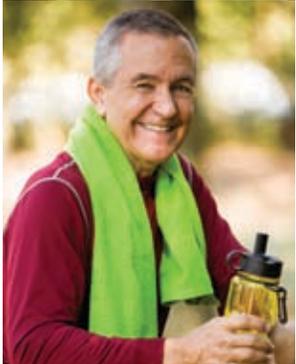


OCTOBER 2009

The System Performance Initiative

A First Year Report



CANADIAN **PARTNERSHIP**
AGAINST **CANCER**



PARTENARIAT CANADIEN
CONTRE LE **CANCER**

The System Performance Initiative – A First Year Report presents an overview of the first year of the System Performance Initiative and the development of high-level indicators to begin reporting on the status of cancer control in Canada. The process of systematically measuring and reporting on cancer control and healthcare delivery is a key component of understanding and improving the cancer control system. This report is a coordinated, collaborative effort to begin that process across Canada.

The project team responsible for the development of the report was led by:
Dr. Heather Bryant, Vice President, Cancer Control, Canadian Partnership Against Cancer
and **Mary Spayne**, Director, System Performance

The Canadian Partnership Against Cancer thanks the System Performance Steering Committee and stakeholders across the country for their guidance and feedback during the first year of this initiative. We also thank Statistics Canada (the Canadian Community Health Survey, the Canadian Cancer Registry), the Canadian Breast Cancer Screening Initiative, and provincial cancer agencies or their equivalent. We are very grateful to those who helped us gather the data for this report.

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1

ABOUT SYSTEM PERFORMANCE



Introduction

This report presents an overview of the first year of the System Performance Initiative and the development of high-level pan-Canadian indicators to begin reporting on the status of cancer control in Canada. The World Health Organization in 2002 urged nations to establish national cancer control programs, stating that:

“A well-conceived, well-managed national cancer control programme lowers cancer incidence and improves the life of cancer patients, no matter what resource constraints a country faces.”¹

The process of systematically measuring and reporting on the quality of cancer control and healthcare delivery, over time, is a key component of a national cancer control program. *The System Performance Initiative – A First Year Report* relates the process whereby the pan-Canadian indicators were developed at the Canadian Partnership Against Cancer (the Partnership). It also presents highlights of the first year’s indicators and areas identified as needing further development and introduces a strategy for moving forward.

About the Partnership

The Canadian Partnership Against Cancer is an independent organization funded by the federal government to accelerate action on cancer control for all Canadians. The Partnership is a group of cancer experts, charitable organizations, governments, patients and survivors, determined to bring change to the cancer control domain. We work together to stimulate generation of new knowledge and accelerate the implementation of existing knowledge about cancer control across Canada.

The Partnership’s vision is to strive to improve cancer control in Canada by being a catalyst for a coordinated approach that will:

- *reduce the expected number of cancer cases;*
- *enhance the quality of life for those affected by cancer;*
- *lessen the likelihood of Canadians dying from cancer; and*
- *increase effectiveness and efficiency of the cancer control domain.*

In support of its vision, one of the Partnership’s key mandates is to measure and report on the quality of cancer control and healthcare. The system performance initiative is one of the ways in which this commitment has been initiated and will be carried forward.

Background on System Performance Reporting in Canada

In Canada, the organization of healthcare services occurs on a provincial/territorial basis, and cancer control is carried out by different authorities across the country. Although Canada has a strong registry system and collection of risk factor data, there is no organized national approach to reporting on needs and performance across the entire cancer control system.

Registry data and health surveys are aggregated at the national level; however, key datasets required for measuring cancer system performance are managed at the provincial level. While comparisons can be made across Canada for many high-level indicators, there are gaps across the country in the availability and completeness of data, especially in the cancer treatment domain. In certain domains, such as supportive care and survivorship, indicators are not easily available and are currently in the process of development. In addition, some indicators are measured differently across provinces, making comparison difficult, although work toward standardization is proceeding in many areas.

Within Canada, one effort to implement a cancer system performance measurement strategy is Ontario's Cancer System Quality Index (CSQI). Published annually since 2005 the CSQI:

- reports on 28 evidence-based quality measures covering cancer prevention to end-of-life care;
- tracks progress against provincially established targets;
- identifies where quality and performance improvements are needed; and
- compares across health regions (Local Health Integration Networks) and cancer centres throughout the province.

The CSQI and international efforts provide valuable models for system performance measurement. It is the vision of the Partnership to draw on these and other examples as the system performance initiative grows, in order to facilitate comprehensive measurement and reporting interprovincially and across the country.

Assessing system performance provides valuable information that can be used by health service providers and policy-makers to assess and improve the ways an organization or health system is meeting the needs of its population.

The Partnership's System Performance Initiative

Objective

The objective of the system performance initiative is to facilitate the exchange of this information through the reporting of cancer control indicators in Canada across provincial jurisdictions and throughout the cancer control continuum.

Reporting of indicators will be collaborative and iterative and will:

- systematically measure and report on cancer control indicators;
- provide stakeholders with meaningful, actionable information;
- provide tools and resources to optimize use and usability of information; and
- regularly seek consensus to identify new challenges and information needs.

The First Year (2008-2009)

The effort toward reporting on the cancer control system began previous to the Partnership with the Canadian Strategy for Cancer Control (CSCC), which, in 2004, commissioned the Canadian Council on Health Services Accreditation (CCHSA) to conduct a literature review and environmental scan of cancer system performance indicators. In 2007, the literature review was updated.

The Partnership continued the initiative by sponsoring an indicator selection conference in February, 2008, wherein a total of 800 indicators were reviewed, and a shortlist of 49 cancer system performance indicators were recommended. After the conference, a System Performance Steering Committee was formed, made up of stakeholders from across the country. Leading to a steering committee workshop in November 2008, criteria for indicator prioritization and a logic model describing how potential indicators fit into the cancer control continuum were developed. Out of this process, approximately 30 indicators were selected to undergo a Feasibility Study for data availability and calculability across the country. Detailed data sheets were prepared.

The System Performance steering committee (2008-2009) comprises scientists, analysts, cancer policymakers and healthcare practitioners from across the country:

DR. IVO OLIVOTTO

Provincial Program Leader, Radiation Oncology, BC Cancer Agency

DR. PETER CRAIGHEAD

VP, Alberta Cancer Board & Director, Tom Baker Cancer Centre, AB

MR. IVAN OLFERT

VP, Care Services Administration, Saskatchewan Cancer Agency

MS. HELEN ANGUS

VP, Research, Canadian Institute for Health Information

DR. GRILICA BOLESNIKOV

Coordinator - Quality Management & Accountability, New Brunswick Cancer Network, New Brunswick Department of Health

DR. DENIS ROY

Director, Information & Knowledge Management, Montérégie Local Health and Social Services Network Development Agency, QC

DR. BRENT SCHACTER

Professor, Department of Internal Medicine, University of Manitoba & Practitioner, Department of Hematology and Medical Oncology, CancerCare Manitoba

