CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

Breast Cancer Screening System Level Indicators: Data Specifications

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Special topic: Impact of Covid-19 on screens

Definition	Percent of changes in individuals screened within 12 months between the pre- and the pandemic era (2019 vs. 2020)
Target	*Not applicable*
Measurement Timeframe	12-month base: 2019 and 2020
Stratification Variables	Not applicable
Calculation	12-month base (number of screens were extracted from indicator 2): **Denominator**: the number of individuals screened in 2019 **Numerator**: the difference in individuals screened between 2020 and 2019
Notes	An individual is counted once within each measurement timeframe

Indicator 1: Breast cancer screening program participation

Definition	Percentage of the target population who have a breast cancer screen within a 30-month period ***CPAC to calculate crude and age-adjusted participation using collected data***
Target	National target (aged 50 to 74 years)*: • ≥70% of the target population within 30 months ** The national target is based on aged 50 to 74. However, jurisdictions may submit data for 40 to 49 if they wish to.*
Measurement Timeframe	Jan 1, 2018 to Dec 31, 2019 Jan 1, 2020 to Dec 31, 2021
Stratification Variables	• Age group (50-59, 60-69, 70-74; optional 40-49) • Gender (female, male, others) • Screening sequence (initial screen, subsequent screen) • Geography (urban, rural, unknown/unspecified)
Denominator	Population aged 50-74 (include 40-49, if applicable) years at the end of the measurement timeframe (estimate of population as of December 31, 2019 and December 31, 2021 from census/forecast/insurance registry) <u>Exclusions</u> • Participants with previous bilateral mastectomy • Previous diagnosis of breast cancer
Numerator	Number of participants who had at least one breast cancer screening in the measurement timeframe (including the 6 months grace period after the measurement timeframe, a total of 30-month period)
Notes	• Age for numerator is calculated based on the participant's age as of December 31, 2019 and December 31, 2021 • Participants with multiple screens should be counted once within each measurement timeframe • A subsequent screen is any screen that takes place after missing one round of screening or less, or within 60 months of a previous screen. If past the 60 month timeframe (the participant missed more than one round of screening), please include as an initial screen. • The number of people in the target population with DCIS or invasive breast cancers may be estimated using cancer registry data • The number of bilateral mastectomies may be estimated using CCHS. In Quebec, people with previous bilateral mastectomy will not be excluded from the denominator • Geography refers to individual's place of residence. Use the most recent versions of PCCF+ (v7c or later) to perform this analysis. If another methodology is used, describe the details along with data limitations in the 'Data Qualification Notes' section in the template. The categories (urban/rural) are classified based

	on the variable CSIZEMIZ (Community size and metropolitan influence zone) from PCCF+: Urban: 1, 2, 3, 4; Rural: 5, 6, 7.

Indicator 2: Abnormal call rate

Definition	Percentage of screening mammograms that were identified as abnormal
Target	National target (aged 50 to 74 years)*: • Initial screens: < 10% • Subsequent screens: < 5% ** The national target is based on aged 50 to 74. However, jurisdictions may submit data for 40 to 49 if they wish to.*
Measurement Timeframe	Jan 1, 2019 to Dec 31, 2019 Jan 1, 2020 to Dec 31, 2020
Stratification Variables	• Age group (50-59, 60-69, 70-74; optional 40-49) • Gender (female, male, others) • Screening sequence (initial screen, subsequent screen (>9 to 18 month, >18 to 30 month, >30 months)) • Technology type (2D mammography, 3D mammography)
Denominator	The total number of screening mammograms in the measurement timeframe
Numerator	The number of screening mammograms identified as abnormal
Notes	• Age is calculated based on the date of the screening mammogram • One month is considered to be 30 days • A subsequent screen is any screen that takes place after missing one round of screening or less, or within 60 months of a previous screen. If past the 60 month timeframe (the participant missed more than one round of screening), please include as an initial screen.

Indicator 3: Percentage of screen-detected cancer among abnormal screens (Positive Predictive Value (PPV))

Definition	Percentage of abnormal screens diagnosed with breast cancer (invasive or in situ) after diagnostic work-up.
Target	National target for invasive or in-situ breast cancer (aged 50 to 74 years)*: • initial screens: ≥5% • subsequent screens: ≥6% ** The national target is based on aged 50 to 74. However, jurisdictions may submit data for 40 to 49 if they wish to.*
Measurement Timeframe	Jan 1, 2019 to Dec 31, 2019 Jan 1, 2020 to Dec 31, 2020
Stratification Variables	• Age group (50-59, 60-69, 70-74; optional 40-49) • Gender (female, male, others) • Screening sequence (initial screen, subsequent screen) • Technology type (2D mammography, 3D mammography)
Denominator	Total number of abnormal screening mammograms in the measurement timeframe <u>Exclusions</u> • Abnormal breast cancer screens that were lost to follow-up within 6 months of screening.
Numerator	The number of abnormal screens which were diagnosed with breast cancers (DCIS or invasive) within 6 months of screens, separated by: • DCIS • Invasive breast cancer • Unknown (optional)
Notes	• Age is calculated based on the date of the screening mammogram • Abnormal screens with benign results may include findings of LCIS, ADH, papilloma, radial scar and phyllodes tumour • A subsequent screen is any screen that takes place after missing one round of screening or less, or within 60 months of a previous screen. If past the 60 month timeframe (the participant missed more than one round of screening), please include as an initial screen. • Assign screen-detected breast cancers that cannot be identified as DCIS or invasive into unknown category (numerator) • The length of a screening episode for breast cancer is 6 months • One month is considered to be 30 days

