geography					
Urban	**7,745**	5,287 (68%)	1,192 (15%)	966 (12%)	300 (4%)
Rural	**1,627**	1,098 (67%)	253 (16%)	217 (13%)	59 (4%)
Unknown	**50**	34 (68%)	5 (10%)	7 (14%)	4 (8%)

Invasive Procedures Rate is the percentage of individuals who received an invasive procedure within 3 months following a routine LDCT scan. Table 9 presents this rate by sex, age, screen type, and geography:

TABLE 9: INVASIVE PROCEDURES WITHIN 3 MONTHS OF A ROUTINE LDCT

	Screened	Received Invasive Procedure
All	9,422	**153 (2%)**
By Sex		
Female	4,327	**88 (2%)**
Male	5,094	**65 (1%)**
Other	1	
By Age		
55-59	1,277	**13 (1%)**
60-64	2,603	**3 (1%)**
65-69	3,135	**57 (2%)**
70-74	2,407	**53 (2%)**
By Screen		
Baseline	8,532	**142 (2%)**
Subsequent	890	**11 (1%)**
By Geography		
Urban	7,745	**123 (2%)**
Rural	1,627	**27 (2%)**
Unknown	50	**3 (6%)**

Table 10 presents the **Cancer Detection Rate** (the number of lung cancers detected per 1,000 screened participants) based on sex, age, screen type, and geography.

TABLE 10: CANCER DETECTION RATE

	Screened	Cancer Diagnosis	Cancer Detection Rate (per 1,000)
All	9,422	154	**16.3**
By Sex			
Female	4,327	87	**20.1**
Male	5,094	67	**13.2**
Other	1	0	
By Age			
55-59	1,277	12	**9.4**
60-64	2,603	32	**12.3**
65-69	3,135	56	**17.9**
70-74	2,407	54	**22.4**
By Screen			
Baseline	8,532	144	**16.9**
Subsequent	890	10	**11.2**
By Geography			
Urban	7,745	131	**16.9**
Rural	1,627	22	**13.5**
Unknown	50	1	**20**

The **Positive Predictive Value (PPV)** represents the percentage of individuals with an abnormal LDCT result who were diagnosed with lung cancer after completion of diagnostic work-up. Table 11 summarizes the PPV by sex, age, screen type, and geography.

TABLE 11: POSITIVE PREDICTIVE VALUE

	Diagnostic Work-ups	Cancer Diagnosis	Cancer Type		Positive Predictive Value (%)
			Small Cell	Non-small Cell	
All	363	154	7	147	**42.4**
By Sex					
Female	201	87	6	81	**43.3**
Male	162	67	1	66	**41.4**
Other	0				
By Age					
55-59	25	12	1	11	**48**
60-64	76	32		32	**42.1**
65-69	134	56	4	52	**41.8**
70-74	128	54	2	52	**42.2**
By Screen					
Baseline	326	144	7	137	**44.2**
Subsequent	37	1		10	**27**
By Geography					
Urban	300	131	6	125	**43.7**
Rural	59	22	1	21	**37.3**
Unknown	4	1		1	**25**

Table 12 summarizes the **Stage Distribution** of non-small cell lung cancers that were detected. The stage classification is according to TNM reference[1].

TABLE 12: STAGE DISTRIBUTION OF DETECTED NON-SMALL CELL LUNG CANCERS

	Non-Small Cell Cancer	Stage				
		0	I	II	III	IV
All	**147**	1 (1%)	93 (63%)	17 (12%)	22 (15%)	14 (10%)
By Sex						
Female	**81**	1 (1%)	53 (65%)	13 (16%)	9 (11%)	5 (6%)
Male	**66**		40 (61%)	4 (6%)	13 (20%)	9 (14%)
Other	**0**					
By Age						
55-59	**11**		8 (73%)	2 (18%)	1 (9%)	
60-64	**32**		18 (56%)	5 (16%)	5 (16%)	4 (13%)
65-69	**52**	1 (2%)	34 (65%)	5 (10%)	6 (12%)	6 (12%)
70-74	**52**		33 (63%)	5 (10%)	10 (19%)	4 (8%)
By Screen						
Baseline	**137**	1 (1%)	84 (61%)	16 (12%)	22 (16%)	14 (10%)
Subsequent	**10**		9 (90%)	1 (10%)		
By Geography						
Urban	**125**	1 (1%)	77 (62%)	14 (11%)	20 (16%)	13 (10%)
Rural	**21**		16 (76%)	2 (10%)	2 (10%)	1 (5%)
Unknown	**1**			1 (100%)		