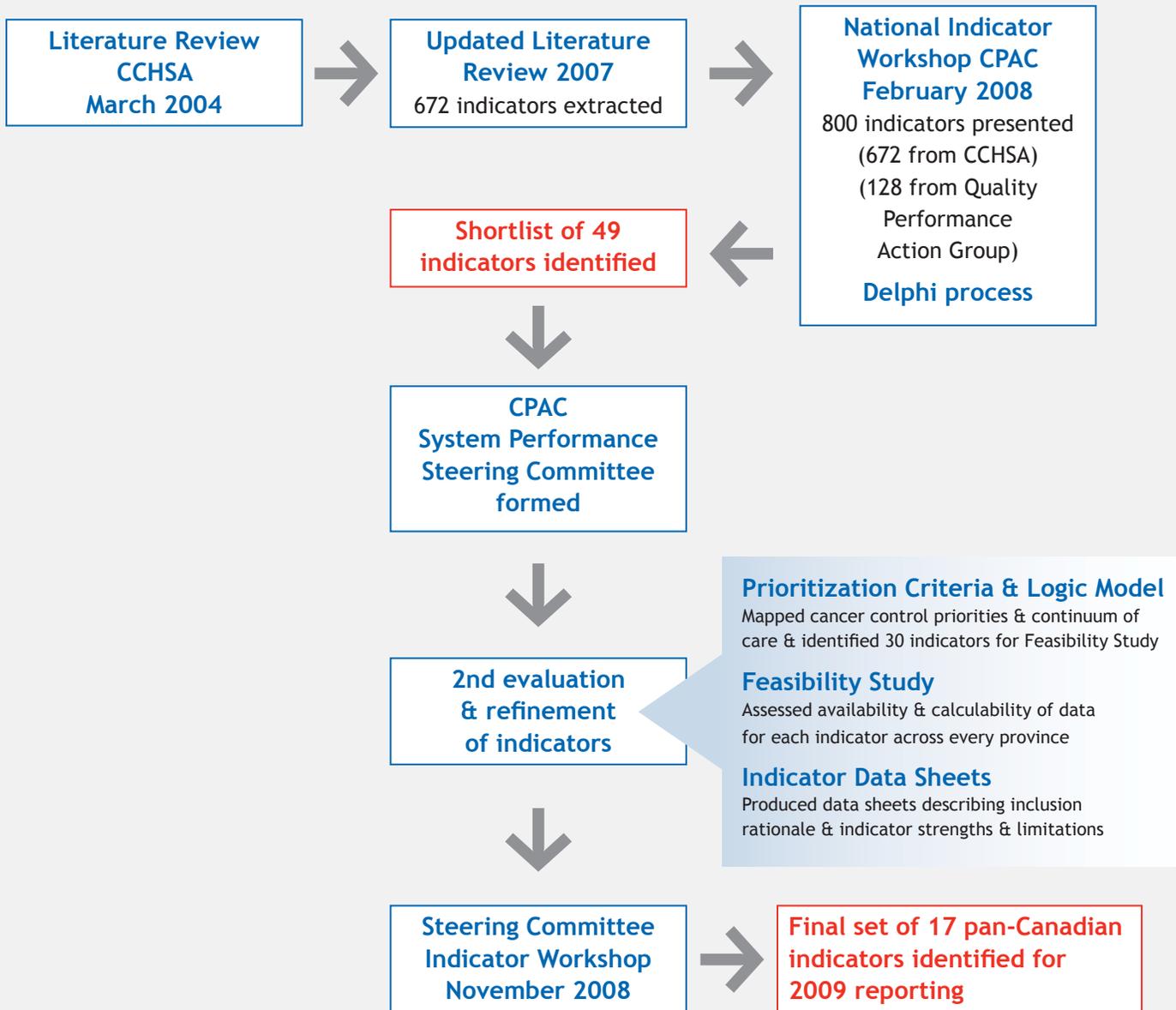
DR. MARGARET FITCH

Chair, Cancer Journey Working Group, Canadian Partnership Against Cancer, & Head, Oncology Nursing, Sunnybrook Health Sciences Centre

The First Year (2008-2009) - CONTINUED

Through a rigorous Delphi process, the steering committee workshop resulted in a final set of 17 high-level pan-Canadian indicators to begin reporting on the status of cancer control in Canada, with six indicators recommended for future development. It was noted that reporting gaps existed, especially in the treatment domain. The process of arriving at the final set of indicators for 2009 reporting is outlined below.

THE PROCESS OF INDICATOR IDENTIFICATION



The First Year (2008-2009) - CONTINUED

In this first year, the main focus of the System Performance Initiative was to work collaboratively with provincial partners to produce a first reporting of pan-Canadian indicators and move forward an understanding of the system. Indicators were presented only if there was consensus on the quality of the data. Consequently, several indicators proposed were suboptimal in scope but were approved with the intent of initiating the reporting process. These indicators are considered to be “in development” and will be reported on more widely in subsequent years.

The final group of seventeen indicators chosen for the first system performance report are listed in the table below. Data for the pan-Canadian indicators were gathered from Statistics Canada (the Canadian Community Health Survey, the Canadian Cancer Registry), the Canadian Breast Cancer Screening Database and directly from provinces.

Indicators - System Performance Report - 2009

Cancer Control Continuum	Indicator	Database			
		CCHS	CCR	CBCSD	P/T Cancer Agencies or Similar
PREVENTION	Smoking Prevalence	✓			
	Smoking Quit Attempts	✓			
	Overweight and Obesity	✓			
	Alcohol Consumption	✓			
SCREENING	Mammography Rates	✓		✓	
	Cervical Screening Rates	✓			
	Colorectal Screening Rates	✓			
DIAGNOSIS AND TREATMENT	Wait Times: Abnormal breast screen to resolution			✓	
	Wait Times: Radiation Treatment				✓
	Radiation Therapy				✓
SUPPORTIVE CARE & SURVIVORSHIP	Symptom Assessment				✓
LONG-TERM OUTCOMES	Cancer Incidence Rates		✓		
	Cancer Mortality Rates		✓		
	Relative Survival Rates		✓		
KNOWLEDGE MANAGEMENT/SURVEILLANCE	Capture of Stage Data				✓
RESOURCES/ CAPACITY	PET Scanner Capacity				✓
	Radiotherapy Capacity (LINACS)				✓

For a full description of indicator definitions, please refer to the Technical Appendix at the end of this report.

National Roll-out of Indicators

In the fall of 2008 and spring of 2009, data for the 17 high-level indicators were gathered and analyzed in preparation for national presentation at regional system performance workshops in June and July of 2009.

THE PROCESS OF DATA ACQUISITION AND ROLL-OUT

Data acquisition
WINTER 2008



**Data analysis
& graphing**
SPRING 2009



National Webinars
seeking provincial feedback
on data presentation
MARCH 2009



Regional Indicator Workshops
reporting on preliminary data
JUNE/JULY 2009

Statistics Canada:
The Canadian Community
Health Survey (CCHS)
The Canadian Cancer Registry (CCR)

The Canadian Breast Cancer
Screening Database (CBCSD)

Provincial cancer agencies
or equivalent

During the process, we sought feedback from stakeholders across the country by holding a series of national webinars where a subset of indicators was presented, and advice was sought on data presentation and display. Sixty-six persons attended from ten provinces, and feedback was used to craft final indicator reporting.

In June/early July 2009, the 17 pan-Canadian indicators were presented in regional system performance workshops in Atlantic and Western Canada and in the provinces of Ontario and Quebec. Province-specific binders were prepared for every jurisdiction and included comprehensive results of the indicators on a national and jurisdictional level.

Highlights and key findings of the pan-Canadian indicators are presented in Chapter Two.

A secondary focus of the workshops was to provide a forum for discussion and collaborative input on identification of “exemplar” indicators and the direction of the system performance initiative into the future.

Results of workshop discussions are presented in Chapter Three.

INDICATOR REPORT - 2009

This chapter distills indicator results and presents selected highlights for the first year. It is not intended as a comprehensive report but presents some notable findings, trends and patterns of information.

Prevention Indicators

Screening Indicators

Diagnosis & Treatment Indicators

Supportive Care & Survivorship Indicator

Long-term Outcomes Indicators

Knowledge Management/Surveillance Indicator

Resources & Capacity Indicators



Smoking Prevalence & Smoking Quit Attempts

It has been well established that tobacco use is a major preventable cause of cancer in Canada, accounting for 85% of all new cases of lung cancer in the country.^{2,3} As lung cancer is among the four most common cancers in Canada and causes the most cancer deaths, a reduction in the use of tobacco is presently also the single most important action that can prevent cancer.