Indicator 4: Cancer detection rate

Definition	Breast cancers detected per 1,000 screens
Target	National target for invasive breast cancer (aged 50 to 74 years)*: • Initial screens: >5 per 1,000 screens • Subsequent screens: >3 per 1,000 screens No national target for in-situ detection rate ** The national target is based on aged 50 to 74. However, jurisdictions may submit data for 40 to 49 if they wish to.*
Measurement Timeframe	Jan 1, 2019 to Dec 31, 2019 Jan 1, 2020 to Dec 31, 2020
Stratification Variables	• Age group (50-59, 60-69, 70-74; optional 40-49) • Gender (female, male, others) • Screening sequence (initial screen, subsequent screen) • Geography (urban, rural, unknown/unspecified) • Cancer stage (0, 1, 2, 3, 4, other (include unknown))
Denominator	The total number of screening mammograms performed in the measurement timeframe <u>Exclusions</u> • Breast cancer screens that were lost to follow-up within 6 months of screening.
Numerator	The number of screens which were diagnosed with breast cancers (DCIS or invasive) within 6 months of the screens, separately by: • DCIS • Invasive breast cancer • Unknown (optional)
Notes	• Age is calculated based on the date of the screening mammogram • One month is considered to be 30 days • For bilateral cancer cases, include the screen with the highest stage tumour • A subsequent screen is any screen that takes place after missing one round of screening or less, or within 60 months of a previous screen. If past the 60 month timeframe (the participant missed more than one round of screening), please include as an initial screen. • Assign screen-detected breast cancers that cannot be identified as DCIS or invasive into unknown category (numerator) • The length of a screening episode for breast cancer is 6 months • Geography refers to individual's place of residence. Use the most recent versions of PCCF+ (v7c or later) to perform this analysis. If another methodology is used, describe the details along with data limitations in the 'Data Qualification Notes' section in the template. The categories (urban/rural) are classified based on the variable CSIZEMIZ (Community size and metropolitan influence zone) from PCCF+: Urban: 1, 2, 3, 4; Rural: 5, 6, 7.

Indicator 5: Time to Diagnosis

Definition	1) The median and 90th percentile of the time (weeks) between an abnormal breast screen result and a diagnosis by tissue biopsy requirement 2) Percentage of participants with diagnosis within the target wait times: • 5 weeks for diagnosis not requiring a tissue biopsy • 7 weeks for diagnosis requiring a tissue biopsy
Target	National target (aged 50 to 74 years)*: • No tissue biopsy: ≥ 90% within 5 weeks • With tissue biopsy: ≥ 90% within 7 weeks ** The national target is based on aged 50 to 74. However, jurisdictions may submit data for 40 to 49 if they wish to.*
Measurement Timeframe	Jan 1, 2019 to Dec 31, 2019 Jan 1, 2020 to Dec 31, 2020
Stratification Variables	• Tissue biopsy (requiring a tissue biopsy, not requiring a tissue biopsy) then by the following variables: ○ Age group (50-59, 60-69, 70-74; optional 40-49) ○ Gender (female, male, others) ○ Geography (urban, rural, unknown/unspecified) ○ Cancer outcome: Stage (0, 1, 2, 3, 4), benign, no cancer
Cohort	Participants who had abnormal screen results during the measurement timeframe <u>Exclusions</u> • Abnormal screens that took longer than 6 months for a confirmed diagnosis • Abnormal screens that were lost to follow-up within 6 months of screening • Abnormal screens with missing/unknown test type (i.e., unable to determine the status of tissue biopsy or determine if the test was a tissue biopsy)
Measure	1. Time from abnormal breast cancer screen to definitive diagnosis • Median and 90th percentile of the time (weeks) between an abnormal breast screen date and a confirmed diagnosis date stratified by tissue biopsy requirement 2. Percentage of participants within the target wait time **No tissue biopsy** **Denominator**: Total number of abnormal screens in the measurement timeframe, where tissue biopsy is not performed **Numerator**: The number of confirmed diagnoses occurring within 5 weeks of screening date **With tissue biopsy** **Denominator**: Total number of abnormal screens in the measurement timeframe, where tissue biopsy is performed

