CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

Lung Cancer Screening Indicators: Data Specifications

July 2024

Table of Contents

1. Percentage of people who qualify for screening at risk assessment who attend screening 2
2. Percentage of screen-eligible individuals returning for screening 3
3. Distribution of LDCT scan results 4
4. Invasive procedure rate: Percentage of participants who undergo an invasive procedure 5
5. Cancer detection rate: Number of invasive cancers detected per 1,000 people screened 7
6. Screen-detected cancers by stage 8
7. Positive predictive value: Proportion of screening participants requiring follow-up who are diagnosed with lung cancer 9

1. Percentage of people who qualify for screening at risk assessment who attend screening

Definition	Percentage of individuals who completed a low-dose computed tomography (LDCT) scan after being deemed eligible at the initial risk assessment
Measurement Timeframe	A single calendar year (most up-to-date based on availability)
Stratification Variables	• Age group (50-54, 55-59, 60-64, 65-69, 70-74) • Sex • Gender • Geography (urban, rural, unknown/unspecified)
Denominator	Those who completed risk assessment and deemed eligible for a routine LDCT screening within the measurement timeframe
Numerator	Of denominator, those who received a routine LDCT scan, broken down by: • Within 3 months since the risk assessment • Within 6 months since the risk assessment
Notes	• The methodological details such as denominator, numerator, measurement timeframe, and reportable stratifiers (e.g., age group) for this indicator may vary across jurisdictions based on the program guidelines and data availability in jurisdictions • Being eligible means that the individual met the qualification criteria to access LDCT after the initial risk assessment. • For this indicator, a routine LDCT scan refers to an initial LDCT scan after the initial risk assessment • An early recall LDCT scan (e.g., within 3 or 6 months after a scan) is part of active surveillance and therefore not considered to be routine • Age refers to age at risk assessment • This is a person-based indicator (i.e., an individual is only counted once in numerator and denominator).

2. Percentage of screen-eligible individuals returning for screening

Definition	Percentage of screen-eligible individuals that returned for a subsequent routine screen (annual or biennial) within the recommended interval
Measurement Timeframe	A single calendar year (most up-to-date based on availability)
Stratification Variables	• Age group (50-54, 55-59, 60-64, 65-69, 70-74) • Sex • Gender • Geography (urban, rural, unknown/unspecified)
Denominator	Those who completed a low-dose computed tomography (LDCT) scan within the measurement timeframe and received a recommendation to return for a subsequent routine annual or biennial LDCT screening
Numerator	Of denominator, those who received a subsequent routine annual or biennial LDCT scan within 1-month pre and 6 months post the recommended scan interval. For example, for participants recommended to come back in 12 months, LDCT scans that are completed within 11 to 18 months would be included. For participants recommended to come back in 24 months, LDCT scans that are completed within 23 to 30 months would be included.
Notes	• The methodological details such as denominator, numerator, measurement timeframe, and reportable stratifiers (e.g., age group) for this indicator may vary across jurisdictions based on the program guidelines and data availability in jurisdictions • For this indicator, a routine LDCT scan refers to a return LDCT scan in 1 or 2 years per recommendation (also called subsequent LDCT scan) • An early recall LDCT scan (e.g., within 3 or 6 months after a scan) is part of active surveillance and therefore not considered to be routine • Age refers to age at screening in the measurement timeframe • This is a person-based indicator (i.e., an individual is only counted once in numerator and denominator).

3. Distribution of LDCT scan results

Definition	Percentage of low-dose computed tomography (LDCT) screens which recommend routine repeat screening or any additional test or referral other than the next routinely scheduled screening visit
Measurement Timeframe	A single calendar year (most up-to-date based on availability)
Stratification Variables	• Age group (50-54, 55-59, 60-64, 65-69, 70-74) • Sex • Gender • Geography (urban, rural, unknown/unspecified)
Denominator	Those who completed a routine annual or biennial LDCT scan within the measurement timeframe
Numerator	Breakdown of the following categories based on their LDCT scan results: • Early recall LDCT (e.g., less than 1 year) • Diagnostic work up referrals for lung cancer (i.e. for additional imaging that's not routine LDCT (e.g., chest CT, PET, MRI, etc.) and invasive procedures) • Return for the next routinely scheduled annual or biennial screening visits