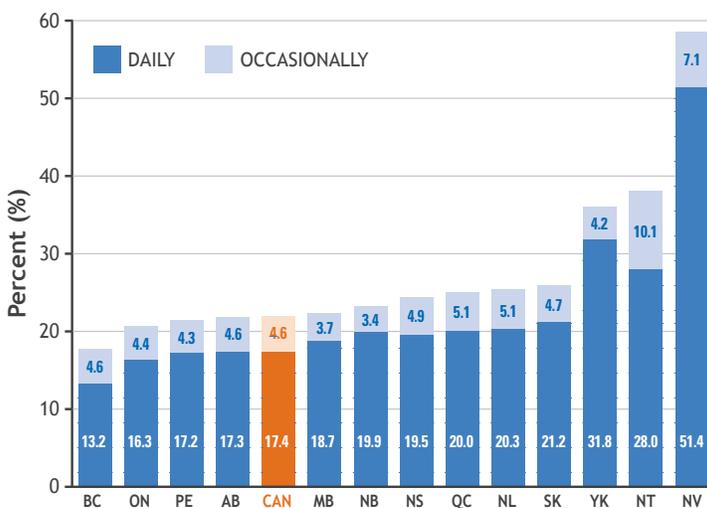
While prevention of smoking uptake by young persons is important, in the long term, international models have shown that the most immediate impact on cancer mortality can be derived from smoking cessation in those currently using tobacco.⁴ Thus, we have chosen to report on two indicators in this domain: smoking prevalence and smoking cessation (smoking quit attempts).

Data for smoking prevalence and smoking cessation are derived from the Canadian Community Health Survey (CCHS) administered by Statistics Canada. In line with questions administered in the survey, smoking cessation measures the proportion of smokers twenty years and older who quit smoking within the previous two years.

Smoking patterns varied across Canada. The territories evidenced the most risk, reflecting the highest rates of smoking and the lowest rates of smoking cessation (FIGURE 1). BC fared best: in 2007, their smoking rates were the lowest in the country and their cessation rates the highest.

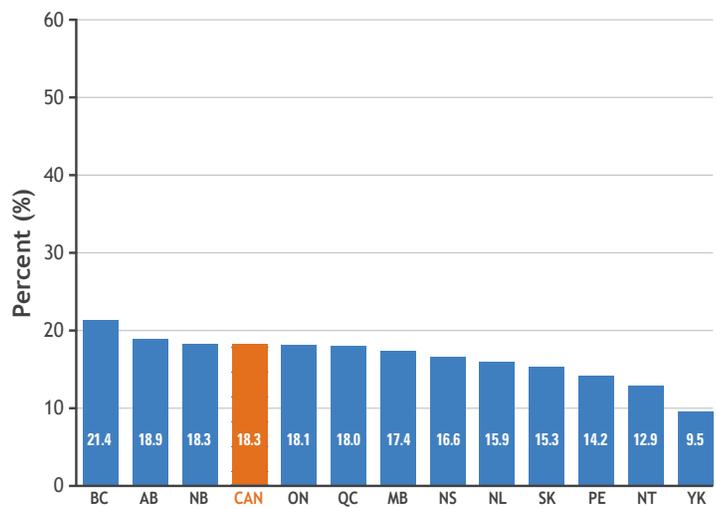
In 2007, of Canadian smokers surveyed, the average quit rate among those who reported quitting within the previous two years was 18% (FIGURE 2).

FIGURE 1
Percentage of population aged 12+ reporting daily or occasional smoking
By province/territory - CCHS 2007



Data Sources: Statistics Canada, Canadian Community Health Survey

FIGURE 2
Percentage of population that has recently quit smoking
By province/territory - CCHS 2007



Data Sources: Statistics Canada, Canadian Community Health Survey

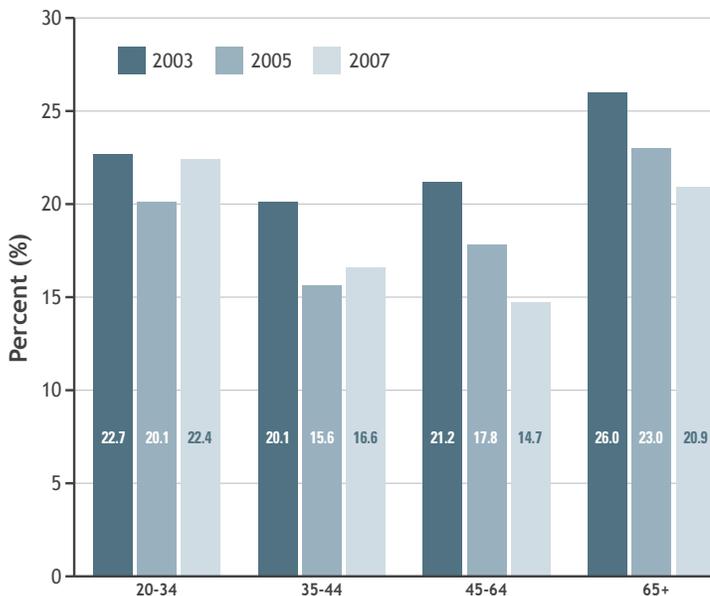
In 2007, of Canadian smokers surveyed, the average quit rate among those who reported quitting within the previous two years was 18%. From 2003 to 2007 cessation rates showed no improvement, and in fact fell from 22% to 18%. This decrease was consistent across most age groups.



Men reported smoking more than women. However, amongst the youngest smokers surveyed in 2007, those aged 12-19, the rate was almost equivalent for males and females, at 12.4% and 11.5%, respectively.

While progress has been made over time, with fewer Canadians overall reporting smoking (prevalence rates decreased from 26% in the 2000-01 CCHS cycle to 22% in 2007), the same trend is not true among those quitting. From 2003 to 2007, cessation rates did not improve, and in fact fell from 22% to 18%. This decrease was consistent across most age groups (FIGURE 3).

FIGURE 3
Percentage of population that has recently quit smoking
 Time trends by age group, Canada - CCHS 2003 to 2007



Data Sources: Statistics Canada, Canadian Community Health Survey

Evidence has shown that the risk of developing lung cancer in those who stop smoking gets progressively lower as the time since quitting gets longer and that if cessation occurs before middle age, the risk attributed to smoking tobacco is cut by over 90%.⁴ Thus, the trend of decreased rates of cessation in Figure 3 suggests that smokers, in older age groups especially, are missing opportunities for the significant decrease in morbidity and mortality to be gained by quitting smoking.

A strong relationship was seen between smoking and socio-economic status and/or location of residence. Smoking prevalence was associated with income, with those of lowest income having the highest smoking rates. Those in urban and rural areas smoked at about the same rate. Conversely, the proportion of smokers who had quit in the previous two years was greatest in the higher income groups, among the most educated and for people residing in urban areas.

Overweight and Obesity

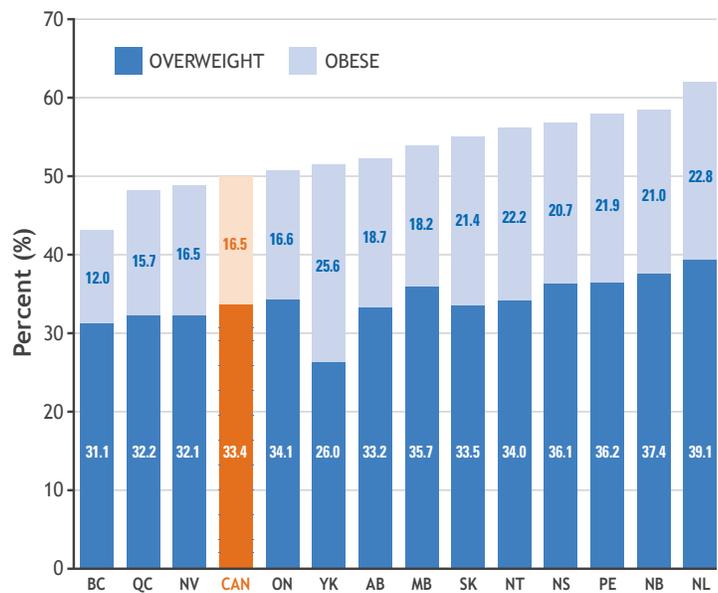
The World Cancer Research Fund (WCRF) reports that cancer risk is elevated for those who are overweight or obese and that “body fatness” is a causal factor for a number of cancers.⁵ It has been estimated that approximately one-third of cancers can be prevented through a combination of healthy food and nutrition, regular physical activity and avoidance of obesity.⁵

In the 2007 CCHS survey, the proportion of the population aged 18 and over who reported being overweight or obese ranged from 43% in British Columbia to 62% in Newfoundland and Labrador. In fact, when considering the overall Canadian average, approximately half of Canadians surveyed reported height and weight placing them in a body mass index (BMI) classification of overweight or obese (FIGURE 4). Across the country, Atlantic Canada evidenced the highest rates of overweight and obesity.

