# The 2014 Cancer System Performance Report

March 2014

Technical Appendix

# 1. Prevention

**Smoking prevalence**
**Definition:** Percentage of population aged 12 years and older in each specified group – daily, occasional, former or never smokers
**Numerator:** Number of daily, occasional, former, or never smokers, aged 12 years and older
**Denominator:** Total population, aged 12 years and older
**Data Source:** Canadian Community Health Survey
**Measurement timeframe:** 2012 (CCHS 2012)
**CCHS variables**: 1.Have smoked 100 or more cigarettes during lifetime; 2.Ever smoked a whole cigarette; 3.Type of smoker at present time; 4.Ever smoked cigarettes daily
**Stratification variables:** Province/territory, age, sex
**Provinces/territories with data available:** All
**Notes:** CCHS data are based on a representative sample which is then extrapolated to the overall population.

**Smoking cessation**
**Definition:** Percentage of recent smokers aged 20 and older that quit smoking in the previous 2 years
**Numerator:** Recent quitters: former smokers who were no longer smoking at the time of the survey who have quit in the last 2 years
**Denominator:** Recent quitters plus current smokers (those who are currently daily or occasional smokers), aged 20 years and older
**Data source:** Canadian Community Health Survey
**Measurement timeframe:** 2012 (CCHS 2012)
**CCHS variables:** 1.Current smoking status; 2.Number of years stopped smoking daily; 3.Number of years stopped smoking completely
**Stratification variables:** Province/territory, age, sex
**Provinces/territories with data available:** All
**Notes:** 1. CCHS data are based on a representative sample which is then extrapolated to the overall population; 2. When the coefficient of variation is between 16.6% and 33.3% (denoted by E on the figure), there is a large amount of relative variation; therefore, estimate should be interpreted with caution.

**Second-hand smoke exposure**
**Definition:** Percentage of non-smokers aged 12 years and older regularly exposed to second-hand smoke at home, in vehicles, or in public spaces
**Numerator:** 1 Number of non-smokers aged 12 years and older who reported someone smoking inside the home every day or almost every day; 2 Number of non-smokers aged 12 years and older who reported being exposed to second-hand smoke in private vehicles every day or almost every day in the past month; 3 Number of non-smokers aged 12 years and older who reported being exposed to second-hand smoke in public places every day or almost every day in the past month
**Denominator:** Non-smokers, aged 12 years and older
**Data source:** Canadian Community Health Survey
**Measurement timeframe:** 2012 (CCHS 2012)

**CCHS variables:** 1 Including both household members and regular visitors, does anyone smoke inside your home, every day or almost every day?; 2 In the past month, were you exposed to second-hand smoke every day or almost every day, in a car or other private vehicle? 3 In the past month, were you exposed to second-hand smoke, every day or almost every day, in public places?
**Stratification variables:** Province/territory, age
**Provinces/territories with data available:** All provinces
**Notes:** 1. CCHS data are based on representative sample which is then extrapolated to the overall population; 2. When the coefficient of variation is between 16.6% and 33.3% (denoted by E on the figure), there is a large amount of relative variation; therefore, estimate should be interpreted with caution.

**Alcohol consumption – exceeding low-risk drinking guidelines**
**Definition:**Percentage of adults aged 18 years and older that reported exceeding the low-risk drinking guideline defined as: An AVERAGE of no more than 2 drinks per day for males, and an AVERAGE of no more than 1 drink per day for females. The daily average was calculated based on the total number of drinks the respondent reported consuming in the week prior to the CCHS interview, divided by 7 days
**Numerator:** Number of adults (aged 18 years and older) who reported exceeding the low-risk drinking guideline
**Denominator:** Total population (aged 18 years and older)
**Data source:** Canadian Community Health Survey
**Measurement timeframe:** 2012 (CCHS 2012)
**CCHS variables:** 1.During the past 12 months, have you had a drink of beer, wine, liquor or any other alcoholic beverage?; 2.Thinking back over the past week, did you have a drink of beer, wine, liquor or any other alcoholic beverage?; 3. How many drinks did you have on each day during the past week? Stratification variables: Province/territory
**Provinces/territories with data available:** NL, QC, ON, MB, SK
**Notes:** 1. The word drink means: 1 bottle or can of beer or a glass of draft, 1 glass of wine or a wine cooler, or 1 drink or cocktail with 1 1/2 ounces of liquor;2. CCHS data is based on representative sample which is then extrapolated to the overall population; 3. Low-risk drinking guideline is based on Canadian Cancer Society/World Cancer Research Fund guidelines.

**Alcohol consumption – no alcohol intake**
**Definition:** Percentage of adults aged 18 years and older that reported no alcohol drinking in the past 12 months
**Numerator:** Number of adults aged 18 years and older who reported drinking no alcohol in the past 12 months
**Denominator:** Total population aged 18 years and older
**Data source:** Canadian Community Health Survey
**Measurement timeframe:** 2012 (CCHS 2012)
**CCHS variables:** During the past 12 months, have you had a drink of beer, wine, liquor or any other alcoholic beverage? **Stratification variables:** Province/territory
**Provinces/territories with data available:** All
**Notes:** 1. The word drink means: 1 bottle or can of beer or a glass of draft, 1 glass of wine or a wine cooler, or 1 drink or cocktail with 1 1/2 ounces of liquor; 2. CCHS data are based on representative sample which is then extrapolated to the overall population.

**Overweight and obesity**

**Definition:** Percentage of adults aged 18 years and older at each BMI and in the BMI groups – underweight (BMI < 18.50); normal weight (BMI 18.50 – 24.99); overweight (BMI 25.00 –29.99); obese (BMI 30.00+); obese II (BMI 35.00 – 39.99); or obese III (BMI 40.00+)

**Numerator:** Number of adults aged 18 years and older at each BMI and in each BMI group – underweight, normal weight, overweight or obese

**Denominator:** Total number of adults aged 18 years and older with valid height and weight responses

**Data source:** Canadian Community Health Survey

**Measurement timeframe:** 2003 (CCHS Cycle 2.1); 2005 (CCHS Cycle 3.1); 2007 (CCHS 2007); 2008 (CCHS 2008); 2009 (CCHS 2009); 2010 (CCHS 2010); 2011 (CCHS 2011); 2012 (CCHS 2012)

**CCHS variables:** 1. Self-reported weight (kg); 2. Self-reported height (m); 3. Calculated BMI values: BMI=weight/(height)$^2$

**Stratification variables:** Province/territory, sex

**Provinces/territories with data available:** All

**Notes:** 1. CCHS data are based on representative sample which is then extrapolated to the overall population; 2. Excludes pregnant women, lactating women, persons less than 3 feet tall or greater than 6 feet 11 inches.

**Human papillomavirus vaccination**

**Definition:** The proportion of females in the targeted cohort to receive the first of 3 doses of the HPV vaccination

**Numerator:** Number of females who have received the first dose of the HPV vaccination through the provincially/territorially organized program

**Denominator:** Number of females in the target grade/age group in schools where the provincial HPV vaccination program has been offered

**Data Source:** Pan-Canadian Cervical Screening Initiative Public Health Agency of Canada's *Canada Communicable Disease Report* **(**http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/12vol38/acs-dcc-1/index-eng.php)

**Measurement timeframe:** 2008/2009 school year (approximately September 1st, 2008 to August 31st, 2009)

**Stratification variables:** Province/territory

**Provinces/territories submitting data:** AB, BC, MB, NB, NL, NS, NT, ON, PE, QC, SK, NU, YK

**Province specific notes:** AB: Data are for 3rd dose of HPV vaccine. NT: Data reported are based on estimates. ON: Data are for 3rd dose of HPV vaccine. PE: Data reported are based on estimates.

**General notes:** 1. The target grade and age group varies by province/territory; 2. Provincial/territorial programs have different target populations, different implementation/roll-out plans (phase in) and different phases of implementation. As provinces continue with the implementation of the vaccine programs, it is expected that percentages will increase and interprovincial variation will decrease.

# 2. Screening

**Cervical cancer screening - self-reported**
**Definition:** Percentage of women aged 18–69 who had at least one Papanicolau (Pap) smear in the past 3 years
**Numerator:** Total number of women aged 18–69 reporting having had at least one Pap test in the past 3 years
**Denominator:** Total Total number of women aged 18–69 (excluding women who have had a hysterectomy)
**Data source:** Canadian Community Health Survey
**Measurement timeframe:** 2008, 2012
**CCHS variables:** 1. Have you ever had a PAP smear test?; 2. When was the last time?; 3. Have you had a hysterectomy?
**Stratification variables:** Province
**Provinces/territories with data available:** All provinces and Territories
**Notes:** CCHS data is based on representative sample which is then extrapolated to the overall population

**Breast cancer screening - self-reported**
**Definition:** Percentage Percentage of asymptomatic females aged 50 – 69 receiving a mammogram within the past 2 years, where asymptomatic is defined as: Respondents who indicated going for a mammogram for any of the following reasons: 1.Family history; Routine screen/check-up; 2. Age; 3. HRT; and 4. NOT for any of the following reasons: Lump; Breast problem; Follow-up to breast cancer treatment; 5. Other
**Numerator:** Asymptomatic females aged 50 – 69 who indicated going for a mammogram within the past 2 years
**Denominator:** Total number of asymptomatic females aged 50 – 69
**Data source:** Canadian Community Health Survey
**Measurement timeframe:** 2008 (CCHS 2008); 2012 (CCHS2012)
**CCHS variables**: 1 Ever had a mammogram; 2.Reasons for having mammogram (mark all that apply): Family history; Routine screen; Age; HRT; Lump; Follow-up to breast cancer treatment; Breast problem; Other; 3. Last time respondent had undergone a mammogram
**Stratification variables:** Province
**Provinces/territories with data available:** All
**Notes:** CCHS data is based on representative sample which is then extrapolated to the overall population