[1]Rami-Porta R, Nishimura KK, Giroux DJ, Detterbeck F, et al. ; Members of the IASLC Staging and Prognostic Factors Committee and of the Advisory Boards, and Participating Institutions. The International Association for the Study of Lung Cancer Lung Cancer Staging Project: Proposals for Revision of the TNM Stage Groups in the Forthcoming (Ninth) Edition of the TNM Classification for Lung Cancer. J Thorac Oncol. 2024 Jul;19(7):1007-1027. doi: 10.1016/j.jtho.2024.02.011. Epub 2024 Mar 4. PMID: 38447919.

Wait Time for Definitive Diagnosis is defined as the weeks between the date of an abnormal LDCT scan and the date of a pathologically and/or cytologically confirmed diagnosis within 6 months. Figure 8 and Table 13 show the wait time for definitive diagnosis by geography.

FIGURE 9: WAIT TIME FOR DEFINITIVE DIAGNOSIS

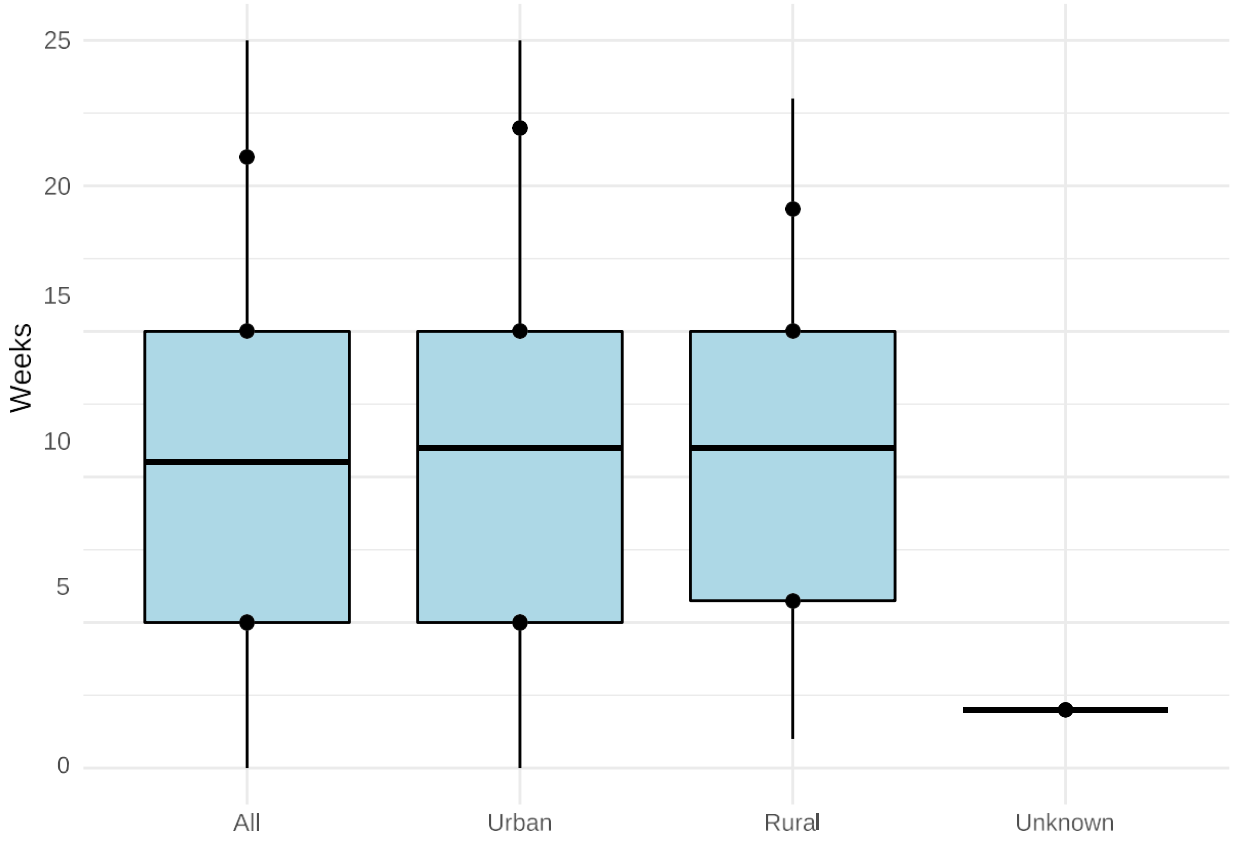
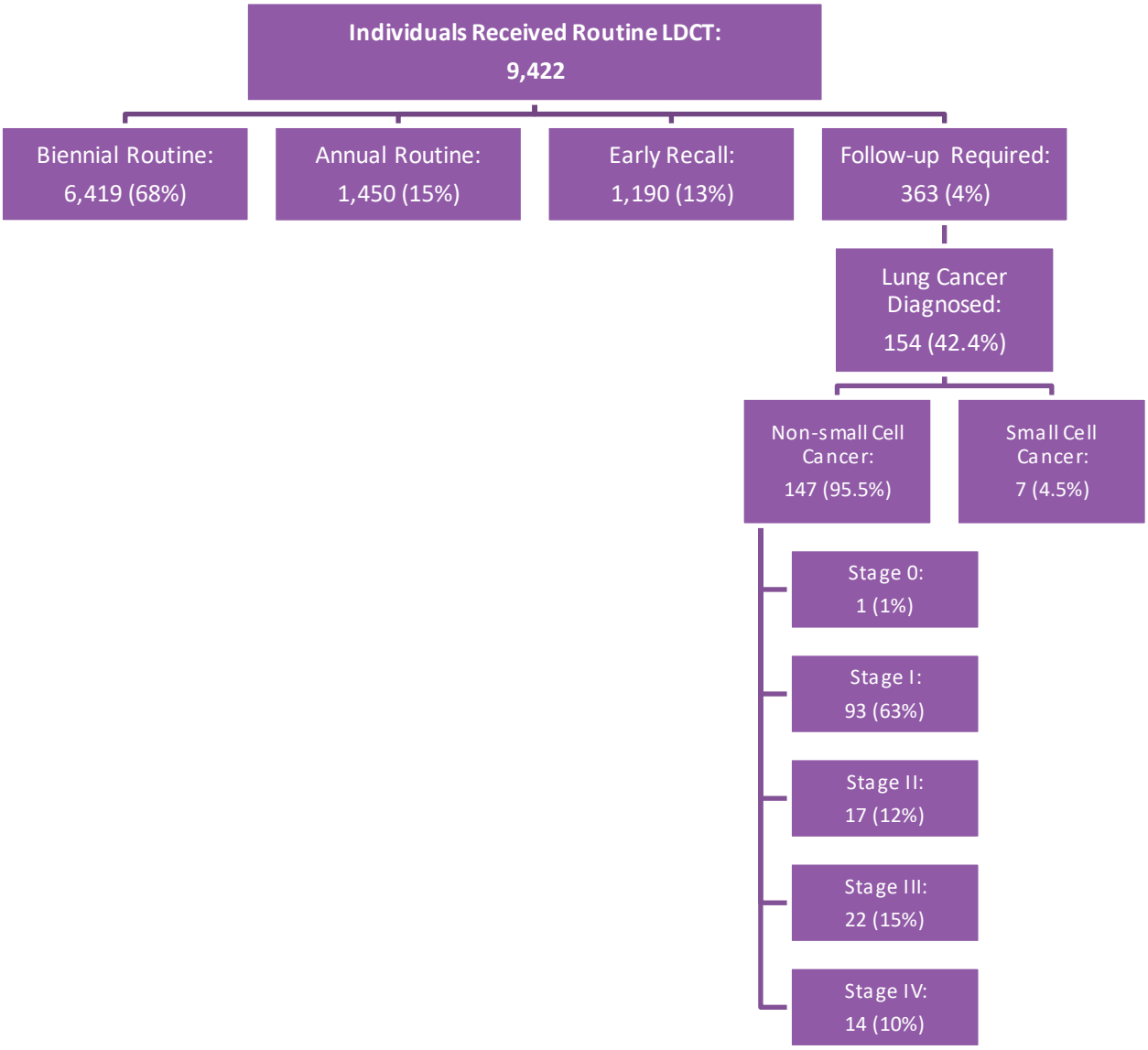