	Numerator: The number of confirmed diagnoses occurring within 7 weeks of screening date

Notes	• Age is calculated based on the date of the screening mammogram
	• One month is considered to be 30 days
	• The date of abnormal breast screen refers to the date of screening
	• The date of definitive diagnosis may be based on various procedures:
	  ○ For invasive or DCIS: the date of the first core or open surgical biopsy that confirms cancer. In rare occasions, fine needle aspiration (FNA) biopsy may also be used for a definitive diagnosis of cancer
	  ○ For benign or normal case: the date of the last benign biopsy/procedure, or last procedure prior to a recommendation to return to regular screening
	• Tissue biopsy includes core (needle) biopsy with or without image guidance and open (excisional) biopsy with or without image guidance
	• Tissue biopsy does not include FNA
	• Geography refers to individual's place of residence. Use the most recent versions of PCCF+ (v7c or later) to perform this analysis. If another methodology is used, describe the details along with data limitations in the 'Data Qualification Notes' section in the template. The categories (urban/rural) are classified based on the variable CSIZEMIZ (Community size and metropolitan influence zone) from PCCF+: Urban: 1, 2, 3, 4; Rural: 5, 6, 7.

Indicator 6: Post-screen breast cancer rate

Definition	The number of breast cancers found after a normal/benign breast cancer screening episode per 10,000 screens
Target	Not Established
Measurement Timeframe	Jan 1, 2017 to Dec 31, 2018
Stratification Variables	• Age group (50-59, 60-69, 70-74; optional 40-49) • Gender (female, male, others) • Screening sequence (initial screen, subsequent screen) • Technology type (2D mammography, 3D mammography) at screening • Geography (urban, rural, unknown/unspecified) • Cancer outcome: Stage (0, 1, 2, 3, 4, other (include unknown))
Denominator	Number of screening mammograms with normal or benign results. Normal or benign results include: • the screens with normal results • the abnormal screens with diagnostic process that ultimately yields a normal/benign results or DCIS within 6 months of screening • the abnormal screens without a confirmed diagnoses within 6 months of screening. These screens are considered benign. The start of follow-up period is defined as: • For normal screen: when the screen is interpreted by radiologists and the results is deemed normal • For abnormal screen with definitive diagnosis: when the diagnostic process confirmed benign results or DCIS within 6 months of screening • For abnormal screen without definitive diagnosis within 6 months: when the screen is interpreted by radiologists and the result is abnormal. The screen is assumed to be benign. The screens were followed up after the end of screening episode up to 36 months and the follow-up period is broken down into 3 intervals: 0 to 12 months, >12 to 24 months and >24 to 36 months. For the first interval of 0 to 12 months interval, exclude the following: • Participants with bilateral mastectomy within the follow-up interval (if possible) • Participants lost to follow-up within the follow-up interval For the interval 12 to 24 months and 24 to 36 months interval, exclude the following: • Participants diagnosed with breast cancer (invasive, DCIS, or unknown) during the previous follow-up interval

	• Participants who returned to screening during the previous follow-up interval • Participants who died during the previous follow-up interval • Participants lost to follow-up within the follow-up interval • Participants with bilateral mastectomy within the follow-up interval, if possible
Numerator	Number of invasive breast cancers or DCIS detected within each of the follow-up intervals (0 to 12 months, >12 to 24 months and >24 to 36 months)

Notes	• Age is calculated based on the screening date in the measurement timeframe
	• One month is considered to be 30 days
	• Post-screen cancer is defined as breast cancer diagnosed between a normal/benign screening episode and the next scheduled screening mammogram visit, where the benign screening episode includes:
	  o The abnormal screens that diagnostic process yields a benign result within 6 months of screening
	  o The abnormal screens that did not receive confirmed diagnoses within 6 months of screening. These screens are considered benign.
	• Participants who were diagnosed with a post-screen cancer between 12 to 24 and 24 to 36 months from the follow up date are included regardless of non-compliance with screening recommendations.
	• After a normal/benign breast cancer screening episode, a subsequent screen, death, or diagnosis of invasive breast cancer/DCIS terminates follow-up. Thus, some screens may only be counted for the first follow-up period while other screens are included in two or all three follow-up intervals. The denominator should be adjusted for each follow-up interval by eliminating the participants based on exclusion criteria for the denominator (listed above).
	• A subsequent screen is any screen that takes place after missing one round of screening or less, or within 60 months of a previous screen. If past the 60 month timeframe (the participant missed more than one round of screening), please include as an initial screen.
	• Geography refers to individual's place of residence. Use the most recent versions of PCCF+ (v7c or later) to perform this analysis. If another methodology is used, describe the details along with data limitations in the 'Data Qualification Notes' section in the template. The categories (urban/rural) are classified based on the variable CSIZEMIZ (Community size and metropolitan influence zone) from PCCF+: Urban: 1, 2, 3, 4; Rural: 5, 6, 7.