**Colorectal cancer screening - self-reported**
**Definition:** Percentage of asymptomatic individuals aged 50–74 who are up-to-date with their colorectal cancer screening where up-to-date is defined as having had an FOBT in the past two years and/or sigmoidoscopy/colonoscopy in the past five years and asymptomatic is defined as:

1. Respondents who reported having a CRC screening test for any of the following reasons: Family history; Regular check-up/routine screening; Age; Race
2. And not for any of the following reasons: Follow-up of problem; Follow-up of colorectal cancer treatment; Other

**Numerator:** Number of asymptomatic individuals aged 50–74 reporting having had an FOBT within the past 2 years and/or a colonoscopy/sigmoidoscopy within the past 5 years
**Denominator:** Total number of asymptomatic individuals aged 50–74
**Data source:** Canadian Community Health Survey
**CCHS variables:** 1. Have you ever had an FOBT test? When was the last time? Why did you have it?; 2.Have you ever had a colonoscopy or sigmoidoscopy? When was the last time? Why did you have it?
**Measurement timeframe:** 2008, 2012
**Stratification variables:** By province, age and sex
**Provinces/territories with data available:** All provinces and Territories
**Notes:** CCHS data is based on representative sample which is then extrapolated to the overall population

# 3. Diagnosis

**Stage distribution**

**Definition:** Distribution of stage at diagnosis among stageable incident cases for which data are available in provincial cancer registries

**Numerator:** Total number of stageable* incident cases by stage at diagnosis (stage 0 through to stage IV, unknown, not available) in the provincial cancer registry

**Denominator:** Total number of stageable incident cases

Exclusions:

- Age (at diagnosis ) 0 – 17
- Non melanoma skin cancer (M8050-8110 with site code C44.0 to C44.9)
- Colorectal reporting for appendix C18.1
- For reporting by site - Lymphoma codes M-95 to M-98, sarcoma codes– 8800/3

**Data source:** Canadian Community Health Survey

**Measurement timeframe:** 2010 and 2011 diagnosis years combined

**Stratification variables:** All cancers, breast, colorectal, lung and prostate

**Provinces/territories with data available:** BC, AB, SK, MB, ON, NB, PE, NL, NS

**Specific Notes:** AB: Colorectal Stage IV have been included in Stage IVNOS, Lung Stage IINOS, IIINOS are actually Stage II and Stage III respectively.

BC: All cancers only include 5 cancer sites: Breast, Cervix, Colorectal, Lung and Prostate and not all Stage 0 collected.

NL: Lung cancer staged I, II or III were entered under the NOS category. Colorectal Stage IV were entered under Stage IVNOS

**General Notes:**

1. *Stageable incident cases per AJCC Cancer Staging manual, 7th edition
2. NOS: if unable to split out A, B and C, please report under the NOS category for that stage
3. Stage 0: includes both in situ and behavior code 3 (malignant)
4. Unknown: cases for which there is insufficient information to ascertain a definitive stage
5. Not available: cases for which stage data is not available or invalid

**Capture of stage – completeness of stage data**

**Definition:** Percentage of stageable incident cases for which stage data are available in provincial cancer registries

**Numerator:** Number of stageable incident cases for which stage data are available in the provincial cancer registry

**Denominator:** Total number of stageable incident cases Denominator exclusions: Non melanoma skin cancer (ICD-O3 morphology codes M8050-8110 with site codes C44.0 to C44.9); Age(at diagnosis) 0-17 years; Lymphoma codes M-95 to M-98;sarcoma codes-8800/3

**Data source:** Reported by provincial cancer agencies or equivalents to the Canadian Partnership Against Cancer

**Measurement timeframe:** 2011 diagnosis years

**Stratification variable:** Province, cancer type: 1. All cancers 2. Four most common cancers: Breast, Prostate, Colorectal, and Lung

**Provinces submitting data:** BC, AB, SK, MB, ON, NB, NS, PE, NL

**Province specific notes: BC:** Stage data for all cancers are not available for 2011. Collaborative stage data is collected on only five disease sites in BC - Breast, Cervix, colorectal, Lung and Prostate. Data do not represent all stage 0 cases in BC.
**AB:** Hematology, sarcoma and melanoma morphologies were removed from the site-specific cancers but included in all cancers. All cases with "NA" stage have been excluded from both the numerator and denominator. All 2011 invasive primaries are collaboratively staged and once coded there should be no cases with missing/not available stage values. Currently "Not Available" indicates the number of cases that have a missing stage at the time of data pull. It also includes skin c44 not basal-squamous that are not staged according to Alberta Cancer Registry (ACR) rules. **ON:** Stage information only included collaborative stage; excluded in situ cases.
**NB:** The counts in "Not Available" category are the number of in situ cases for prostate cancer. NB does not stage in situ prostate cancer. All cancers excluded non-melanoma skin cancer.
**NS:** The "Not Available" reported are true NAs. In many cases these are histology exclusions which cannot be staged.
PE: Beginning in 2011 PE stopped the collection and staging of in situ cervical cancer.
**General notes:**
1. The source data for this indicator were submitted by the provincial cancer agencies based on definitions provided by the Canadian Partnership Against Cancer for the distribution of cases by stage.
2. Incident cases that are stageable as per AJCC Cancer Staging Manual 7th Edition are included in denominator. Cases with unknown stage are included in the numerator. Incident cases that could but were not staged due to incomplete coding or data not available are included in the denominator (i.e. Not available).
3. Indicator is based on data reported directly by the provinces for this Report. No separate validation or verification of the submitted data was done.
4. Staging can be based on AJCC TNM staging reported directly by clinicians and/or based on the Collaborative Staging methodology. Data from other staging systems or standards were not included as valid stage data in the indicator.
5. All cancer sites included stage 0 cases.

**<u>Capture of stage – cases for which stage is unknown</u>**
**Definition:** Percentage of stageable incident cases for which stage is recorded as "unknown" in the provincial cancer registry
**Numerator:** Number of stageable incident cases for which stage is recorded as "unknown" in the provincial cancer registry
**Denominator:** Total number of stageable incident cases
**Data source:** Reported by provincial cancer agencies or equivalents to the Canadian Partnership Against Cancer
**Measurement timeframe:** 2010, 2011 diagnosis year
**Stratification variable:** Province, cancer type:1.1. Breast2. Colorectal 3. Lung 4. Prostate 5. All other cancers
**Provinces submitting data:** BC, AB, SK, MB, ON, NB, NS, PE, NL
**Province specific notes:**
**BC:** Stage data for all cancers are not available for 2010 and 2011. Collaborative stage data is collected on only five disease sites in BC - – Breast, Cervix, Colorectal, Lung and Prostate. Data do not represent all stage 0 cases.
**AB:** Hematology, sarcoma and melanoma morphologies were removed from the site-specific cancers but included in all cancers. All cases with "NA" stage have been excluded from the denominator. All

2010 and 2011 invasive primaries are collaboratively stage and once coded these should be no cases with missing/not available stage values. Currently "Not Available" indicates the number of cases that have a missing stage at the time of data pull. It also includes skin c44 not basal-squamous that are not staged according to Alberta Cancer Registry (ACR) rules.
**ON:** Stage information only included collaborative stage; excluded in situ cases.
**NB:** The counts in "Not Available" category are the number of in situ cases for prostate cancer. NB does not stage in situ prostate cancer. All cancers excluded non-melanoma skin cancer.
**NS:** The "Not Available" reported are true NAs. In many cases these are histology exclusions which cannot be staged.
**PE:** Beginning in 2011 PE stopped the collection and staging of in situ cervical cancer.
**General notes:**
1. The source data for this indicator were submitted by the provincial cancer agencies based on definitions provided by the Canadian Partnership Against Cancer for the distribution of cases by stage.
2. Invasive incident cases that are stageable as per AJCC Cancer Staging Manual 7th Edition are included in denominator. Cases with unknown stage are included in the numerator. Incident cases that could but were not staged due to incomplete coding or data not available are included in the denominator (i.e. Not available).
3. Indicator is based on data reported directly by the provinces for this Report. No separate validation or verification of the submitted data was done.
4. Staging can be based on AJCC TNM staging reported directly by clinicians and/or based on the Collaborative Staging methodology. Data from other staging systems or standards were not includedas valid stage data in the indicator.
5. The Canadian Partnership Against Cancer has recently launched an initiative to support the implementation of Collaborative Staging across the country. Upon the conclusion of this initiative, complete staging is expected to be available from the participating provinces for the top four disease sites: breast, prostate, lung and colorectal.
6. All cancer sites included stage 0 cases.