TABLE 13: WAIT TIME FOR DEFINITIVE DIAGNOSIS OF NON-SMALL CELL LUNG CANCER[1]

	Definitive Cancer Diagnosis	Median (weeks)	90th percentile (weeks)
All	132	10	21
By Geography			
Urban	111	11	22
Rural	20	10	19
Unknown	1	2	2

[1] *This indicator reports a different lung cancer count compared to other indicators because it requires a six-month time frame between screening and diagnosis in its calculation*

FIGURE 10: SCREENING OUTCOME SUMMARY 2022-2023



FUTURE OUTLOOK

1. Outreach

Program has been engaging with jurisdictions to share the lessons learned so that other jurisdictions can continue to work and establish their own lung screening programs.
The health promotions team has done a tremendous job in engaging PCPs to understand knowledge gaps in lung screening and integrate their suggestions to improve the screening uptake, retention, and management of tobacco dependency and incidental findings.

2. Awards

2023 Leading Practice Award from the Health Standards Organization for launching the first screening program for lung cancer in Canada.

3. Research

A geospatial mapping project is ongoing with the following objectives:

- To identify the distribution of lung cancer patients in BC between July 1, 2022, and June 30, 2023
- To determine the proportion of who would have been eligible for screening if screening were available prior to clinical diagnosis of lung cancer
- To apply geospatial mapping to BC population based on collected data analysis to improve outreach strategy and address disparities related to geography and rurality

APPENDICES

1. Glossary

Eligibility Rate

Percentage of BC individuals assessed and deemed eligible to receive a LDCT scan

$$\text{Eligibility Rate} = \frac{\text{Individuals eligible for LDCT scan}}{\text{Individuals assessed}} \times 100$$

Screen Rate

Percentage of BC individuals who were eligible for lung screening and received at least one screening LDCT scan

$$\text{Screen Rate} = \frac{\text{Individuals completed at least one LDCT scan}}{\text{Individuals eligible for LDCT scan}} \times 100$$

Retention Rate

Percentage of BC individuals who were recommended for an annual routine screen in 2022 and completed a subsequent LDCT scan

$$\text{Retention Rate} = \frac{\text{Individuals completed a subsequent LDCT scan}}{\text{Individuals recommended for an annual routine screen}} \times 100$$

Smoking Abstinence Rate

Percentage of individuals who reported having quit smoking since previous screening assessment

$$\text{Smoking Abstinence Rate} = \frac{\text{Individuals who reported having quit smoking}}{\text{Individuals who reported smoking previously}} \times 100$$

Invasive Procedures Rate

Percentage of individuals who received an invasive procedure within 3 months following a routine LDCT scan

$$\text{Invasive Procedures Rate} = \frac{\text{Individuals who received an invasive procedure}}{\text{Individuals who had a routine LDCT scan}} \times 100$$

Cancer Detection Rate

The number of lung cancers detected per 1,000 screened participants

$$\text{Cancer Detection Rate} = \frac{\text{Individuals diagnosed with lung cancer}}{\text{Individuals completed a routine LDCT scan}} \times 1{,}000$$