Notes	• The methodological details such as denominator, numerator, measurement timeframe, and reportable stratifiers (e.g., age group) for this indicator may vary across jurisdictions based on the program guidelines and data availability in jurisdictions
	• There are no uniformly accepted criteria for definition of a positive screen requiring additional tests or referral. As the evidence accumulates recommendations for thresholds are expected to be refined.
	• Age refers to age at screening in the measurement timeframe
	• For this indicator, a routine LDCT scan refers to the following:
	  ○ An initial LDCT scan after the risk assessment OR
	  ○ A return LDCT scan in 1 or 2 years per recommendation (also called subsequent LDCT scan)
	• An early recall LDCT scan (e.g., within 3 or 6 months after a scan) is part of active surveillance and therefore not considered to be routine
	• The labels and categories depend on the radiologist scan interpretation and result management protocol used.
	• This is a person-based indicator (i.e., an individual is only counted once in numerator and denominator).

4. Invasive procedure rate: Percentage of participants who undergo an invasive procedure

Definition	Percentage of participants screened with a low-dose computed tomography (LDCT) who undergo an invasive procedure for follow-up
Measurement Timeframe	A single calendar year (most up-to-date based on availability)
Stratification Variables	• Age group (50-54, 55-59, 60-64, 65-69, 70-74) • Sex • Gender • Screening sequence (baseline/subsequent) • Geography (urban, rural, unknown/unspecified)
Denominator	Those who completed a baseline or subsequent routine annual or biennial LDCT scan within the measurement timeframe Note: For the purpose of national comparison, the denominator is the number of participants screened instead of the number of participants with a positive screen (since criteria to define a positive screen may differ across jurisdictions)
Numerator	Of denominator, those who went through an invasive procedure within 3 months due to abnormal result of a LDCT scan Invasive procedures include but not limited to: • bronchoscopy (with or without biopsy or endobronchial ultrasound) • transthoracic CT guided lung biopsy • surgical biopsy or resection (including VATS) • pleural fluid sampling • mediastinoscopy Pulmonary function testing, MRI, IV contrast enhanced CT, PET-CT, and bone scan are not considered invasive procedures

Notes	• The methodological details such as denominator, numerator, measurement timeframe, and reportable stratifiers (e.g., age group) for this indicator may vary across jurisdictions based on the program guidelines and data availability in jurisdictions
	• To be included in the calculation, invasive procedures must occur as a result of screening and not as a result of symptomatic work up.
	• If the last LDCT was done 3 or more years ago, the LDCT in the current measurement timeframe should be considered as a new baseline.
	• For this indicator, a routine LDCT scan refers to the following:
	  ○ An initial LDCT scan after the risk assessment OR
	  ○ A return LDCT scan in 1 or 2 years per recommendation (also called subsequent LDCT scan)
	• An early recall LDCT scan (e.g., within 3 or 6 months after a scan) is part of active

	surveillance and therefore not considered to be routine • Age refers to age at screening in the measurement timeframe • This is a person-based indicator (i.e., an individual is only counted once in numerator and denominator).

5. Cancer detection rate: Number of invasive cancers detected per 1,000 people screened

Definition	Number of invasive lung cancers detected per 1,000 people screened with a low-dose computed tomography (LDCT)
Measurement Timeframe	A single calendar year (most up-to-date based on availability)
Stratification Variables	• Sex • Gender • Screening sequence (baseline/subsequent) • Geography (urban, rural, unknown/unspecified)
Denominator	Those who completed an annual or biennial routine LDCT scan within the measurement timeframe
Numerator	Of denominator, those diagnosed with invasive lung cancers after an abnormal LDCT scan (e.g., received diagnostic work-up or early recall LDCT): • Within 3 months of an abnormal scan • Within 6 months of an abnormal scan Note: Invasive cancers include minimally invasive adenocarcinoma. Exclusion: • Adenocarcinoma in situ and atypical adenomatous hyperplasia