**Breast cancer diagnosis wait time: abnormal mammogram to resolution**
**Definition:** 1. The median and 90th percentile elapsed time (in weeks) from abnormal breast screen to resolution (test date of definitive diagnosis);2. The percentage of women for which the above wait time was within target timeframes;3.The percentage of women aged 50-69 receiving a screening mammogram/clinical breast exam through the provincial organized screening program in a: 24-month period and a 30-month period
**Population:** Women aged 50 – 69 participating in the organized breast screening program with an abnormal breast screen result (mammogram or clinical breast examination); 1. Requiring a tissue biopsy; 2. Not requiring a tissue biopsy
**Measures:** 1a. Median wait time (weeks); 1b. 90th percentile wait time (weeks); 2. Percentage with resolution within the target wait time – targets are 7 weeks for women requiring a tissue biopsy and 5 weeks for women not requiring a tissue biopsy; 3. Participation rate:
Numerator: Women aged 50-69 who received at least one mammogram/clinical breast exam in the provincial organized breast screening program
Denominator: Total number of women, aged 50-69, eligible for participation in the organized breast screening program during that time period
**Data source:** Provincial breast cancer screening programs
**Measurement timeframe:** Wait time: 2011, 2004-2011Participation rate: 24-month period (January 1, 2011 –December 31, 2012) 30-month period (July 1, 2010 – December 31, 2012)

**Data reported:** BC, AB, SK, MB, ON, QC, NB, NS, PE, NL, NT
**Province specific notes: AB:** Wait time data were based on the screening mammograms done by Screen Test, which is part of Alberta Breast Cancer Screening Programs (accounting for about 10% of screening mammograms in Alberta).
**SK:** Participation rate included patients who have had breast cancer in the past who are allowed to re-screen with the screening Program for breast cancer.
**ON:** Median and percentile are not available from 2009 onward. Percentage within target for 2011 is for aged 50-74. Participation rate is for aged 50-74 and is adjusted using the 2006 Canadian population.
**QC:** Data are not available for 2004, 2009 and 2011.
**NT:** 2011 wait time data included one site (Stanton) only. Participation rate included two sites (Stanton & Hay River) only.
**General notes:**
1. Indicator excludes tests beyond 6 months post screen.
2. Time to diagnosis is based on the date of the first pathological biopsy result of breast cancer (excludes fine needle aspiration and all inconclusive procedures) or the date of the last benign test or pathological biopsy.
3. Definitive diagnosis of cancer is the first core or open surgical biopsy that confirms cancer. In rare occasions fine needle aspiration (FNA) biopsy may also be used as a definitive diagnosis of cancer. Definitive diagnosis of benign cases is the last benign test up to 6 months following an abnormal screen.
4. Tissue biopsy includes open and core needle biopsy.
5. The wait times presented must be evaluated in the context of the overall participation in organized breast cancer screening programs.

**Percentage of women (aged 50-69) who participated in an organized breast cancer screening program during a 24-month (January 1, 2011 to December 31, 2012) and a 30-month period (July 1, 2010 to December 31, 2012), by province/territory**

| Period/Province/ Territory | BC | AB | SK | MB | ON | QC | NB | NS | PE | NL | YT | NT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **24-month** | 48.8 | 58.5 | 41.4 | 54.3 | 43.2 | 58.2 | 55.5 | 57.0 | - | 37.1 | - | 45.0 |
| **30-month** | 52.9 | 63.5 | 37.7 | 58.4 | - | 64.4 | 62.9 | 62.4 | - | 42.0 | - | 57.0 |

"-" Data are not available for ON (30 months), PE (24 months and 30 months), YT (24 months and 30 months) SK data included patients who have had breast cancer in the past who are allowed to re-screen with the Screening Program for breast cancer. ON data are for aged 50-74 and are age adjusted using the 2006 Canadian population. NT data included 2 sites (Stanton & Hay River) only.
In AB, the participation rate includes breast screening done through the Screen Test Program and the Alberta Society of Radiologists (ASR). Physician claim data was also used.
Data source: Provincial breast cancer screening programs.

**Colon cancer diagnosis wait time: abnormal fecal test to colonoscopy**
**Definition:** Time (in days) between an abnormal colorectal cancer screening fecal test result and a follow-up screening colonoscopy procedure
**Population:** Individuals with an abnormal fecal test (for CRC screening) who went on to receive a colonoscopy within 180 days of the fecal test result
**Measures:** 1. Median 2. 90th percentile 3. Number of individuals having a follow-up colonoscopy within 180 days

**Data Source:** Reported by the provincial colorectal screening programs through the National Colorectal Cancer Screening Network
**Measurement Timeframe:** First-round screening tests conducted between January 1, 2009 and December 31, 2011
**Data Reported:** BC, SK, MB, NS, PE provided data. Province specific notes:
**SK:** Data include one health region in which the program started on October 1, 2009.
**NS:** Data are for April 1, 2009 – December 31, 2011.
**PE:** Data reflect only patients who participated in the screening program May 1, 2011 – December 31, 2011.
**General Notes:**
1. This indicator does not include patients who received a colonoscopy more than 6 months following an abnormal fecal test.
2. The colonoscopy may have been performed inside or outside the Program but only includes individuals whose abnormal fecal test was performed in the screening Program.

# 4. Treatment

## 4.1 Surgery

**Removal of 12 or more lymph nodes in colon cancer resections**

**Definition:** The proportion of colon cancer resections for which 12 or more lymph nodes were removed and examined

**Numerator:** Colon cancer cases diagnosed during the year and resected within 1 year of diagnosis for which 12 or more lymph nodes were removed and examined

**Denominator:** All colon cancer cases diagnosed in the province during the year and resected within 12 months of diagnosis

**Exclusions:** Cases with unknown number of nodes removed and examined were excluded from both numerator and denominator.

**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer, typically from collaborative staging data

**Measurement timeframe:** 2007, 20082009, and 2010 diagnosis years

**Stratification variables:** Province, age, sex

**Provinces submitting data:**AB, SK, MB, ON, NB, NS, PE, NL

**Province specific notes: AB:** Treatment information is based on initially planned treatment to primary site (ACR data). Excludes C18.1 for 2010. CCI codes are not identified in the ACR, as such all coded surgeries were included for complete colon resection. If more than one surgical procedure is performed, the most definitive procedure is documented. The definition of definitive is the surgical procedure with the intent to cure. **NL:** Did not limit data to complete resections (colectomy). **ON:** 2010 data are for colon cases with 12 or more nodes examined in 2010 rather than colon cancer cases were diagnosed in 2010.

**General notes:**

1. Colon cases defined as ICDO3 codes: C18.0 to C18.9 with behavior code
2. Exclude lymphoma Codes M-95 to M-98. 2010 data also exclude sarcoma codes, neuroendocrine carcinoma, squamous cell carcinoma
3. Colon resections identified as CCI codes: 1NM87 or 1NM89 or 1NM91 or descriptors listed in Table 1 below
4. All resected cases, regardless of margin status (due to data limitations)
5. Last resection date (if multiple) – diagnosis date <=365 days.
6. Cases for patients under 18 years of age (at diagnosis) were excluded.

**Resection rate for Stage II or III rectal cancer patients**

**Definition:** Percentage of stage II or III rectal cancer patients who had a surgical resection within one year of diagnosis

**Numerator:** The number of cases receiving a rectal resection within 1 year of diagnosis

**Denominator:** The number of stage II and III rectal cancer cases

**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer

**Measurement timeframe:** 2009 and 2010 diagnosis year

**Stratification variables:** Province, sex, age

**Provinces submitting data:** AB, SK, MB, ON, NB, NS, PE, NL

**Province specific notes AB:** Resections not necessarily limited to the specified types (complete rectum). For 2010, Treatment information is based on initially planned treatment to primary site (ACR data). CCI codes are not identified in the ACR, as such all coded surgeries were included for complete rectum resection. If more than one surgical procedure is performed, the ACR codes the most definitive procedures is documented. The definition of definitive is the surgical procedure with the intent to cure.
**NB:** For 2010, the surgery information was captured in Cancer Registry instead of Discharge Abstract Database.
**NS:** For 2009, cases from Cumberland Health Authority were included. For 2010, collaborative stage variables were used to identify those having resections. Individual charts were reviewed to obtain resection date. Extension codes were used to identify true resections (i.e. polypectomies were not considered resections)
**NL:** For 2010, margin status was not recorded. Ineligible surgeries were excluded from the denominator.
**General Notes:**
1. Rectal cases defined as CCI codes: C19.9 or C20.9, AJCC group stage at diagnosis = II or III. Exclude lymphoma codes M-95 to M-98. 2010 data also exclude sarcoma codes – 8800/3, neuroendocrine carcinoma, squamous cell carcinoma
2. Rectal resection defined as CCI codes 1NQ87 or 1NQ89 or surgeries listed in Table 1 below.
3. Resected cases included regardless of margin status (due to data limitations) for 2009, included margins are negative for 2010
4. Last resection data (if multiple)-diagnosis date<=365 days
5. Cases for patients under 18 years of age were excluded

**Resection rate for Stage III colon cancer patients**
**Definition:** Percentage of stage III colon cancer patients who had a surgical resection within one year of diagnosis
**Numerator:** The number of cases receiving a colon resection within 1 year of diagnosis
**Denominator:** The number of stage III colon cancer cases
**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer
**Measurement timeframe:** 2009 and 2010 diagnosis year
**Stratification variables:** Province, sex, age
**Provinces submitting data:** AB, SK, MB, NB, NS, PE, NL
**Province specific notes: AB:** Treatment information is based on initially planned treatment to primary site (ACR data). CCI codes are not identified in the ACR data, as such all coded surgeries were included for complete colon resection. If more than one surgical procedure is performed, the most definitive procedure is documented. The definition of definitive is the surgical procedure with the intent to cure.
**NL:** Cases where margin status was positive or unknown were removed. All cases that did not have an eligible surgery were removed. See Table 1 below.
**General Notes:**
1. Colon cases defined as CCI codes: C18.0-C18.9 for 2009, C18.0 and C18.2 to C18.9 for 2010, AJCC group stage at diagnosis = III. Exclude lymphoma codes M-95 to M-98. 2010 data also exclude sarcoma codes – 8800/3, neuroendocrine carcinoma, squamous cell carcinoma.
2. Colon resection defined as CCI codes 1NM87 or 1NM89 or 1NM91, or surgeries listed in Table 1 below.
3. Resected cases included regardless of margin status (due to data limitations) for 2009, included margins are negative for 2010
4. Last resection data (if multiple)-diagnosis date<=365 days
5. Cases for patients under 18 years of age were excluded.