While rates of overweight and obesity have risen over the past two decades,^{6,7} the increase in Canada is not as apparent in the short time period measured for this report, 2003 to 2007. There was, however, an increase over this period in the percentage of Canadians who are obese.

FIGURE 4

Percentage of adults classified as overweight or obese
By province/territory - CCHS 2007



Data Sources: Statistics Canada, Canadian Community Health Survey



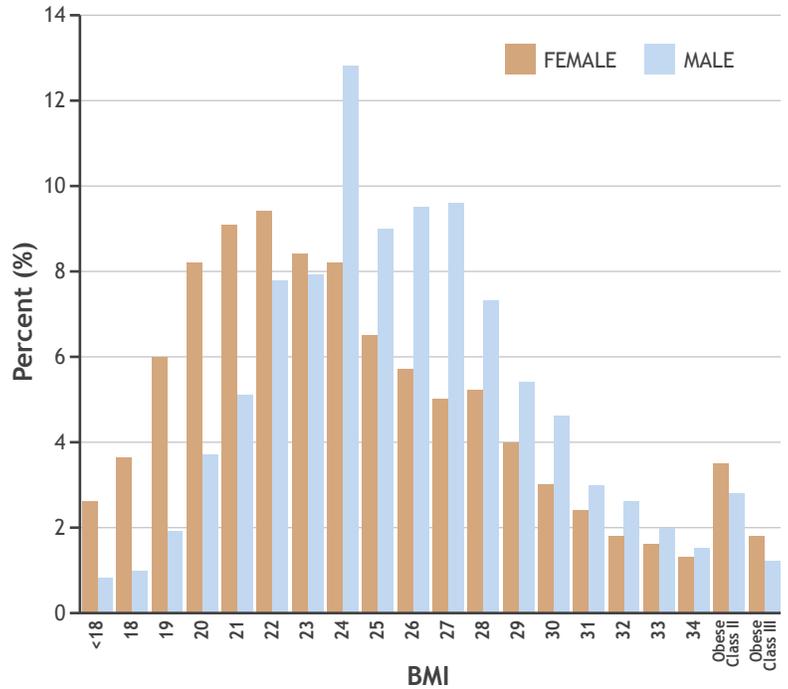
In 2007, approximately half of Canadians surveyed reported height and weight placing them in a body mass index (BMI) classification of overweight or obese.

PREVENTION INDICATORS

In 2007, CCHS population curves showed that males were more likely to have a higher BMI than females (FIGURE 5).

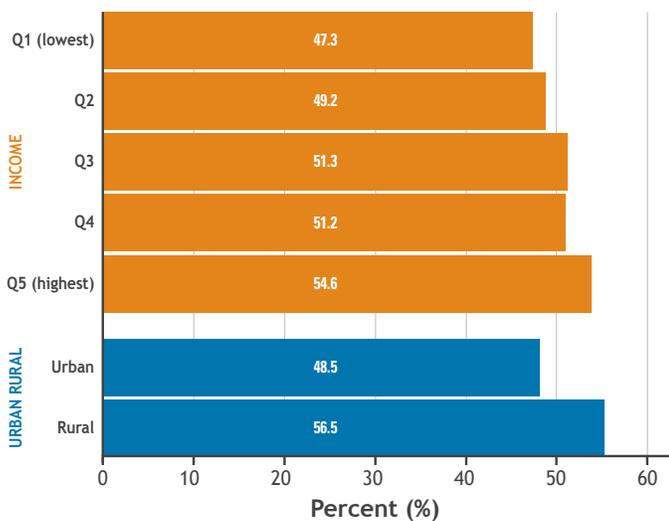
Interestingly, when looking at the data of overweight and obesity jointly, the likelihood of falling into this category was more frequent with increasing income and among those living in rural areas (FIGURE 6). However, when looking at obesity alone, there was very little variation among income groups, even while the trend for those living in rural areas remained the same (FIGURE 7).

FIGURE 5
BMI distribution curve of adults (%)
By gender, Canada - CCHS 2007



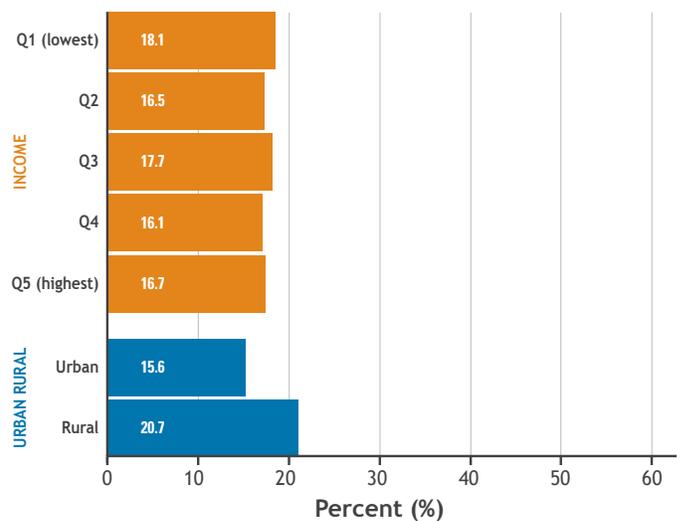
Data Sources: Statistics Canada, Canadian Community Health Survey

FIGURE 6
Percentage of adults classified as overweight or obese
By income quintile and urban/rural area, Canada - CCHS 2007



Data Sources: Statistics Canada, Canadian Community Health Survey

FIGURE 7
Percentage of adults classified as obese
By income quintile and urban/rural area, Canada - CCHS 2007



Data Sources: Statistics Canada, Canadian Community Health Survey

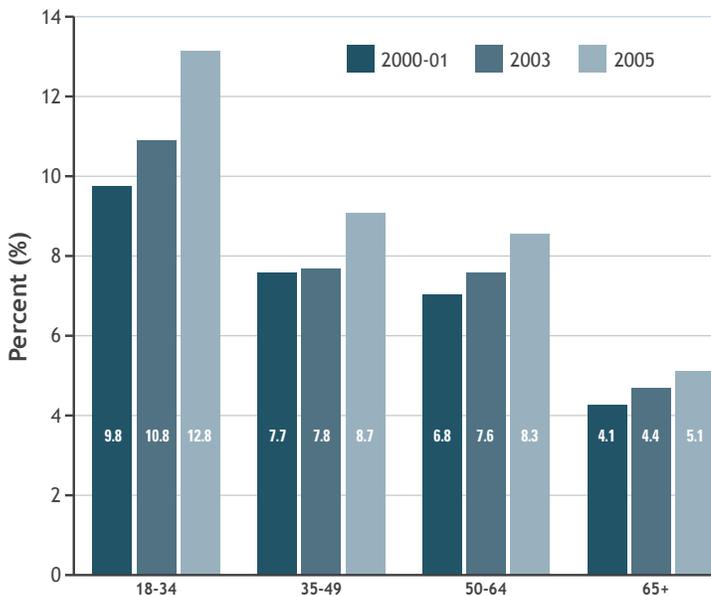
Alcohol Consumption

While research suggests there may be potential benefits of alcohol consumption for coronary heart disease, there is evidence that alcohol consumption may be a risk factor in the development of cancer.⁵ Recognizing these factors, the WCRF established a “low-risk drinking guideline” of no more than 2 drinks per day for males and no more than 1 drink per day for females.⁵ The alcohol consumption indicator is based on this guideline.