Notes	• The methodological details such as denominator, numerator, measurement timeframe, and reportable stratifiers (e.g., age group) for this indicator may vary across jurisdictions based on the program guidelines and data availability in jurisdictions
	• If the last routine LDCT was done 3 or more years ago, the LDCT in the current measurement timeframe should be considered as a new baseline.
	• For this indicator, a routine LDCT scan refers to the following:
	  ○ An initial LDCT scan after the risk assessment OR
	  ○ A return LDCT scan in 1 or 2 years per recommendation (also called subsequent LDCT scan)
	• An early recall LDCT scan (e.g., within 3 or 6 months after a scan) is part of active surveillance and therefore not considered to be routine
	• Age refers to age at screening in the measurement timeframe
	• A nodule that is diagnosed to be malignant must be present at the baseline or subsequent annual or biennial screening LDCT
	• This is a person-based indicator (i.e., an individual is only counted once in numerator and denominator).

6. Screen-detected cancers by stage

Definition	Distribution by stage of all screen-detected lung cancers
Measurement Timeframe	A single calendar year (most up-to-date based on availability)
Stratification Variables	• Sex • Gender • Screening sequence (baseline/subsequent) • Geography (urban, rural, unknown/unspecified)
Denominator	Number of pathologically and/or cytologically confirmed lung cancer cases within 6 months of an abnormal routine annual or biennial low-dose computed tomography (LDCT) scans in the measurement timeframe
Numerator	Of denominator, broken down by: • Stage 0/I/II/III/IV/Others

Notes	• The methodological details such as denominator, numerator, measurement timeframe, and reportable stratifiers (e.g., age group) for this indicator may vary across jurisdictions based on the program guidelines and data availability in jurisdictions
	• If the last routine LDCT was done 3 or more years ago, the LDCT in the current measurement timeframe should be considered as a new baseline.
	• For this indicator, a routine LDCT scan refers to the following:
	  ○ An initial LDCT scan after the risk assessment OR
	  ○ A return LDCT scan in 1 or 2 years per recommendation (also called subsequent LDCT scan)
	• An early recall LDCT scan (e.g., within 3 or 6 months after a scan) is part of active surveillance and therefore not considered to be routine
	• Age refers to age at screening in the measurement timeframe
	• This is a person-based indicator (i.e., an individual is only counted once in numerator and denominator).

7. Positive predictive value: Proportion of screening participants requiring follow-up who are diagnosed with lung cancer

Definition	Proportion of screening participants with routine low-dose computed tomography (LDCT) scans requiring follow-up diagnostic work up and diagnosed with lung cancer.
Measurement Timeframe	A single calendar year (most up-to-date based on availability)
Stratification Variables	• Sex • Gender • Screening sequence (baseline/subsequent) • Geography (urban, rural, unknown/unspecified)
Denominator	Those who completed an annual or biennial routine LDCT scan within the measurement timeframe and referred for diagnostic work-up Note: Diagnostic work-up could include imaging (Chest CT, PET, Chest CT/PET, MRI), or invasive tests (e.g., tissue sampling, mediastinoscopy, bronchoscopy, surgical biopsy) Exclusion: • People with an abnormal screen that requires early follow up LDCT but no diagnostic work-up

Numerator	Of denominator, those diagnosed with invasive lung cancer after diagnostic work-up referral
	
	1) Diagnosis interval:
	  • Within 3 months of an abnormal scan
	  • Within 6 months of an abnormal scan
	2) Type of cancer:
	  • Small-cell, non-small cell, others

Notes	• The methodological details such as denominator, numerator, measurement timeframe, and reportable stratifiers (e.g., age group) for this indicator may vary across jurisdictions based on the program guidelines and data availability in jurisdictions
	• If the last routine LDCT was done 3 or more years ago, the LDCT in the current measurement timeframe should be considered as a new baseline.
	• For this indicator, a routine LDCT scan refers to the following:
	  ○ An initial LDCT scan after the risk assessment OR
	  ○ A return LDCT scan in 1 or 2 years per recommendation (also called subsequent LDCT scan)
	• An early recall LDCT scan (e.g., within 3 or 6 months after a scan) is part of active surveillance and therefore not considered to be routine
	• Age refers to age at screening in the measurement timeframe
	• This is a person-based indicator (i.e., an individual is only counted once in

	numerator and denominator).