**Resection rate for Stage II or IIIA non-small cell lung cancer patients**

**Definition:** Percentage of stage II or IIIA non-small cell lung cancer patients who had a surgical resection within one year of diagnosis

**Numerator:** The number of cases receiving a surgical resection within 1 year of diagnosis

**Denominator:** The number of stage II or IIIA non-small cell lung cancer cases

**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer

**Measurement timeframe:** 2009 and 2010 diagnosis year

**Stratification variables** Province, sex, age

**Provinces submitting data:** AB, SK, MB, ON, NB, NS, PE

**Province specific notes: AB:** Treatment information is based on initially planned treatment to the primary site (ACR data). CCI codes are not identified in the ACR, as such all coded surgeries were included for complete lung resection. If more than one surgical procedure is performed, the most definitive procedure is documented. The definition of definitive is the surgical procedure with the intent to care. This indicator excludes case with stage="III".

**NS:** Collaborative stage variables were used to identify those having resections. Individual chart were reviewed to obtain resection date

**General Notes:**

1. Non-small cell lung cases defined as CCI codes: C34.0 to C34.9, AJCC group stage at diagnosis = II or IIIA. Exclude lymphoma codes M-95 to M-98. 2010 data also exclude sarcoma codes – 8800/3, neuroendocrine carcinoma, squamous cell carcinoma.
2. Resections defined as CCI codes 1GR87, 1GR89, 1GR91, 1GT59, 1GT87, 1GT89 or 1GT91 or surgeries listed on Table 1 below.
3. Resected cases included regardless of margin status (due to data limitations) for 2009, included margins are negative for 2010
4. Last resection data (if multiple)-diagnosis date<=365 days
5. Cases for patients under 18 years of age were excluded

## 4.2 Radiation Therapy

**Radiation therapy wait time: ready-to-treat to treatment**

**Definition:** 1. The median and 90th percentile elapsed time from ready to treat to start of radiation therapy, measured in days; 2. The percentage of radiation therapy cases for which the above wait time was within target timeframes

**Included population:** All cancer patients receiving radiation therapy who have wait time data collected as consistent with the specifications of this indicator

**Measures:** 1a. Median wait time (days) 1b. $90^{th}$ percentile wait time (days) 2. Percentage of patients starting treatment within target timeframe (4 weeks after being ready to treat)

**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer

**Measurement timeframe:** 2012 treatment years

**Stratification variables:** Province, by disease site (all cancers, breast, colorectal, lung , prostate)

**Provinces submitting data:** BC, AB, SK, MB, ON, QC, NB, NS, PE, NL

**Province specific notes:**

**AB:** Includes all cases who had radiation therapy at a cancer care facility in Alberta with their first treatment between January 3, 2012 – December 31, 2012. Includes cases living in another province at time of diagnosis but received radiation therapy in Alberta. The tumor group classification for this indicator differs from the other indicators in that they are based on referral tumor groups.
MB: Radiation therapy wait time is measured by primary site. **QC:** Median and 90th percentile data are not available. **NB:** Patients with missing date for ready to treat are excluded. New Brunswick Cancer Network reports wait times for radiation therapy for the following areas: brain and CNS, breast, gastro-intestinal, genitourinary, gynecology, head & neck, leukemia, lung, lymphoma, malignant melanoma, sarcoma, skin, benign cancer.**PE:** Patients diagnosed out of province and treated on PE are excluded. **NL:** Wait times come from the patient clinical record – the Oncology Patient Information System (OPIS)
**General notes:**
1. All behavior codes are included.
2. Cases with treatment done in 2012 are included.
3. The source data for this indicator were submitted by the provincial cancer agencies based on definitions provided by the Canadian Partnership Against Cancer.
4. Of note for breast cancer data, if the province obtains this data from a wait time database as opposed to a registry, then breast cancer cases were to be included per the database definition.
5. There are known discrepancies in the ways in which different provinces measure wait times. One of the key sources of variation is the way the "Ready to Treat" timeframe is defined. Efforts are underway to standardize these definitions. The following section outlines the definitions used by the different provinces.

**Provincial definitions:**
**AB:** The date when the patient is physically ready to commence treatment. **BC:** The date at which both oncologist and patient agree that treatment can commence. Being ready to treat requires that all diagnostic tests and procedures required to assess the appropriateness of, indications for, and fitness to undergo radiation therapy are complete. **MB:** The date when a decision has been made by the radiation oncologist and is agreed to by the patient that radiation therapy is appropriate and should commence AND the patient is medically ready to start treatment AND the patient is willing to start treatment. **NB:** The date when any planned delay is over and the patient is ready to begin treatment from both a social/personal and medical perspective. **NL:** The date when all pre-treatment investigations and any planned delay are over, and the patient is ready to begin the treatment process from both a social/ personal and medical perspective. **NS:** The date when all pre-treatment investigations and any planned delay are over, and the patient is ready to begin the treatment process from both asocial/personal and medical perspective. Nova Scotia did not have a ready to treat date until February 2010; a proxy date was used prior to this time. **ON:** The time from when the specialist is confident that the patient is ready to begin treatment to the time the patient receives treatment. **PE:** The date when all pre-treatment investigations and any planned delay are over, and the patient is ready to begin the treatment process from both a social/personal and medical perspective. **QC:** At consultation, the radiation oncologist enters the date at which the patient will be ready to treat on a formulary requesting treatment. **SK:** The date when the patient is ready to receive treatment, taking into account clinical factors and patient preference. In the case of radiation therapy, any preparatory activities (e.g., simulation, treatment planning, dental work) do not delay the ready to treat date.

**<u>Radiation Therapy Capacity</u>**
**Definition:** Per capita linear accelerator availability
**Numerator:** Number of operational linear accelerators (available for radiation therapy) in province
**Denominator:** Total provincial population

**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against CancerPopulation from Annual Population estimates for Canada, provinces and territories, accessed from: http://www.statcan.gc.ca/daily-quotidien/130926/t130926a002-eng.htm
**Measurement timeframe:** 2012 calendar years
**Stratification variables:** Province
**Provinces submitting data:** AB, BC, MB, NB, NL, NS, ON, PE, QC, SK
**General notes:** LINACS were pro-rated for partial availability.

**Radiation therapy utilization**
**Definition:** Percentage of cancer cases receiving radiation therapy within 2 years of diagnosis
**Numerator:** Total number of cancer incident cases diagnosed in 2010 who have received radiation therapy within two years of diagnosis. Numerator inclusions: All cases who have received radiation therapy regardless of treatment intent. Radiation therapy was not limited to the primary tumour site.
**Denominator:** Total number of cancer incident cases diagnosed in 2010
**Denominator exclusions:** 1. In situ and borderline cases; 2.Non-melanoma skin cancer (ICD-O3 morphology codes M8050-8110 with site codes C44.0 to C44.9)
**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer
**Measurement timeframe:** 2010 diagnosis years
**Stratification variables:** Province
**Provinces submitting data:** MB, NS, SK, NB, AB, NL, BC, PE
**Province specific notes:** AB: If the Alberta Cancer Registry is notified of out of province treatment to provincial residents or it is mentioned in the documents, it will be coded and included. Data include both External Beam and Brachytherapy. Treatment information is based on initial and post-initial treatments in the ACR and EMR. And it includes all initially planned RT (ACR) and post-initial RT, including radiation therapy for metastasis, progression of a palliative intent (EMR). Data exclude radiation theraphy associated to another primary tumour coded on the ACR. **BC:** Majority of radiation therapy to sites other than the primary tumour site are excluded but there may be a few cases that can't be excluded without having to go through all the data manually. **PE:** Out of province data are not excluded but the numbers would be so small that it is likely not relevant.
**General notes:**
1. Treatments associated with brachytherapy treatment are included.
2. The "incident case" is at the patient/ primary disease level as per Canadian Cancer Registry. The same person with 2 separate primaries would be treated as 2 incident cases (within applicable CCR/NAACCR rules; Reference: Thornton M (Editor). Standards for Cancer Registries Volume II Data Standards and Data Dictionary, 17th Edition. Springfield: North American Association of Central Cancer Registries; 2012 [accessed on 2012 October 25]. Available at: http://www.naaccr.org/Applications/ContentReader/Default.aspx?c=3
3. Cases for patients under 18 years of age (at diagnosis) were excluded.
4. Radiation therapy start date – diagnosis date <=730 days

**Pre-operative radiation therapy for stage II or III rectal cancer patients**
**Definition:** Percentage of resected stage II and III rectal cancer cases receiving pre-operative (neo-adjuvant) radiation therapy
**Numerator:** Stage II and III rectal cancer cases diagnosed during the year receiving pre-operative radiation therapy up to 120 days before resection