Positive Predictive Value

Percentage of individuals with an abnormal LDCT result who were diagnosed with lung cancer after completion of diagnostic work-up

$$\text{Positive Predictive Value} = \frac{\text{Individuals diagnosed with lung cancer}}{\text{Individuals with an abnormal LDCT result}} \text{ x } 100$$

2. Acknowledgements

The Lung 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 promoting the benefits of screening
- Dedicated and highly trained staff to perform and interpret the screening LDCTs
- Primary care providers and medical specialists to provide diagnostic follow-up and treatment
- Health Authority screening centres and diagnostic facilities providing space and personnel to support lung screening LDCTs and the relevant follow-up tests.

We would like to thank the following organizations for their ongoing support (alphabetical):

- BC Cancer Foundation
- BC Radiological Society
- Canadian Cancer Society
- Canadian Partnership Against Cancer
- College of Physicians and Surgeons of BC
- Doctors of BC
- Divisions of Family Practice
- Society of General Practitioners
- University of British Columbia

3. Publications and Presentations

a) Publications

- Lam S, Sam J, Lui J, Zhang Y, Mayo J. BC Cancer Lung Screening Program: Insights on a risk model–based approach for primary care providers. Br Columbia Med J. 2023 Apr;65(3):84-87.
- Simkin J, Khoo E, Darvishian M, Sam J, Bhatti P, Lam S, Woods RR. Addressing Inequity in Spatial Access to Lung Cancer Screening. Curr Oncol. 2023 Aug 31;30(9):8078-8091.
- Lam S, Bai C, Baldwin DR, Chen Y, Connolly C, de Koning H, Heuvelmans MA, Hu P, Kazerooni EA,
- Lancaster HL, Langs G, McWilliams A, Osarogiagbon RU, Oudkerk M, Peters M, Robbins HA, Sahar L, Smith RA, Triphuridet N, Field J. Current and Future Perspectives on Computed Tomography Screening for Lung Cancer: A Roadmap From 2023 to 2027 From the International Association for the Study of Lung Cancer. J Thorac Oncol. 2024 Jan;19(1):94-105. Epub ahead of print 2023 Aug 16:S1556-0864(23)00736-0. doi: 10.1016/j.jtho.2023.08.016.
- Wilkinson AN, Lam S. Lung cancer screening primer: Key information for primary care providers. Can Fam Physician. 2021 Nov;67(11):817-822. doi: 10.46747/cfp.6711817. PMID: 34772708
- Cressman S, Weber MF, Ngo PJ, Wade S, Behar Harpaz S, Caruana M, Tremblay A, Manser R, Stone E, Atkar-Khattra S, Karikios D, Ho C, Fernandes A, Yi Weng J, McWilliams A, Myers R, Mayo J, Yee J, Yuan R, Marshall HM, Fong KM, Lam S, Canfell K, Tammemägi MC. Economic impact of using risk models for eligibility selection to the International lung screening Trial. Lung Cancer. Lung Cancer. 2023 Feb;176:38-45. doi: 10.1016/j.lungcan.2022.12.011. Epub 2022 Dec 22. PMID: 36592498
- Tammemägi MC, Ruparel M, Tremblay A, Myers R, Mayo J, Yee J, Atkar-Khattra S, Yuan R, Cressman S, English J, Bedard E, MacEachern P, Burrowes P, Quaife SL, Marshall H, Yang I, Bowman R, Passmore L, McWilliams A, Brims F, Lim KP, Mo L, Melsom S, Saffar B, Teh M, Sheehan R, Kuok Y, Manser R, Irving L, Steinfort D, McCusker M, Pascoe D, Fogarty P, Stone E, Lam DCL, Ng MY, Vardhanabhuti V, Berg CD, Hung RJ, Janes SM, Fong K, Lam S. USPSTF2013 versus PLCOm2012 lung cancer screening eligibility criteria (International Lung Screening Trial): interim analysis of a prospective cohort study. Lancet Oncol. 2022 Jan;23(1):138-148. doi: 10.1016/S1470-2045(21)00590-8. Epub 2021 Dec 11.PMID: 34902336