While this definition is in keeping with international alcohol consumption guidelines, such as those of the US’s Behavioral Risk Factor Surveillance System, it relates only to cancer risk guidelines and does not reflect the potential role of alcohol in injury and other health outcomes.

Data for the alcohol consumption indicator are derived from the CCHS administered by Statistics Canada and are available through 2005. Across Canada, among adults surveyed, the proportion of the population reporting exceeding low-risk drinking guidelines for 2005 ranged from 6.6% in Prince Edward Island to 12.5% in Yukon.

FIGURE 8
Percentage of adults exceeding low risk drinking guidelines
 Time trends by age group, Canada - CCHS 2000-01 to 2005



Data Sources: Statistics Canada, Canadian Community Health Survey

The percentage of adults overall who reported exceeding the low-risk drinking guidelines increased nationally between 2001 (7.6%) and 2005 (9.2%). This trend of increased consumption occurred across all age groups, even though those most likely to exceed the guidelines were the youngest adults, aged 18-34 (FIGURE 8).

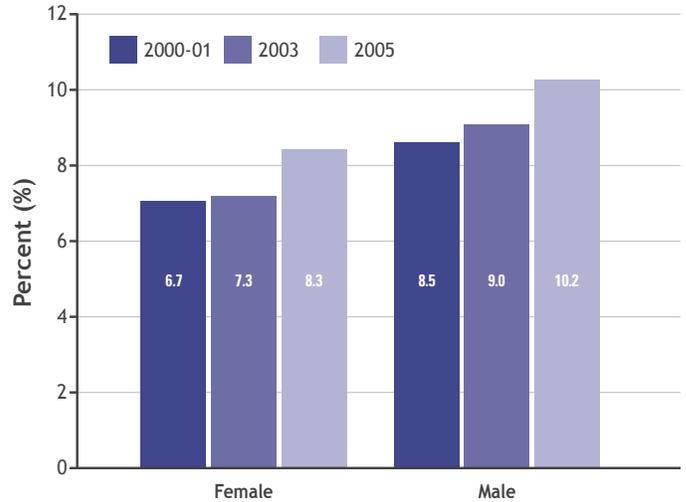
The trend was also true for both males and females over time, even though a lower percentage of females exceeded the gender-specific guidelines than did males (FIGURE 9).

There was a clear relationship between exceeding low-risk drinking guidelines and socio-economic status and/or location of residence. The proportion of the population exceeding guidelines increased sharply as income increased. The proportion of the population exceeding guidelines living in urban and rural locations was similar (FIGURE 10).



FIGURE 9

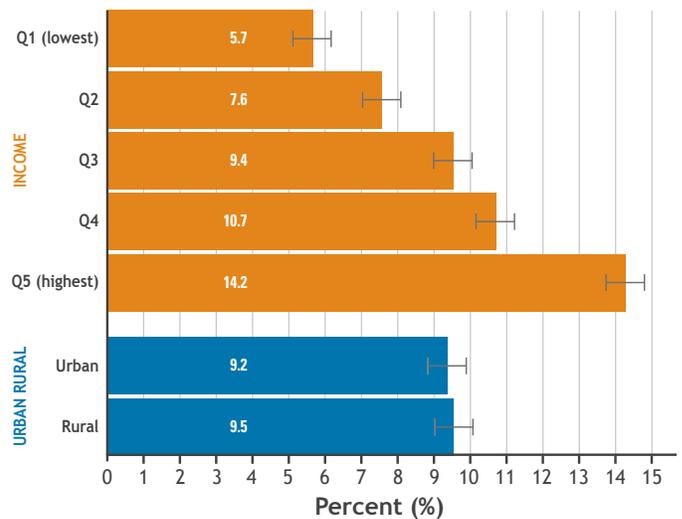
Percentage of adults exceeding low risk drinking guidelines
Time trends by gender, Canada - CCHS 2000-01 to 2005



Data Sources: Statistics Canada, Canadian Community Health Survey

FIGURE 10

Percentage of adults exceeding low-risk drinking guidelines
By income quintile and urban/rural area, Canada - CCHS 2005



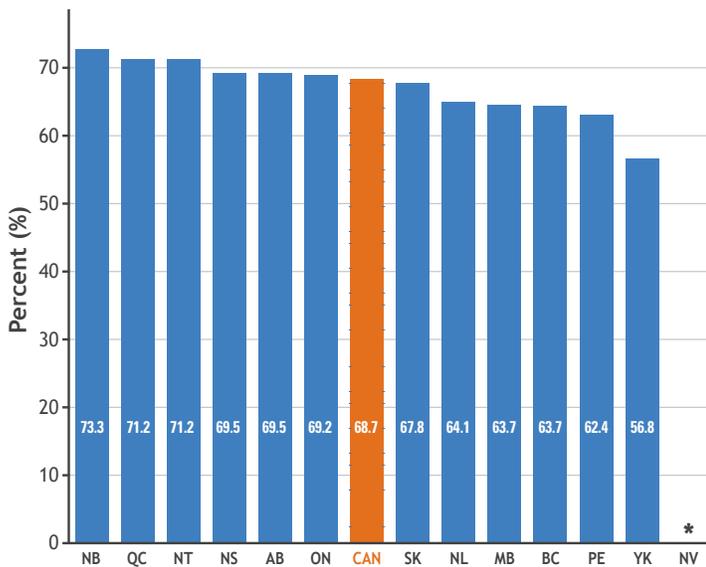
Note: 95% confidence intervals are indicated on figure
Data Sources: Statistics Canada, Canadian Community Health Survey

Breast Cancer Screening – Mammography

Data for this indicator are drawn from the Canadian Community Health Survey (CCHS). Information on mammography rates through organized screening programs is also available from the Canadian Breast Cancer Screening Database (CBCSD). However, CBCSD data are limited to organized screening programs and therefore may not capture a significant portion of breast screening activity in Canada. As well, while CBCSD data are not a self-reported measure and may be more verifiable, they were available only through 2004. For these reasons, CCHS was chosen to describe this indicator.

Across Canada, self-reported screening mammography rates remained relatively stable between 2000/01 and 2005, the period of time measured for this report. In 2005, the percentage of women aged 50-69 reporting a screening mammogram within the previous two years ranged from 57% in the Yukon Territories to 73% in New Brunswick. The Canadian average was 69% (FIGURE 11).

FIGURE 11
Percentage of women (50-69) reporting a screening mammogram in past 2 years
 By province/territory - CCHS 2005



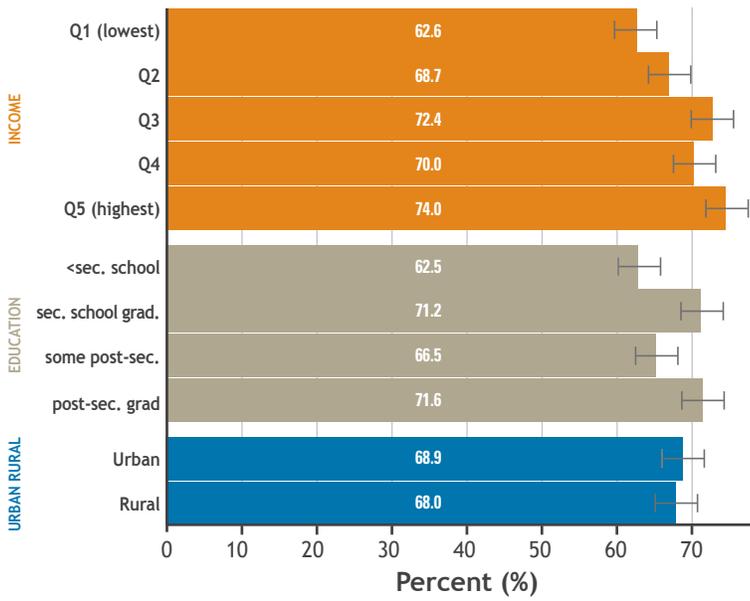
*Suppressed due to statistical unreliability caused by small numbers
 Data Sources: Statistics Canada, Canadian Community Health Survey

Breast screening participation rates were similar for all age groups within the target population, ranging in 2005 from 65% among women aged 50-54 to 72% among women aged 55-59 and 60-64.