**Denominator:** Stage II and III rectal cancer cases diagnosed in the province during the year and having a rectal resection within one year of diagnosis
**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer
**Measurement timeframe:** 2007, 2008, 2009, and 2010 diagnosis year
**Stratification variables:** Province, age, sex
**Provinces submitting data:** AB, SK, MB, ON, NB, NS, PE, NL
**Province specific notes: AB:** Resections not necessarily limited to the specified types (complete rectum). For 2010, Treatment information is based on initially planned treatment to primary site (ACR data). CCI codes are not identified in the ACR, as such all coded surgeries were included for complete rectum resection. If more than one surgical procedure is performed, the ACR codes the most definitive procedures is documented. The definition of definitive is the surgical procedure with the intent to cure. Cases with radiation therapy after surgery were excluded. **MB:** Radiation therapy was not limited to primary tumour site. **ON:** Radiation therapy was not limited to primary tumour site. **NB:** For 2010, the surgery information was captured in Cancer Registry instead of Discharge Abstract Database. The "Extension Evaluation codes" were used to find out if the patient had pre-operative radiation therapy. **NS:** For 2007 and 2008, cases from Cumberland Health Authority were excluded as they may be receiving cancer care in New Brunswick, and Nova Scotia does not have out-of-province treatment data. For 2009, cases from Cumberland Health Authority were included. For 2010, collaborative stage variables were used to identify those having resections. Individual charts were reviewed to obtain resection date. Extension codes were used to identify true resections (i.e. polypectomies were not considered resections). In the event of synchronous primaries, analysis restricted to a single disease.**PE:** Treatment intent filter was used to identify neo-adjuvant therapy. **NL:** Treatment intent filter was used to identify neo-adjuvant therapy. For 2010, margin status was not recorded. Ineligible surgeries were excluded from the denominator.
**General notes:**
1. Rectal cases defined as ICDO3 codes: C19.9 or C20.9, AJCC Group Stage at Diagnosis = II or III. Exclude lymphoma codes (M-95 to M-98. 2010 data also exclude sarcoma codes – 8800/3, neuroendocrine carcinoma and squamous cell carcinoma.
2. Rectal resections defined as CCI codes 1NQ59 or 1NQ87 or 1NQ89 or see list of descriptors listed in Table 2 below.
3. Resected cases included regardless of margin status (due to data limitations).
4. 1st resection date (if multiple) – diagnosis date <=365 days. 1$^{st}$ resection date – radiation therapy start date<=120 days 5. Cases for patients under 18 years of age (at diagnosis) were excluded.

**<u>Post-operative radiation therapy for stage I or II breast cancer patients</u>**
**Definition:** Percentage of stage I and II breast cancer cases (female) receiving adjuvant radiation therapy following breast conserving surgery
**Numerator:** Stage I and II breast cancer cases (female) diagnosed in the province during the year and starting radiation therapy within 270 days following breast conserving surgery
**Denominator:** Stage I and II breast cancer cases (female) diagnosed in the province during the year and receiving breast conserving surgery within one year of diagnosis
**Exclusions:** Cases receiving a mastectomy
**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer
**Measurement timeframe:** 2007, 2008, 2009 and 2010 diagnosis years
**Stratification variables:** Province, age

**Provinces submitting data:** AB, SK, MB, ON, NB, PE, NL
**Province specific notes: AB:** Breast conserving surgery has been identified by a surgery modality as "lumpectomy" or "segmental resection". If more than one surgical procedure is performed, the most definitive procedure is documented. For example, if a segmental resection is performed, followed by a modified radical mastectomy, only the modified radical mastectomy will be coded in our database. The definition of definitive is the surgical procedure with the intent to cure. **SK:** Date of surgery is not available for cases diagnosed in 2009. **ON:** Radiation therapy was not limited to primary tumour site. **NL:** Treatment intent filter applied. **PE:** Treatment intent filter applied for 2009, but not applied for 2010 as it was only entered part way through the year so data is missing for half of the applicable cases.
**General notes:**
1. Breast cases identified as ICDO3 codes: C50.0 to C50.9, AJCC Group Stage at Diagnosis = I or II. Exclude male, lymphoma codesM-95 to M-98. 2010 data also exclude sarcoma codes – 8800/3, neuroendocrine carcinoma and squamous cell carcinoma.
2. Breast-conserving surgery cases are identified using CCI codes 1YM87 or 1YM88.
3. Cases with a subsequent mastectomy within one year of lumpectomy are excluded, using CCI codes 1YM89 to 1YM92 in the specified time period.
4. Resected cases included regardless of margin status (due to data limitations).
5. Last resection date (if multiple) - diagnosis date <= 365 days Radiation start date – last resection date (if multiple) <=270 days 6. Cases for patients under 18 years of age (at diagnosis) were excluded.

## 4.3 Systemic Therapy

**Post-operative chemotherapy for stage III colon cancer patients**
**Definition:** Percentage of stage III colon cancer cases receiving chemotherapy following surgical resection
**Numerator:** Stage III colon cancer cases diagnosed during the year who were resected within one year of diagnosis and starting adjuvant chemotherapy within 120 days of surgery
**Denominator:** Stage III colon cancer cases diagnosed in the province during the year and having a colon resection within one year of diagnosis
**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer
**Measurement timeframe:** 2007, 2008, 2009 and 2010 diagnosis years
**Stratification variables:** Province, age, sex
**Provinces submitting data:** AB, SK, MB, PE, NL
**Province-specific notes: AB:** Treatment information is based on initially planned treatment to primary site (ACR data). CCI codes are not identified in the ACR data, as such all coded surgeries were included for complete colon resection. If more than one surgical procedure is performed, the most definitive procedure is documented. The definition of definitive is the surgical procedure with the intent to cure. **MB:** Oral chemotherapy is included but will not be complete. **PE:** Treatment intent filter was used to identify adjuvant therapy from 2007-2009. It didn't apply for 2010 data as it was only entered part way through the year so data is missing for half of the applicable cases. **NL:** Treatment intent filter was used to identify adjuvant therapy. Cases where margin status was positive or unknown were removed from the denominator. All cases that did not have an eligible surgery as per Procedure Codes table were removed from the denominator. Those cases where a chemo start date could not be ascertained were removed from the denominator. In many cases, data were available for the date on which a chemo script was written but not a definitive start date.

**General notes:**

1. No filter for treatment intent was used, unless otherwise specified by province.
2. Colon cases defined as ICDO3 codes: C18.0 to C18.9 for 2007-2009, C18.0 and C18.2 to C18.9 for 2010, AJCC Group Stage at Diagnosis = III. Exclude lymphoma codesM-95 to M-98. 2010 data also exclude sarcoma codes – 8800/3, neuroendocrine carcinoma, squamous cell carcinoma.
3. Colon resections defined as CCI codes: 1NM87 or 1NM89 or 1NM91 or descriptors listed in Table 2 below.
4. Resected cases included regardless of margin status (due to data limitations) for 2007-2009. Resected cases included the cases where margin is negative.
5. Chemotherapy includes oral and IV chemotherapy.
6. Last resection date (if multiple) – diagnosis date <=365 days. Chemo start date – last resection date (if multiple) <=120 days7. Cases for patients under 18 years of age (at diagnosis) were excluded.

**<u>Post-operative chemotherapy for stage II or IIIA non-small cell lung cancer patients</u>**

**Definition:** Percentage of stage II and IIIA non-small cell lung cancer cases receiving chemotherapy following surgical resection

**Numerator:** Stage II and IIIA non-small cell lung cancer cases diagnosed during the year, resected within one year of diagnosis and starting adjuvant chemotherapy within 120 days of surgery

**Denominator:** Stage II and IIIA non-small cell lung cancer cases diagnosed in the province during the year and having a lung resection within one year of diagnosis

**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer

**Measurement timeframe:** 2007, 2008, 2009, and 2010 diagnosis years

**Stratification variables:** Province, age, sex

**Provinces submitting data:** AB, SK, MB, ON, NS, PE

**Province specific notes: AB:** Treatment information is based on initially planned treatment to the primary site (ACR data). CCI codes are not identified in the ACR, as such all coded surgeries were included for complete lung resection. If more than one surgical procedure is performed, the most definitive procedure is documented. The definition of definitive is the surgical procedure with the intent to care. This indicator excludes case with stage="III". **MB:** Oral chemotherapy is included but will not be complete. **ON:** Chemotherapy data excluded most oral chemotherapy since those data are notreliably reported to Cancer Care Ontario. 2010 data are for 2010/2011.NS: Collaborative stage variables were used to identify those having resections. Individual chart were reviewed to obtain resection date. **PE:** Treatment intent filter was used to identify adjuvant therapy for 2007-2009. It didn't apply for 2010 data as it was only entered part way through the year so data is missing for half of the applicable cases.

**General notes:**

1. Non-small cell lung cases defined as ICDO3 codes: C34.0 to C34.9. Exclude histology codes: 8002, 8041, 8043, 8044, 8045, 8073 and 8803. Exclude lymphoma codesM-95 to M-98. 2010 data also exclude sarcoma codes, neuroendocrine carcinoma, squamous cell carcinoma.
2. AJCC Group Stage at Diagnosis = II or IIIA.
3. Resections defined as CCI codes: 1GR87, 1GR89, 1GR91, 1GT59, 1GT87, 1GT89 or 1GT91 or descriptors listed in Table 2 below.
4. All resected cases are included regardless of margin status (due to data limitations).
5. Last resection date (if multiple) – diagnosis date <=365 days. Chemotherapy start date – last resection date (if multiple) <=120 days.
6. Chemotherapy includes oral (as available in data) and IV chemotherapy.

