
Palliative and End-of-Life Care: A Cancer System Performance Report

September 2017

Technical Appendix

Figure 2: Palliative care designation for cancer patients

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| Definition: | Distribution of when the first palliative care code was applied for patients who died of cancer in an acute-care hospital |
| Rationale for measurement: | <p>This indicator measures how early and often inpatients who died in an acute-care hospital with a cancer diagnosis were identified as “palliative care” patients.</p> <p>The designation of “palliative care” in an acute-care setting is based on the presence of the clinical code Z51.5 (Palliative Care) on a patient’s abstract. The palliative care code should be applied to patient’s abstracts whenever there is physician documentation of palliative care.</p> |
| Measurement timeframe: | 2014/15 and 2015/16 fiscal years combined |
| Denominator: | Patients who died in an acute care hospital due to cancer as the most responsible diagnosis within the measurement timeframe |
| Numerator: | <p>Number of patients:</p> <ol style="list-style-type: none"> 1) with no <i>palliative care code</i> 2) who had first <i>palliative care code</i> at final admission 3) who had first <i>palliative care code</i> before final admission |
| Exclusion criteria: | <ol style="list-style-type: none"> 1) Patients aged <18 2) Unlinkable records |
| Data availability: | All provinces/territories except QC |
| Stratification: | Not applicable |
| Data source: | Canadian Institute for Health Information (CIHI), Discharge Abstract Database |
| Data retrieval date: | Dec, 2016 |
| Variables details: | Not applicable |
| Notes from Jurisdictions: | Not applicable |
| Methodology notes: | Not applicable |
| Changes to definition compared to previous years: | Not applicable |

Figure 3: Palliative home care visits in the last 6 months of life

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| Definition: | Percentage of cancer patients across health regions who received palliative home care visits by a nurse or personal support worker in the last 6 months of life |
| Rationale for measurement: | Data presented here examines access to palliative home care by health region. This allows each health region to determine its performance relative to health regions of similar population sizes and facilitate in the evaluation of health care system delivery in each region. |
| Measurement timeframe: | 2004 to 2009 |
| Denominator: | Study population in each province's health region |
| Numerator: | The number of cancer patients who had palliative home care visits by a nurse or Personal Support Worker in the last 6 months |
| Exclusion criteria: | Please refer to Barbera et al, manuscript for details. |
| Data availability: | BC, ON, NS |
| Stratification: | 1) Province 2) Health region |
| Data source: | Reprinted with permission. © 2015 American Society of Clinical Oncology. All rights reserved. Barbera, L et al: J Clin (Quality Indicators of End-of-Life Care in Patients with Cancer: What Rate Is Right?). Vol. (11), 2015: 279-287. |
| Data retrieval date: | Not available |
| Variables details: | Not applicable |
| Notes from Jurisdictions: | Not applicable |
| Methodology notes: | Data source for palliative home-care in the last 6 months of life was available from provincial organizations overseeing home care services for three provinces (Home and Community Care in British Columbia, Continuing Care in |

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| | <p>Nova Scotia and the Ontario Association of Community Care Access Centres in Ontario).</p> <p>For details on data specifications refer to Barbera et al, manuscript.</p> |
| Changes to definition compared to previous years: | Not applicable |

Figure 4: Cumulative length of stay in acute-care hospitals in the last 6 months of life

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| Definition: | Cumulative length of stay in day in an acute care hospital, measured in 25 th , 50 th and 75 th percentile days in the last 6 months of life of those adults who died (with a cancer diagnosis) in an acute care hospital |
| Rationale for measurement: | <p>Longer stay in an acute care hospital reveals that the outpatient/community care may not be addressing the patients' needs which may signal the need for more palliative care services.</p> <p>Measuring hospital use at end-of-life is imperative to identify interprovincial variations that may signal inadequately managed end-of-life care. This will help to advance jurisdictional initiatives targeted at improving palliative care services.</p> |
| Measurement timeframe: | Fiscal years 2014/15 and 2015/16 combined |
| Population: | Adult cancer patients (aged 18+) who died in acute care hospital and were admitted to an acute care hospital within 6 months prior to death |
| Exclusion criteria: | <ol style="list-style-type: none"> 1) Patients aged <18 2) Quebec (QC) 3) Deaths not in acute care facilities |
| Data availability: | All provinces, except QC |
| Stratification: | Province |
| Measures: | 25 th , 50 th , and 75 th percentiles |
| Data source: | Canadian Institute for Health Information (CIHI), Discharge Abstract Database |
| Data retrieval date: | Sept, 2016 |
| Variables details: | Not applicable |
| Notes from Jurisdictions: | Not applicable |