FIGURE 12

Percentage of women (50-69) reporting a screening mammogram in past 2 years
By income quintile, education, and urban/rural area, Canada - CCHS 2005



Note: 95% confidence intervals are indicated on figure
Data Sources: Statistics Canada, Canadian Community Health Survey

Breast screening rates in 2005 increased with income. Sixty-three per cent of women in the lowest income quintile reported a screening mammogram in the previous two years as compared to 75% in the highest income quintile. Reported screening rates were also lowest for women with less than secondary school education but were similar for women living in urban and in rural areas (FIGURE 12).



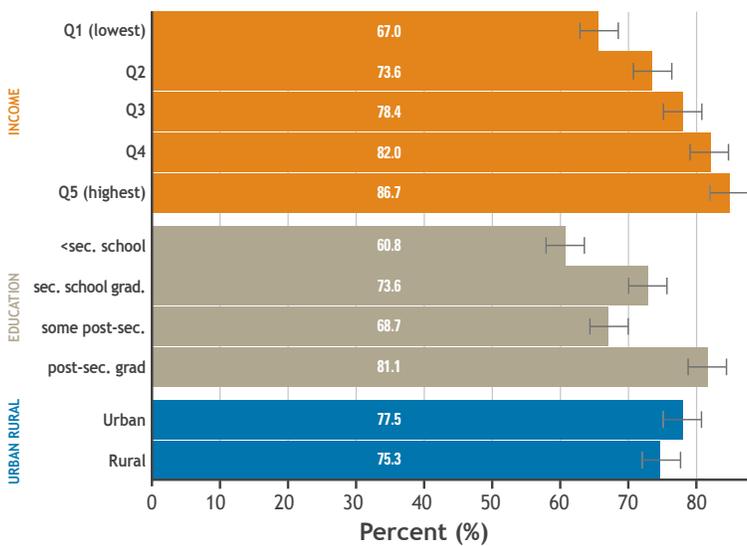
Cervical Cancer Screening – Pap Testing

At this time, cervical cancer screening programs are in place in several jurisdictions, some relying on organized screening programs and others using a combination of approaches. Current screening guidelines also vary somewhat across Canada at this time. Data for this indicator are drawn from the CCHS.

Self-reported cervical cancer screening rates were high and remained relatively stable between 2000/01 and 2005, the time period measured for this report. In 2005, the percentage of women aged 18-69 who had not had a hysterectomy (and were therefore at risk for cervical cancer) reporting having had a Pap test in the previous three years, ranged from 72% in Quebec to 85% in Nova Scotia. The overall Canadian average was 76%.

From 2000/01 to 2005, younger women and older women reported lower Pap test rates than women in the 30-59 age groups. In 2005, for example, rates ranged from 68% in women aged 60-69 and 70% in women aged 18-29 to 82% for women aged 30-39.

FIGURE 13
Percentage of women (18-69) reporting a Pap smear test in past 3 years
 By income quintile, education, and urban/rural area, Canada - CCHS 2005



Note: 95% confidence intervals are indicated on figure
 Data Sources: Statistics Canada, Canadian Community Health Survey

Socio-economic trends for cervical cancer screening were similar to those of breast cancer screening. Women in the lowest income quintile were least likely to undergo a Pap test, reporting a screening rate of 67% as compared to women in the highest income quintile with a rate of 87% (FIGURE 13). Similarly, reported screening rates were lowest for women with less than secondary school education and rates were similar for women living in urban and rural areas.



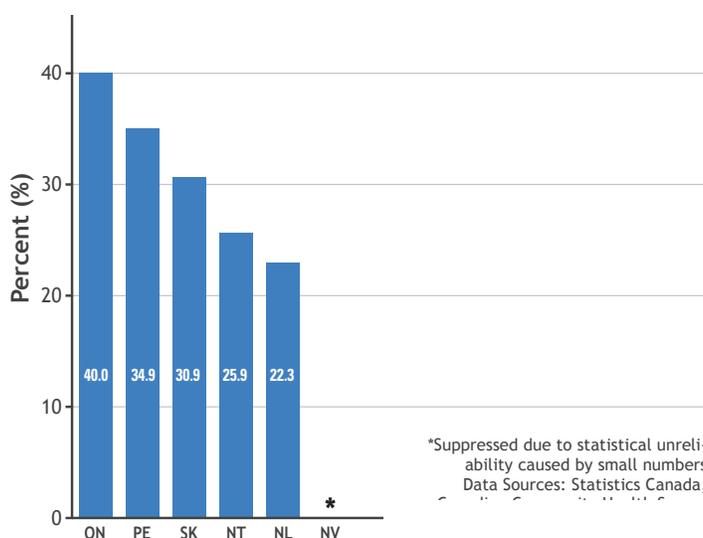
Colorectal Cancer Screening

Guidelines have recommended colorectal cancer screening in Canada since 2001,⁸ and population recommendations were instituted in 2002.⁹ Since 2007, eight provinces and one territory have announced or are currently running colorectal screening programs or pilot programs. All are using a fecal test as their entry test into the program, and screening is commonly recommended for all average risk persons aged 50-74.

However, as programs were not in place during the years measured for this report, and as screening guidelines varied, this indicator includes persons who reported screening through FOBT and/or colonoscopy/sigmoidoscopy, with the purposes of capturing a comprehensive snapshot of colorectal cancer screening in Canada.

FIGURE 14

Individuals (50-74) reporting FOBT and/or sigmoidoscopy/colonoscopy for asymptomatic reasons (%) By province/territory - CCHS 2007



Data for this indicator are drawn from the CCHS. Of the eight provinces and territories (P/Ts) participating in the survey in 2005, the percentage of individuals reporting having undergone a fecal test for screening purposes within the previous two years and/or a colonoscopy/sigmoidoscopy within the previous five years[†] ranged from 17% in Yukon to 33% in Ontario. Only six P/Ts participated in the 2007 survey; in this year, the screening rate for the same indicator ranged from 22% in Newfoundland and Labrador to 40% in Ontario (FIGURE 14).

[†]Note: A commonly recommended screening time interval is 5 years for sigmoidoscopy and 10 years for colonoscopy. Since the survey data does not distinguish between the two modalities, the 5-year time frame was used for both. This does not have a substantial impact on the rates.



In 2007, males reported being screened at a lower rate than females for colorectal cancer, at 37% and 41%, respectively.

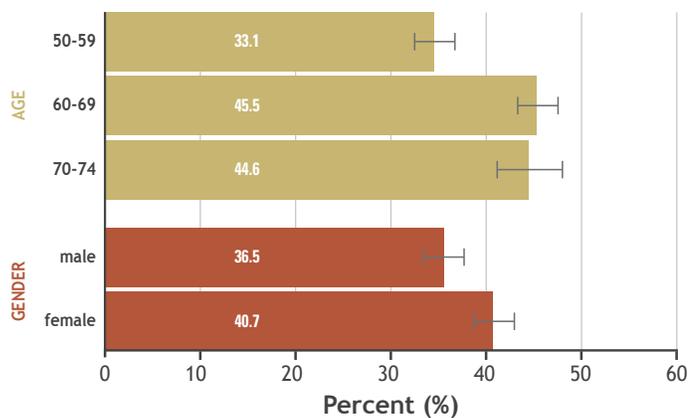
SCREENING INDICATORS

In 2007, males reported being screened at a lower rate than females for colorectal cancer, at 37% and 41%, respectively (Figure 15). Among different age groups in the target population, participation was higher for those aged 60 and over (45%) as compared to those in the 50-59 year age group (33%) (FIGURE 15).