7. No filter for treatment intent was used, unless otherwise specified by province.
8. Cases for patients under 18 years of age (at diagnosis) were excluded.

**Table 1: Procedure Codes**

| | Procedure Codes | | Diagnostic codes | |
|---|---|---|---|---|
| **Specific Cohort** | **CCP** | **CCI** | **ICD-9-CM** | **ICD-10** |
| Colon cancer resections | 57.5*, 57.6* | 1.NM.87.^^, 1.NM.89.^^, 1.NM.91.^^ | Only colorectal cancer codes | |
| | | | 153*, 154.0, 154.1 154.2, 154.3. 154.8 | C18, C19, C20 C21 |
| Rectal cancer resections | 60.2, 60.24, 60.4, 60.5, 60.51, 60.52, 60.53, 60.55, 60.59 | 1.NQ.87.LA, 1.NQ.87.DA, 1.NQ.87.PF, 1.NQ.87.RD, 1.NQ.87.DF, 1.NQ.89.^^ | Only colorectal cancer codes | |
| | | | 153*, 154.0, 154.1 154.2, 154.3. 154.8 | C18, C19, C20 C21 |

**Table 2: Clinical Descriptors**

| Clinical descriptors for Colon Cancer | Clinical descriptors for Rectal Cancer |
|---|---|
| right hemicolectomy,<br>left hemicolectomy<br>segmental colectomy<br>partial colectomy<br>transverse colectomy<br>subtotal coloectomy<br>anterior resection (note overlap with rectal cancer below) | anterior resection (overlap with colon cancer above)<br>low anterior resection<br>abdominoperineal resection<br>segmental resection rectum<br>Harmann procedure<br>total proctectomy |

# 5. Person Centred-Perspective

**Screening for distress**

**Definition:** Extent to which provinces and their cancer programs have implemented standardized tools to screen for patient-reported symptoms such as emotional and physical distress (including pain)
**Extent of Implementation:** 1.Province wide implementation*standardized symptom screening undertaken for at least a portion of patients at each provincial cancer centre and data collected centrally; 2.Partial implementation*standardized symptom screening undertaken for at least a portion of patients at selected provincial cancer centres; 3.Not provincially coordinated (some local use possible)*provincially managed implementation of symptom screening does not exist; however, some individual centres/regions may use a screening tool but do not report data at a provincial level
Information sources: Provincial cancer agencies
**Measurement timeframe:** 2012
**Provinces submitting data:** BC, AB, SK, MB, ON, QC, NB, NS, PE, NL

**Place of death**

**Definition:** Percentage of deaths of cancer patients by location: hospital, other health care facility, private home, or other location
**Numerator:** 1. By province: Number of cancer deaths in: hospital; other2. Canada: Number of cancer deaths in hospital; private home; other
**Denominator:** Number of cancer deaths
**Data source:** Canadian Vital Statistics – Death Database (annual file)
**Measurement timeframe:** 2005 to 2009
**Stratification variables:** Province
**Notes:**
1. All deaths in British Columbia in 2005 and 2006 were recorded as unknown location.
2. In the figure, Cancer patient place of death, by province – 2009, unknown location was excluded. "Other" included other specified locality, other health care facility and private home.
3. In the figure, Cancer patient place of death, Canada – 2005 to 2009, "Other" included other specified locality, other health care facility and unknown locality.
4. Includes data from all provinces and territories.

**Patient satisfaction – all dimensions of care**

**Definition:** NRC AOPSS Survey (self-reported data); see inclusion/exclusion criteria below – provincial % Negative rating, summary indicator for the dimensions surveyed: Access to Care, Coordination and Continuity of Care, Emotional Support Information, Communication & Education, Physical Comfort, Respect for Patient Preferences, Overall Quality of Care
**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer
**Measurement timeframe: AB:** Feb-Aug 2012**MB:** Jun-Oct 2011 **NS:** Jun-Sept 2012**PE:** Nov2012-Jan2013 **SK:** Apr-Jun2011

**Patient satisfaction – emotional support dimension**

**Definition:** NRC Picker AOPSS Survey (self-reported data) – provincial % negative rating for the 7 stratifications for emotional support: 1. By site (Breast, Cervix/Uterine/Ovarian, Colorectal/Bowel, Lung

and Prostate/testicular); 2. Reason for Treatment (first time cancer diagnosis, repeat cancer diagnosis); 3. Time since Diagnosis (less than 6 months ago, between 6-12 months ago, between 1 and 2 years ago, between 2 to 5 years ago and more than 5 years ago); 4. Education (< Sec. School, Sec. School Grad and Post-Sec. Grad); 5. Health Status (Poor, Fair, Good, Very Good and Excellent) (6) Sex (Female and Male) (7) Age (<50, 50-74 and 75+)

**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer

**Measurement timeframe: AB**: Feb-Aug 2012 **MB:** Jun-Oct 2011 **NS**: Jun-Sept 2012 **PE:** Nov2012-Jan2013 **SK**: Apr-Jun2011

**National Research Corporation Canada**
**Ambulatory Oncology Patient Satisfaction Survey**
**Inclusion and Exclusion Criteria**

Exclusion Criteria:

- Deceased patients
- Patients less than 18 years of age (based on date of birth at time of data extraction for surveying)
- Patients with no known fixed address
- Patients who do not have a confirmed cancer diagnosis (even if they have received treatment in the facility) including in-situ, benign haematology and/or non-malignant cancers (for example myeloproliferative diseases) or those going through a diagnostic assessment process
- Patients who received only inpatient services
- Patients who have notified the hospital that they wish to be excluded from mailing list.

Inclusion Criteria:

- Patients who have received active treatment in an ambulatory setting in the past 3 months
- Patients with a confirmed diagnosis of Cancer (include those patients with diseases identified as invasive, with a 3 in the 5th position of the ICD-O-3 histology code ( malignant, primary site)
- Have undergone active outpatient treatment in the past 3 months

- Are 18 years or older (based on date of birth at time of data extraction for surveying)

The table below highlights where sampling criteria for jurisdictions varies from the criteria outlined above.

| Jurisdiction | Deviations from the standard Inclusion/Exclusion criteria | Data elements in addition to those required as per NRC Implementation Manual |
|---|---|---|
| Alberta | Inclusion<br>Those who have been on treatment for six months. | • Can identify patients who received chemotherapy and radiation treatments however surgery is not captured until approximately a year after diagnosis so the vast majority of patients will not have surgical information.<br>• Will identify patients who received IV and/or oral chemotherapy at the tertiary centres. However at the Associate and Community cancer centres, are unable to determine the type of systemic treatment received. This will result in the inclusion of patients who received |

| Jurisdiction | Deviations from the standard Inclusion/Exclusion criteria | Data elements in addition to those required as per NRC Implementation Manual |
|---|---|---|
| | | hormones and immunotherapy as well as those who received chemotherapy.<br>• Alberta will use the ICD code for invasive cancer as used by the other provinces.<br>• Will use age at diagnosis as prescribed on the Implementation Manual. |
| Nova Scotia<br><br>Surveyed Point in Time Summer 2012 | Exclusion<br>Exclude in-situ bladder<br>There is a flag set on each case where 'ambiguous' terms appear on the pathology report. The histology could still be classified as /3 (invasive), but if this flag were set, the patient would not be approached. | Oral Chemotherapy patients:<br>There is a problem in identifying these patients. They are not specifically included or excluded. Due to limitations in the IT system, an algorithm has been developed for selecting patients that are most likely to be receiving chemotherapy based on visits to medical oncologists so oral chemotherapy patients could be part of that algorithm. Certainly oral chemotherapy is increasing and they may have different issues or not identify themselves as chemotherapy patients in the survey. |
| Saskatchewan<br><br>Sample point in time every 1 – 2 years | Exclusions:<br>- Patients who are on injections (determined by a comprehensive drug master list from Care Services)<br>- Patients who have restrictions in Ceres/Eureka/CMS<br>- Patients with specific chemo/radiation events<br><br>Inclusions:<br>- Patients who have a specific COPS institution as a scheduled event<br>- Haematology patients (as there is no way currently to exclude those patients)<br>- Have undergone active outpatient treatment in the past six months. | Oral Chemotherapy patients:<br>Oral chemotherapy patients included in sample size. Patients not receiving IV chemotherapy are not excluded from the serious side effects and care that they should receive and expect during their cancer care service. Many cancer patients are on oral chemotherapy, such as the brain, GI, pancreatic cancer patients that require the same information, education, support, follow up and side effects management as do the IV chemotherapy patients. |
| Manitoba | • As per criteria above. | |
| Prince Edward Island | • As per criteria above. | |

# 6. Research

**Adult clinical trial participation**

**Definition:** The ratio of the total number of all patients (≥19 years) newly enrolled in cancer-related therapeutic trials or clinical research studies in 2012 to the projected number of new cancer cases (all ages) in 2012

**Numerator:** Number of cancer patients (≥19 years) newly enrolled in cancer-related therapeutic clinical trials or clinical research at provincial cancer centres in 2012. For patient enrolled in multiple clinical trials, count all occurrences.