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| Methodology notes: | <ol style="list-style-type: none">1) The cumulative length of stay in an acute care hospital in the last 6 months of life was defined as the date of the first admission to the date of death.2) If the date of first admission is not available, length of stay was calculated based on the date of final admission to the date of death3) Data included all admissions whether or not related to cancer as long as on the final abstract, cancer was listed as a diagnosis. |
| Changes to definition compared to previous years: | Not applicable |



Figure 5: Multiple admissions to acute-care hospitals in the last 28 days of life

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| Definition: | Percentage of two or more acute inpatient admissions in the last 28 days of life of those adults who died (with a cancer diagnosis) in an acute care hospital |
| Rationale for measurement: | Measuring hospital use at end-of-life is imperative to identify interprovincial variations that may signal inadequately managed end-of-life care. This will help to advance jurisdictional initiatives targeted at improving palliative care services. |
| Measurement timeframe: | Fiscal years 2014/15 and 2015/16 combined |
| Denominator: | The number of adult patients (aged 18+) who were inpatient in the last 28 days of life, and who died (with a cancer diagnosis) in an acute care hospital |
| Numerator: | The number of adult patients (aged 18+) who were inpatient twice or more in the last 28 days of life of those who died (with a cancer diagnosis) in an acute care hospital |
| Exclusion criteria: | 3) Patients aged <18 4) Quebec (QC) 5) Deaths not in acute care facilities |
| Data availability: | All provinces, except QC |
| Stratification: | Province |
| Data source: | Canadian Institute for Health Information (CIHI), Discharge Abstract Database |
| Data retrieval date: | Sept, 2016 |
| Variables details: | Not applicable |
| Notes from Jurisdictions: | Not applicable |
| Methodology notes: | Data included all admissions whether or not related to cancer as long as on the final abstract, cancer was listed as a diagnosis. |

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| Changes to definition compared to previous years: | Not applicable |
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Figure 6: Emergency department visits in the last 28 days of life

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| Definition: | Distribution of emergency department visits in the last 28 days of life among adult cancer patients who died (with a cancer diagnosis) in an acute-care hospital |
| Rationale for measurement: | Examining interprovincial variations in the use of ED near death may point to opportunities to learn from other jurisdictions about strategies to minimize the need for an ED visit at the end-of-life for cancer patients. |
| Measurement timeframe: | Fiscal years 2014/15 and 2015/16 combined |
| Denominator: | The total number of adult cancer patients (aged 18+) who died (with a cancer diagnosis) in an acute-care hospital |
| Numerator: | The number of adult cancer patients (aged 18+) who: <ul style="list-style-type: none"> • had no emergency department visit • had one emergency department visit • had two or more emergency department visits |
| Exclusion criteria: | Patients aged <18 |
| Data availability: | ON and AB |
| Stratification: | Not applicable |
| Data source: | Canadian Institute for Health Information (CIHI), Discharge Abstract Database, 2014-2015 and 2015-2016; National Ambulatory Care Reporting System, 2013-2014 to 2015-2016. |
| Data retrieval date: | Sept, 2016 |
| Variables details: | Not applicable |
| Notes from Jurisdictions: | Not applicable |
| Methodology notes: | Data included all admissions whether or not related to cancer as long as on the final abstract, cancer was listed as a diagnosis. |
| Changes to definition compared to previous years: | Not applicable |

Figure 7: Admissions to an Intensive Care Unit in the last 14 days of life

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| Definition: | The percentage of adult cancer patients who were admitted to an intensive care unit (ICU) in the last 14 days of life and died (with a cancer diagnosis) in an acute-care hospital |
| Rationale for measurement: | Examining interprovincial variations in the use of critical care in the last 14 days of life may point to opportunities for learning from other jurisdictions about strategies for optimizing the appropriate use of ICU at the end-of-life for cancer patients. |
| Measurement timeframe: | Fiscal years 2014/15 and 2015/16 combined |
| Denominator: | The number of adult cancer patients (aged 18+) who died (with a cancer diagnosis) in an acute care hospital |
| Numerator: | The number of adult cancer patients (aged 18+) who died (with a cancer diagnosis) in an acute care hospital and were admitted to an ICU in the last 14 days of life |
| Exclusion criteria: | Patients aged <18 |
| Data availability: | All provinces, except QC |
| Stratification: | Province |
| Data source: | Canadian Institute for Health Information (CIHI), Discharge Abstract Database |
| Data retrieval date: | Sept, 2016 |
| Variables details: | Not applicable |
| Notes from Jurisdictions: | Not applicable |
| Methodology notes: | Data on ICU included only facilities that reported ICU data. |
| Changes to definition compared to previous years: | Not applicable |