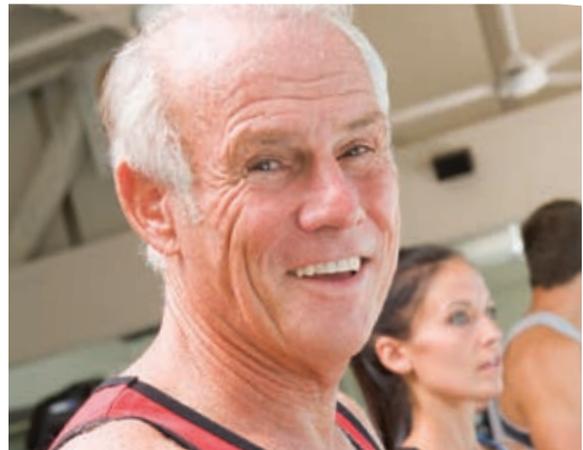
There was also a difference noted in reporting of colorectal cancer screening by income quintiles with persons in the lowest income quintile reporting a screening rate of 27% as compared to a rate of 36% for those in the highest quintile. No particular trend was noted for education level, and rates for those living in urban and rural areas were about the same.

FIGURE 15

Individuals (50-74) reporting FOBT and/or sigmoidoscopy/colonoscopy for asymptomatic reasons (%) By age and gender, average of participating P/Ts - CCHS 2007



Note: 95% confidence intervals are indicated on figure
 *Note: Participating P/Ts in 2007 (NL, PE, ON, SK, NT, NV)
 Data Sources: Statistics Canada, Canadian Community Health Survey



Wait Times: Abnormal Breast Screen to Resolution

Data for this indicator were drawn from the Canadian Breast Cancer Screening Database (CBCSD) and are current through 2004.

The indicator measures the wait times between a breast screen (mammogram or clinical breast exam) with a positive result (or abnormal screen) and the resolution of the diagnosis. It is important to note that the CBCSD is relevant only for women receiving mammograms or clinical breast exams through organized provincial breast screening programs. While participation rates vary widely across provinces (from 10.3% in Alberta to 52.7% in New Brunswick) and should be taken into account when interpreting results, the indicator nevertheless provides a snapshot of the status of this domain in 2004.

Guidelines identifying target wait times for abnormal breast screen to resolution were established by the Canadian Breast Cancer Screening Initiative¹⁰ and Health Canada's Evaluation Indicators Working Group¹¹ and apply to asymptomatic women between the ages of 50 and 69 years, with no prior diagnosis of breast cancer.



Within the target population of women aged 50-69, wait times were examined by five-year age groups. There was very little difference experienced in wait times across those age groups, both for women requiring and not requiring a tissue biopsy.

DIAGNOSIS & TREATMENT INDICATORS

For cases **requiring** a biopsy in 2004, the provincial median wait times for abnormal breast screen to biopsy ranged from 5.7 weeks to 14.9 weeks, and the 90th percentile wait times ranged from 12 weeks to 41 weeks. The percentage of cases resolved within the target time frame of 7 weeks ranged from 20.5% in Saskatchewan to 66% in PEI (FIGURE 16).

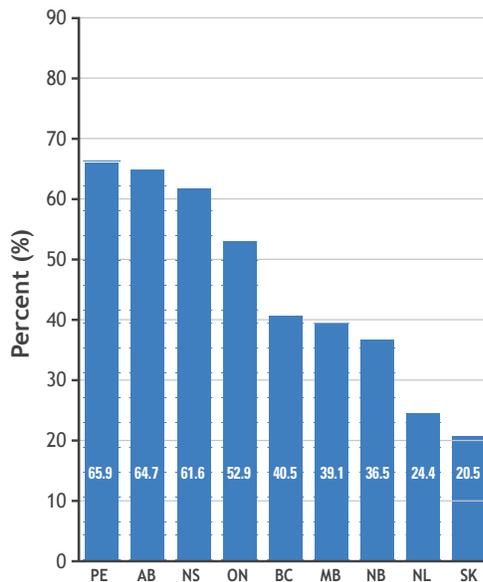
For cases **not requiring** a biopsy, the provincial median wait times for abnormal screen to non-biopsy resolution ranged from 2.4 weeks to 4.9 weeks in 2004. The 90th percentile wait times ranged from 7.4 weeks to 26.7 weeks. The percentage of cases resolved within the target time frame of 5 weeks ranged from 52% in British Columbia to 81% in Ontario (FIGURE 17).

Within the target population of women aged 50-69, wait times were examined by five-year age groups. There was very little difference experienced in wait times across those age groups, both for women requiring and not requiring a tissue biopsy.

It is recognized that results reflected in this indicator are outdated, as many provinces have instituted initiatives to improve wait times since 2004. Efforts will be made, therefore, in the second year of system performance reporting, to find ways to work with provinces to report more current data.

FIGURE 16

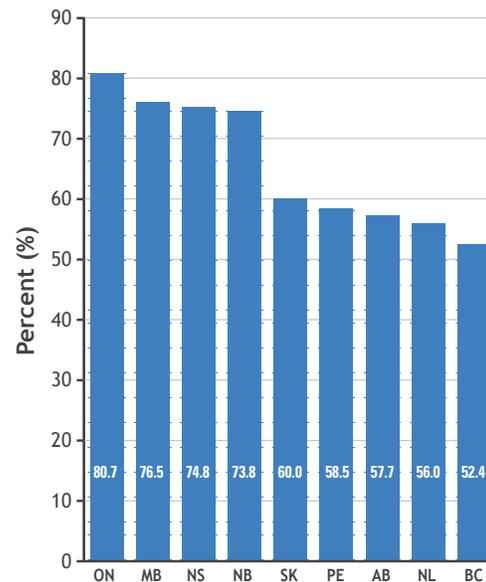
Percentage with abnormal breast screen and resolution within 7 weeks (target), Women (50-69) requiring a tissue biopsy - 2004



Data Sources: Public Health Agency Of Canada, Canadian Breast Cancer Screening Database

FIGURE 17

Percentage with abnormal breast screen and resolution within 5 weeks (target), Women (50-69) not requiring a tissue biopsy - 2004



Data Sources: Public Health Agency Of Canada, Canadian Breast Cancer Screening Database

Wait Times: Radiation Treatment (Ready To Treat to Treatment)

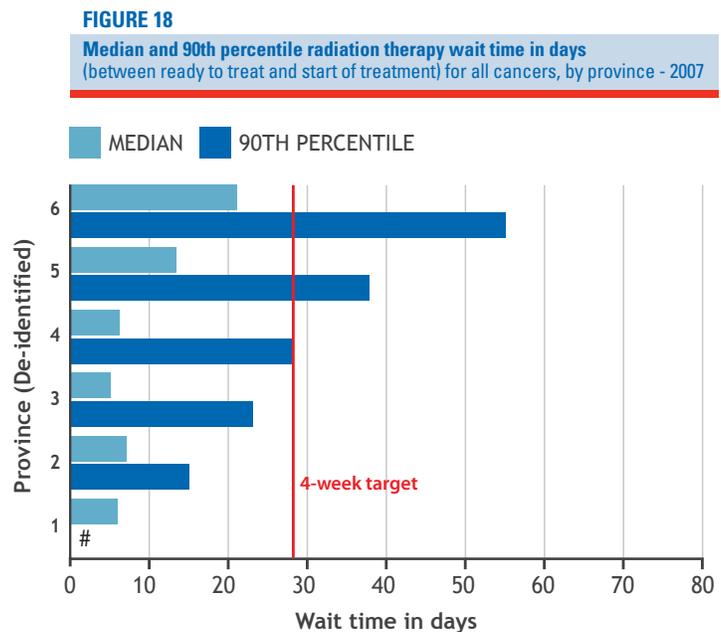
In December 2005, provinces and territories announced a set of national benchmarks for access to patient care services. This list included the radiation therapy benchmark recommending that 90% of patients start radiation therapy within four weeks from the time they are deemed ready for treatment.¹² Since then, all provinces and territories have implemented processes for the measurement of radiation therapy wait times statistics and strategies to reduce those wait times.