**Denominator:** Projected number of new invasive cancer cases (all ages) in 2012 – provided by Canadian Cancer Society.

**Data source:** Reported by provincial cancer agencies or equivalent to the Canadian Partnership Against Cancer

**Measurement timeframe:** 2012 calendar year

**Stratification variables:** Province, cancer type: 1. All invasive cancers (all invasive cancers for the numerator, all cancers which included bladder in situ cases for the denominator); 2. Breast; 3. Colorectal 4. Lung; 5. Prostate

**Provinces submitting data:** All invasive cancers: BC, AB, SK, MB, ON, NB, NS, PE, NL

**By cancer type:** BC, AB, SK, MB, NB, NS, PE, NL

**Province specific notes: AB:** Includes the total number of accruals for cancer patients (>=19 years) newly enrolled in cancer related therapeutic trials or clinical research in 2012 who were on the Alberta Cancer Trials (ACCT) database. If a patient went on multiple clinical trial accruals in the given year, a patient would be counted for each accrual. The ACCT database also includes patients who were living outside of Alberta, as long as they were on a clinical trial in Alberta. The ACCT database includes both females and males in the Breast Tumour Group and may include clinical trials for non-melanoma skin patients.**MB:** Included cases from out of province.

**Pediatric clinical trial participation**

**Definition:** The ratio of the total number of all patients (≤18 years) enrolled in cancer-related therapeutic trials or clinical research studies in 2012 to the total number of new cancer cases (≤18 years) diagnosed at pediatric cancer centres in 2012

**Numerator:** All patients (≤18 years) newly enrolled in cancer-related therapeutic trials or clinical research studies during the year

**Denominator:** New cancer cases (≤18 years) newly registered at pediatric cancer centres during the year

**Data source:** Reported by $C^{17}$ Council to the Canadian Partnership Against Cancer, collected September 2013

**Measurement timeframe:** 2011 and 2012 calendar years

**Provinces submitting data:** BC, AB, SK, MB, ON, QC, NS, NL

**Notes:** 1. For the purposes of registration, a clinical trial is any cancer-related research study that prospectively assigns human participants to a health-related intervention to evaluate the effects on health outcomes; 2. Data exclude enrolments in biology studies and include Phase I to Phase IV clinical trials.

**Cancer research investment**

**Definition:** 1. Distribution of site-specific cancer research funding in the calendar year 2010, as reported by 33 organizations/ programs in Canada. 2. Distribution of new cancer cases in Canada 3. Distribution of cancer deaths in Canada

**Numerator:** 1. Total research funding devoted to specific sites in the calendar year 2010 2. Total new cancer cases for special sites in 2008 3. Total cancer deaths for special sites in 2009.

**Denominator:** 1. Total site-specific cancer research funding in the calendar year 2010 2. Total new cancer cases in 20083. Total cancer deaths in 2009.

**Stratification variables:** Cancer site

**Exclusions:** Analysis included only site-specific research project funding, which comprised 50% of cancer research funding in 2010. Therefore, non-site specific research funding was excluded from the figure

**Data source:** Cancer research investment: Canadian Cancer Research Survey (CCRS) New cancer cases: CANSIM Table 103-0550 New cases for ICD-O-3 primary sites of cancer, by age group and sex, Canada, provinces and territories, annual, Canadian Cancer Registry – 3207Cancer deaths: CANSIM Table 102-0522 Deaths by causes, Chapter II: Neoplasms (C00 to D48), age group and sex, Canada, annual (number), Vital Statistics – Death Database – 3223

**Measurement timeframe:** Cancer research investment: January 1, 2010 to December 31, 2010. New cancer cases: 2008. Cancer deaths: 2009

**Provinces submitting data:** Cancer research investment: 33 organizations/programs across all jurisdictions

**General notes:**

While CCRS does include data from major cancer research funders, it does not include data on funding from the following:

- Federal government organizations (ex., Canadian Foundation of Innovation, NSERC, SSHRCC)
- Other non-governmental/voluntary sector organizations (ex., CARO, Rethink Breast Cancer)
- Hospital foundations (ex., Princess Margaret Hospital Foundation)
- Provincial government organizations (ex., Change Foundation, Saskatchewan Health Research Foundation)
- Organizations from outside Canada that fund Canada-based researchers, such as NCI; and f. Business/industry.

# 7. System Efficiency

**Breast screening outside recommended guidelines**

**Definition:** Percentage of asymptomatic females aged 75+ receiving a mammogram within the past 2 years and percentage of asymptomatic females aged 75+ and over, by single year of age receiving a mammogram within the past year, where asymptomatic is defined as: Respondents who indicated going for a mammogram for any of the following reasons: Family history; Routine screen/check-up; Age; HRT; and, NOT for any of the following reasons: Lump; Breast problem; Follow-up to breast cancer treatment; Other
**Numerator:** Asymptomatic females aged 75+ who indicated going for a mammogram within the past 2 years
**Denominator:** Total number of asymptomatic females aged 75+
**Data source:** Canadian Community Health Survey
**CCHS Variable:** 1.Ever had a mammogram; 2.Reasons for having mammogram (mark all that apply): Family history; Routine screen; Age; HRT; Lump; Follow-up to breast cancer treatment; Breast problem; Other; 3. Last time respondent had undergone a mammogram
**Measurement timeframe:** 2008 (CCHS 2008); 2012 (CCHS2012)
**Stratification variables:** Provinces
**Provinces submitting data:** All provinces and Territories
**General Notes:** CCHS data are based on representative sample which is then extrapolated to the overall population.

**Mastectomies performed as day surgeries**

**Definition:** Percentage of breast cancer mastectomies done as day surgeries, by province/territory
**Numerator:** Mastectomy performed as day surgery
**Denominator:** Total mastectomy
**Exclusion:** Potential duplicate records are removed from the analysis. Potential duplicate records are identified as discharges with identical values in the following data elements:
1. For HMDB: Institution, health card number, admission date, admission time, discharge date, discharge time, health card province3, birth date, gender, postal code, MRDx/main problem, principal CCI/main intervention
2. For Alberta Ambulatory Care data: INST HEALTH_CARD_ENCRYPT_NUM STDATE STHOUR ENDDATE ENDHOUR DOB SEX POSTCODE MDIAG MINT
3. Invalid Health Card Number ("000000000000").
4. Health Card Province Code='CA'.
5. Invalid postal code.
6. Procedures coded as abandoned.
7. Newborns, stillbirths and cadaveric donors.
8. Invalid episode date (i.e., 01JAN9999).
**Data source:** Hospital Morbidity Database, National Ambulatory Care Reporting System; Canadian Institute for Health Information Alberta Ambulatory Care Reporting System; Alberta Health and Wellness
**Measurement timeframe:** 2007/08 to 2011/12 combined fiscal years
**Stratification variables:** All Provinces
**Provinces submitting data:** All provinces and Territories
**General Notes:** 1. Age >= 18 years; 2. Patients receiving a mastectomy anywhere within the discharge

record containing the surgical episode associated with the patient's first breast resection are considered mastectomy cases

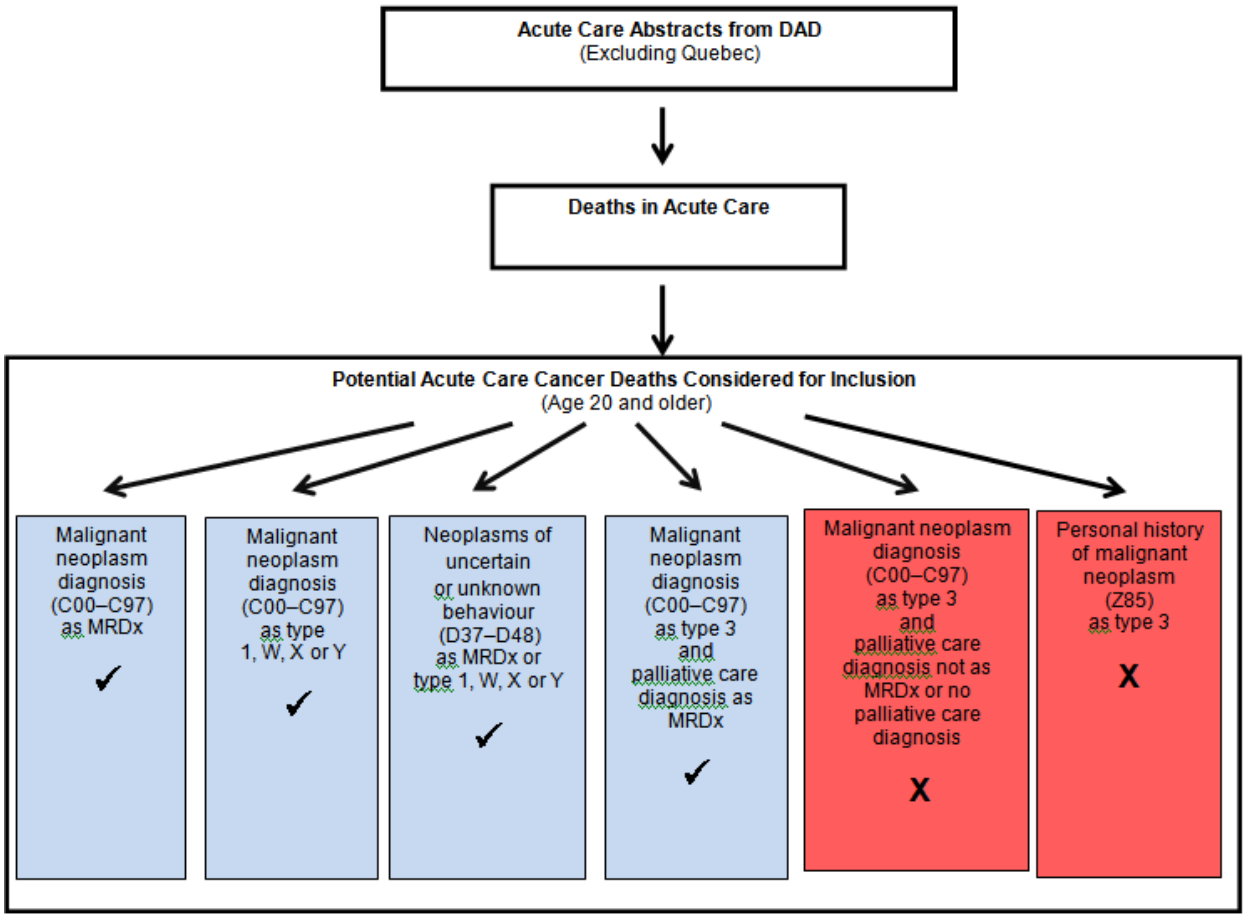
**Intensive Care Unit use in last two weeks of life**