Figure 8: Ratio of acute care hospital deaths to mortality cases

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| Definition: | Ratio of the number of acute care hospital deaths in adult patients (with a cancer diagnosis) to the total number cancer deaths |
| Rationale for measurement: | It enables a better understanding of health system resources allocation. |
| Measurement timeframe: | Fiscal years 2014/15 and 2015/16 combined |
| Denominator: | Projected number of deaths due to cancer in 2014 and 2015 (for details, refer to “Methodology notes” section) |
| Numerator: | Number of adult patients (with a cancer diagnosis) who died in an acute care hospital |
| Exclusion criteria: | Denominator: Refer to “Methodology notes” section. Numerator: 1) Patients aged <18 2) Quebec (QC) 3) Deaths not in acute care facilities |
| Data availability: | All provinces/territories, except QC |
| Stratification: | Province |
| Data source: | 1) Canadian Institute for Health Information (CIHI), Discharge Abstract Database 2) Canadian Cancer Society, Canadian Cancer Statistics |
| Data retrieval date: | Sept, 2016 for acute care hospital data from the Canadian Institute for Health Information (CIHI) Projected cancer deaths were extracted from the Canadian Cancer Statistics 2014 and 2015. |
| Variables details: | Not applicable |
| Notes from Jurisdictions: | Not applicable |
| Methodology notes: | 1. Data from Canadian Institute for Health Information (CIHI): Provincial variations exist in how location of death is categorized, as well as in how different settings |

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| | <p>(i.e., designation of hospital-based hospices or palliative care units) are classified.</p> <p>2. Estimated numbers of cancer deaths were retrieved from Canadian Cancer Statistics 2014 and 2015, and re-estimated as follow:</p> <ul style="list-style-type: none"> i) The cancer deaths were for all provinces and territories except QC. ii) At the provincial/territory level, the cancer deaths were for age 0+ but the cancer deaths in acute care hospitals were for age 18+. The estimated all cancer deaths for age 0-17 for all provinces/territories combined (including QC) was only 0.18% of the deaths for ages 0+. |
| Changes to definition compared to previous years: | Not applicable |

Figure 9: Chemotherapy use in the last 30 days of life

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| Definition: | The percentage of cancer patients who started on a new chemotherapy regimen within the last 30 days of life (measured by the first treatment date of a chemotherapy course) |
| Rationale for measurement: | <p>In general, cancer-directed therapies are not likely to be helpful for patients with advanced metastatic tumours who are markedly debilitated by their cancer. Specifically, chemotherapy use in the last weeks of life has been associated with less satisfaction with care, more frequent hospital visits, no or very short hospice involvement and death in an acute-care setting.</p> <p>Measuring variations across the country in the use of chemotherapy near the end-of-life could enhance alignment with evidence-based guidelines, thereby increasing the use of services that offer the most benefit to patients and improving quality of life.</p> |
| Measurement timeframe: | Two most recent death years available: BC (2013 – 2014), AB (2013 – 2014), MB (2011 – 2012), ON (2011 – 2012), NS (2013 – 2014) |
| Denominator: | Number of patients (aged 18+) who died of cancer (including metastatic cases) |
| Numerator: | Number of patients starting a new chemotherapy regimen in the last 30 days of life |
| Exclusion criteria: | <ol style="list-style-type: none"> 1) Non-melanoma skin cancers (C44.x) 2) Cases only confirmed by death certificate |
| Data availability: | BC, AB, MB, ON, NS |
| Stratification: | Province |
| Data source: | Provincial cancer agencies and programs |
| Data retrieval date: | June – Oct 2016 |
| Variables details: | Not applicable |