b) Presentations

Stephen Lam

- Lung cancer screening since NLST. Canadian Surgery Forum. Vancouver. September 21, 2021
- Lung Screening Research. PHSA Board Research & Academic Development Committee Meeting. Vancouver. November 18, 2021
- Lung Cancer Screening – the time is now. BC Cancer Kelowna Radiation Oncology Grand Round. November 22, 2021.
- Canadian Experience in Lung Cancer Screening. Azienda Ospedaliera San Camillo Forlanini Early-Stage Lung Cancer: Road to A Cure Symposium, Rome, Italy. November 25, 2021.
- BC Lung Screening Program. UBC Radiology Grand Round. Vancouver. February 1, 2022.
- Screening Lung Cancer. BC Cancer Agency Family Practice Oncology GPO Lecture. Vancouver. March 2, 2022.
- Lung Cancer Screening: From Research to Program Implementation. American Lung Cancer Screening Initiative - Massachusetts General Hospital Distinguished Lecture (virtual). June 22, 2022.
- Training, Assessment & Standardized CAD-Based Reporting: The British Columbia Lung Screening Program. IASLC 2022 CT Screening Symposium. Vienna, Austria. August 5, 2022.
- Lung cancer screening. BC Cancer Agency Family Practice Oncology GPO Lecture. Vancouver.

March 1, 2023; and September 30, 2023.

- Prevention, Early detection and screening. New York Lung Cancer Foundation Conference. New York, USA. March 3, 2023.
- Lung Cancer Screening and Suspected Lung Cancer in Primary Care. Family Practice Oncology Network Lecture. Vancouver. March 16, 2023.
- Lung Screening and Prevention Program: Learning from British Columbia. University of Saskatchewan College of Medicine Department of Medicine Grand Round Saskatchewan. March 19, 2023.
- BC Lung Screening Program, UBC Radiology Grand Round. Vancouver, April 19, 2023.
- BC Lung Screening Program: Lessons Learned. UBC Respiratory Medicine Seminar. Vancouver. May 24, 2023.
- Screening in Canada. 44th International Conference on Screening for lung Cancer and 12th Conference on Research for Early Lung Cancer Treatment. Verona, Italy. June 29, 2023.
- Monitoring screening quality and Improving screening uptake. Panel discussion: 44th International Conference on Screening for lung Cancer and 12th Conference on Research for Early Lung Cancer Treatment. Verona, Italy. June 29, 2023.
- Taking a Health System Approach to Low-dose CT Lung Cancer Screening: A Bespoke Framework to Support Implementation. On behalf of the Health Policy Partnership Lung Cancer Policy Network. ASLC 2023 World Congress on Lung Cancer. Singapore. September 11, 2023.
- Pro-Con Debate. Never Smokers Should Be Screened. 2023 IASLC CT Screening Symposium. September 9. 2023. Singapore.
- Lung Cancer Screening in Canada. Rescue Lung Society Lung Cancer Screening Meeting. October 28, 2023. Boston, USA.
- Opportunities To Advance CT Lung Measurements Using CT Calibration & Artificial Intelligence. Prevent Cancer Foundation Quantitative Imaging Workshop XX (virtual). November 2, 2023. USA.
- Lung Cancer Screening. BC Cancer Lunch and Learn lecture. Vancouver. December 22, 2023.

Joanne Solmundson, Janette Sam, Javis Lui, Fabio Feldman, Rableen Nagra, John Mayo, Stephen Lam

- British Columbia Lung Screening Program: A Risk Model-Based Approach. International Cancer Screening Network 2023. Plenary Session Presentation. Turin, Italy. June 21, 2023

Rableen Nagra, Stephen Lam

- Launching the First Provincial Lung Screening Program in Canada. BC Cancer Summit. Bright Spots Plenary Session. Vancouver. November 17, 2023.

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