**Definition:** Percentage of cancer patients admitted to an Intensive Care Unit (ICU) in the last 14 days of life and percentage of patients who died in the ICU
**Numerator:** (A) Patients Admitted to Intensive Care Unit (ICU) in the last 14 days of Life; (B)Patients died in ICU
**Denominator:** Patients died in hospital
**Exclusions:** Records submitted by Quebec facilities or records with Quebec-issued health cards
**Data source:** Discharge Abstract Database, 2011–2012, Canadian Institute for Health Information
**Measurement timeframe:** 2011/12 to 2012/13 combined fiscal years
**Stratification variables:** By Provinces
**Provinces submitting data:** ON, NL, AB, PE, SK, BC, MB, NB, NS
**General Notes:**

1. Patient Age >= 20 years
2. Cancer patients were identified using ICD-10-CA codes for either
    - A significant diagnosis of malignant neoplasm or neoplasms of uncertain or unknown behaviour; or
    - A most responsible diagnosis of palliative care, with a secondary diagnosis of malignant neoplasm.

    See Appendix A below on how cancer patients were selected
3. ICU records were identified from the DAD using the Special Care Unit (SCU) variables. To remove potential reporting bias, only facilities that submitted ICU data were used for the ICU analysis. To examine ICU visits within 14 days of death, only records indicating at least one ICU visit within 14 days of death were included. ICU visits that began before the 14-day window were excluded. The number of patients who died in the ICU was calculated for the entire cohort, regardless of when they were admitted to the ICU.

**Appendix A**




**Legend**

✓ Included in the study cohort.

X Excluded from the study cohort.

**Notes**

MRDx: most responsible diagnosis.
Type 1: significant pre-admit diagnosis.
Type W, X or Y (service transfers diagnosis): significant pre-admit diagnosis.
Type 3: secondary diagnosis.
Not shown in the diagram but also excluded were a few cases of C and D codes that had other diagnosis types.

# 8. Long-Term Outcomes

**Age-standardized incidence rates**

**Definition:** The incidence rate that would have occurred if the age distribution in the population of interest was the same as that of the standard, where incidence rate is defined as the number of cases of cancer (malignant neoplasms) newly diagnosed during a year, per 100,000 people at risk

**Numerator:** Number of new cancer cases (all ages): 1. Breast (female); 2. Colorectal; 3. Lung; 4. Prostate (male); 5. Pancreas

**Denominator:** 1. Annual female population estimate in hundreds of thousands 2, 3, 5 Annual population estimates in hundreds of thousands 4. Annual male population estimate in hundreds of thousands

**Age standardization:** Direct method using the 2011 Canadian Census population

**Data sources:** Canadian Cancer Registry (CCR) Database – cancer incidence dataDemography Division of Statistics Canada – population estimates

**Measurement timeframe:** For overall trends, Canada – 1992 to 2008. By province: 3-year combined (2008 – 2010), except QC (2008 only)

**Stratification variables:** Province, sex

**General notes:** 1. World Health Organization, International Classification of Diseases for Oncology, Third Edition (ICD-O-3) and the International Agency for Research on Cancer (IARC) rules for determining multiple primaries sites were used: colorectal (ICD-O-3: C18.0 to C18.9, C19.9, C20.9, C26.0), lung and bronchus (ICD-O-3: C34.0 to C34.9), female breast (ICD-O-3: C50.0 to C50.9), prostate (ICD-O-3: C61.9), pancreas (ICD-O-3: C25.0-C25.9)

**Age-standardized mortality rates**

**Definition:** The mortality rate that would have occurred if the age distribution in the population of interest was the same as that of the standard, where mortality rate is defined as the number of deaths due to cancer (malignant neoplasms) in a year per 100,000 people at risk

**Numerator:** Number of deaths from cancer (all ages): 1. Breast (female); 2. Colorectal; 3. Lung; 4. Prostate (male); 5. Pancreas

**Denominator:** 1. Annual female population estimate in hundreds of thousands 2, 3, 5 Annual population estimates in hundreds of thousands; 2. Annual male population estimate in hundreds of thousands

**Age standardization:** Direct method using the 2011 Canadian Census population

**Data sources:** Canadian Vital Statistics – Death Database – cancer mortality data Demography Division of Statistics Canada – population estimates

**Measurement timeframe:** For overall trends, Canada – 1992 to 2008By province: For breast, colorectal, lung, prostate: 3-year combined (2007 – 2009). For pancreas: 5-year combined (2005 – 2009)

**Stratification variables:** Province, sex

**General notes:** 1. Up to the year 1999, causes of death were coded according to World Health Organization (WHO), International Classification of Diseases, Ninth Revision (ICD-9): Colorectal (ICD-9 153-154), lung (ICD-9: 162), female breast (ICD-9: 174), prostate (ICD-9: 185), pancreas (ICD-9: 157)2. After the year 1999, causes of death were coded according to the World Health Organization (WHO), International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10):

Colorectal (ICD-10:C18-C20, C26.0), lung (ICD-10 : C34), female breast (ICD-10: C50), prostate (ICD-10: C61), pancreas (ICD-10: C25)

**Age-standardized relative survival ratios**

**Definition:** Relative survival ratio (RSR) is the ratio of the observed survival for a group of cancer patients (malignant neoplasms) to the expected survival for members of the general population who have the same main factors affecting survival (sex, age, place of residence) as the cancer patients. The age-standardized RSR is that relative survival that would have occurred if the age distribution of the cancer patients under study had been the same as that of the standard population

**Numerator:** For period analysis method (2006-2008): Observed cumulative survival probabilities of cancer patients after diagnosis with follow-up in 2006 to 2008 for breast, lung and colorectal; 2005 to 2007 for pancreas. For cohort analysis method (1992-1994): Observed cumulative survival probabilities of cancer patients who were diagnosed during 1992-1994: 1. Breast; 2. Colorectal; 3. Lung; 4. Pancreas

**Denominator:** Expected survival of comparison population that was alive for 5 years for patients with follow-up in 2006 to 2008 for breast, lung and colorectal; 2005 to 2007 for pancreas.

**Age-standardized:** For breast, lung and colorectal: age-standardized to people diagnosed with that cancer in Canada between 1992 and 2001. For pancreas, age-standardized to population diagnosed with pancreatic cancer in Canada between 2001 and 2005

**Data sources:** Breast, lung and colorectal: Canadian Cancer Statistics 2013 Pancreas: Canadian Cancer Registry (annual file, release date 2011) Provincial life tables (provided from Statistics Canada, 2012)

**Measurement timeframe:** For period analysis method, patients with follow-up during 2006 to 2008 for breast, lung and colorectal; 2005 to 2007 for pancreas. For cohort analysis method, patients diagnosed during 1992 to 1994 **Stratification variables:** Province,

**General notes:**

1. World Health Organization, International Classification of Diseases for Oncology, Third Edition (ICD-O-3) and the International Agency for Research on Cancer (IARC) rules for determining all primaries sites were used: colorectal (ICD-O-3 C18.0 to C18.9, C19.9, C20.9, C26.0), lung and bronchus (ICD-O-3 C34.0 to C34.9), breast (ICD-O-3 C50.0 to C50.9), pancreas (ICD-O-3: C25.0-C25.9)
2. “Canada” represents all provinces and territories, except Quebec. Data from Quebec have been excluded, in part, because the method of ascertaining the date of cancer diagnosis differs from the method used by other registries and because of issues in correctly ascertaining the vital status of cases.
3. The analysis was conducted using both cohort and period analysis methods (Reference: Brenner H, Gefeller O. An alternative approach to monitoring cancer patient survival. Cancer. 1996;78:2004 – 10).
4. Expected survival proportions were derived from sex-specific complete provincial life tables produced by Statistics Canada, using the Ederer II approach. (Reference: Ederer F, Heise H. The effect of eliminating deaths from cancer on general population survival rates (methodological note 11, End Results Evaluation section). National Cancer Institute; August 1959)
5. Period analysis was used to estimate the survival for the cases diagnosed 2006 – 2008 for breast, lung and colorectal; 2005 – 2007 for pancreas. Relative survival ratios for 1992 to 1994 were calculated using cohort analysis. For breast, lung and colorectal, these data are based on people aged 15–99 years at diagnosis. Survival ratios for Newfoundland and Labrador are not shown as they are artificially high. For pancreas, these data are based on people aged 15-74, MB, NB and PE has sparse data in some of the age groups, therefore, results were not presented since the estimate would be unstable.