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| <p>Notes from Jurisdictions:</p> | <p>AB:</p> <ol style="list-style-type: none"> 1) Included all invasive cancer diagnoses (excluding NMSC) for individuals aged ≥ 18. Only AB residents with complete registry status are counted. Age groups are based on age at death. 2) Recorded those who deceased in 2013, 2014, non-DCO (excluded "Died of NMSC", "Death cause not coded" & "Non-cancer death cause"); 3) Numerator includes new chemo regimens (either a new unused regimen or a new course of a used regimen); 4) Excluded chemo records with missing regimen initiation date (we cannot identify if it's the same chemo course without the initiation date); 5) Both oral and IV chemo are included; 6) Chemo used in acute care, continuing care or long-term care settings are excluded; 7) The age group used different definitions compared to the results submitted last year for 2013 data. The last submission used age at diagnosis whereas the current submission used age at death. <p>MB: Oral chemotherapy may not have been complete but what we have is included. Chemotherapy start dates are only recorded one per year.</p> <p>NS: Data included some patients who received bisphosphonates in a chemotherapy unit.</p> <p>ON:</p> <ol style="list-style-type: none"> 1) The original cohort definition required information about cause of death. There is a delay in the update of this variable in the OCR, and the most updated data only includes up to 2012. Therefore, the analysis is based on calendar years 2011 and 2012. 2) There were limitations with chemotherapy regimen level information in DAD, NACRS, and PDRP data. Therefore, the number of patients who switched to a new regimen in their |
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| | <p>last 30 days of life was determined solely by ALR data. Thus, due to data limitation, some in-patient chemotherapies and some chemotherapies happening in satellite sites may be excluded from the analysis. However, those patients who had their first net new chemotherapies in their last 30 days of life and their chemotherapies were only reported in any of DAD, NACRS, and PDRP data were also considered as having new chemotherapy regimens.</p> <p>3) For the oral chemotherapies in ALR data, the prescription dates were used as service dates due to the unavailability of the dispensing dates or consumption dates.</p> |
| <p>Methodology notes:</p> | <ol style="list-style-type: none"> 1. Chemotherapy includes oral and IV chemotherapy (unless otherwise specified). 2. The following SAS code was used to select cancer-related cause of death: if ('C00'<=/*ICD-10 Code Cause of death variable*/<='C43' or 'C45'<=/*ICD-10 Code Cause of death variable*/<='C97'); 3. The first treatment is counted within the last 30 days of life |
| <p>Changes to definition compared to previous years:</p> | <p>The exclusion of non-melanoma skin cancers (C44.x) is a new condition for this year.</p> |

Figure 10: Palliative radiation therapy in the last year of life

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| Definition: | The percentage of prostate and breast cancer patients who received palliative radiation therapy within one year prior to death |
| Rationale for measurement: | Because reliable information on treatment intent is not routinely collected in provincial data sources, we are examining the use of palliative radiation therapy indirectly. This has been achieved by measuring the percentage of prostate and breast cancer patients receiving radiation therapy within one year prior to death from prostate and breast cancer respectively. Using this time frame increases the likelihood that the radiation therapy reported on in the indicator was delivered for palliative intent. |
| Measurement timeframe: | Two most recent death years available: AB (2012 – 2013), BC (2012 – 2013), NS (2012 – 2013), MB (2011 – 2012), PE (2012 – 2013), NL (2011 – 2012), NB (2012 – 2013) |
| Denominator: | Total number of deaths within the measurement timeframe |
| Numerator: | Number of patients receiving radiation therapy within one year prior to death |
| Exclusion criteria: | Male breast cancer patients |
| Data availability: | AB, BC, NS, MB, PE, NL and NB |
| Stratification: | 1) Province 2) Cancer type: prostate, breast |
| Data source: | Provincial cancer agencies and programs |
| Data retrieval date: | June – Oct 2016 |
| Variables details: | 1) Prostate cancer (ICD-O-3: C61.9 excluding histology codes 9050-9055, 9140, 9590-9992) 2) Breast cancer (ICD-O-3: C50.0-C50.9 excluding histology codes 9050-9055, 9140, 9590-9992) – female only |
| Notes from Jurisdictions: | AB: Data does NOT include out of province treatment. Data includes provincial residents only. Invasive only. |

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| | <p>MB: All RT start dates in the one year prior to death have been included even if not recorded as palliative.</p> <p>NB: 2011 radiation information may be incomplete.</p> <p>PE: All cases were verified by link with ARIA DB followed by chart review as only first course of RT was collected in the registry, beginning with 2013 diagnosis year.</p> <p>NL: Mortality data are only available up to the end of 2012 so the years 2011 and 2012 were used for date of patient death.</p> |
| Methodology notes: | Not applicable |
| Changes to definition compared to previous years: | Not applicable |