Data for this indicator were obtained directly from provincial cancer agencies through a survey conducted specifically for this initiative. The indicator measures the length of the interval between a patient being identified as ready for radiation treatment and the start of the first session of therapy (Ready To Treat to Treatment). During the data gathering process, it became apparent that data may have been gathered or reported differently among provinces. For this reason, the indicator is considered to be “in development” and a collaborative decision was made with provinces to de-identify data for this report.

Among the eight jurisdictions submitting data for this indicator, the percentage of all cancer cases being treated within the 4-week target time frame in 2007 ranged from 62.5% to 99.6%. Six of eight provinces submitting data reported a rate over 90%.

Over the three years of data collected (2005 to 2007), the per cent of cases treated within the target time frame increased for all but one of the provinces submitting multiple years of data.

In 2007, six provinces submitted wait times information detailing number of days waited. Among these, the median wait times ranged from 5 to 21 days, and the 90th percentile wait times ranged from 15 to 55 days. Three of the provinces submitting information reported 90th percentile wait times at or below the 4-week target time frame (FIGURE 18).



Data not available
 Data Source: Provincial Cancer Agencies

Wait Times: Radiation Treatment (CONTINUED)

At the system performance workshops in June and July 2009, the importance of uniformly defining “ready to treat” across provinces for the second year of system performance reporting was underscored, with the goal of increasing data comparability and improving the assessment and understanding of radiation therapy wait times across the country.

Radiation Therapy Utilization

This indicator measures the utilization of radiation therapy services. In its current form, the indicator is calculated as the ratio of total radiation therapy courses to the total number of new cancer cases. The data are based on information reported to the Partnership by provincial cancer agencies.

The data provide a snapshot of what is known in Canada at this time. During the data gathering process, it became apparent that data may have been gathered or reported differently among provinces, and therefore a true assessment of radiation therapy utilization across Canada is not possible at this time. This indicator is therefore “in development” and plans are in place to further refine the indicator in the future.

In 2007, the ratio of radiation therapy courses to incident cases ranged from approximately 0.4 to 0.55 for the seven provinces submitting data. These values are in line with reported results from international measurement efforts.



Over the three years of data collected (2005 to 2007) for Radiation Therapy Wait Times, the proportion of cases treated within the 4-week target time frame increased for all but one of the provinces submitting multiple years of data. In 2007, six of eight provinces submitting data reported a rate over 90%.

Symptom Assessment

The cancer community at large recognizes the urgent need to develop indicators that assess supportive care and survivorship. Unfortunately, there is still a lack of reliable and standardized data in this domain.

The indicator selected by the Steering Committee for this report measures the extent to which provinces and their cancer agencies have implemented standardized symptom assessment tools for pain and emotional distress. Routine screening for pain and emotional distress, often referred to as the fifth and sixth vital signs¹³ respectively, helps to identify any non-medical problems early on, so that the appropriate support services can be offered to address a patient's specific needs.

One commonly used assessment tool is the Edmonton Symptom Assessment Scale (ESAS), which is designed to assist in the assessment of nine common symptoms experienced by cancer patients: pain, tiredness, nausea, depression, anxiety, drowsiness, appetite, well-being and shortness of breath. Other standardized tools may be used for the same purpose.

The indicator results are based on data provided to the Partnership by the provincial cancer agencies or their equivalent.

Four provinces reported using some form of centrally tracked, standardized symptom assessment tool in 2007: British Columbia, Alberta, Manitoba and Ontario (TABLE 1). Of these four provinces, only two reported implementing a standardized tool (ESAS) in all of their cancer centres, and the tool may have been administered to a minority of patients only. Reliable data on the per cent of cancer patients assessed were not available.

Many provinces are reporting new initiatives to better measure and understand the supportive care and survivorship domains. Thus, future indicator work will focus on monitoring these efforts to attain a more comprehensive assessment of cancer supportive care and survivorship across Canada.

TABLE 1

Extent of usage of standardized symptom assessment tools across clinics within provincial cancer agencies (Surveyed February 2009)

Province	CANCER CENTRES*		
	All	Some	None
BC	×		
AB		×	
SK			×
MB		×	
ON	×		
QC			×
NB			×
NS			×
PE			×
NL			×

***Definitions:**

ALL: Standardized symptom assessment is undertaken for at least a portion of patients at each provincial cancer centre.

SOME: Standardized symptom assessment is undertaken for at least a portion of patients at selected provincial cancer centres.

NONE: Provincially managed implementation of symptom assessment does not exist.

Many provinces are reporting new initiatives to better measure and understand the supportive care and survivorship domains.

Long-Term Outcomes and Surveillance - Introduction

Cancer surveillance statistics, including incidence and mortality, offer key insights into assessments of the burden of cancer in Canada.

Age-standardized rates are often used to examine incidence and mortality because they allow comparisons by accounting for different age distributions in populations. It is important to remember, however, that age-standardized incidence and mortality rates cannot be quoted as “real” rates and thus cannot be used for resource planning. Actual incidence numbers or crude rates are more relevant for that purpose. In this report, all data are age-standardized to the 1991 Canadian population and exclude non-melanoma skin cancer.

When examining incidence rates, differences among time periods or jurisdictions may reflect different exposures to risk factors (often in the past) or diagnostic patterns (prostate specific antigen use, for example, or screening frequencies for other cancers). Differences among age-standardized mortality rates may reflect differences in cancer control activities, including prevention, screening, diagnosis and treatment.



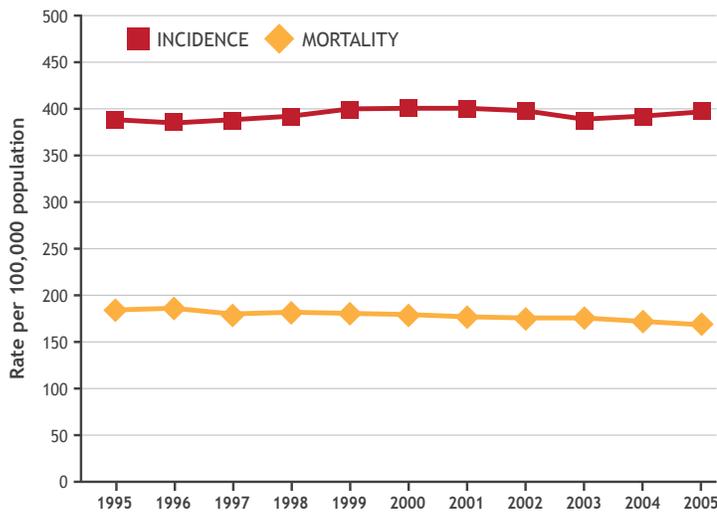
Another important cancer surveillance indicator is cancer survival, or the proportion of patients living at some point subsequent to the diagnosis of the disease. Relative survival measures cancer patients’ probability of survival compared to the overall population of the same age and gender over a given period of time. As such, it is useful because it measures improvements in the cancer care system’s ability to extend life and is highly meaningful for patients and their families.

All Cancers

The age-standardized cancer incidence rate (ASIR) in Canada remained stable throughout the decade, although decreases are beginning to be seen in some provinces, notably British Columbia. The age-standardized mortality rate (ASMR) gradually decreased from 1995 to 2005 (FIGURE 19).

FIGURE 19

Age-standardized incidence and mortality rates - all cancers
Canada - 1995 to 2005

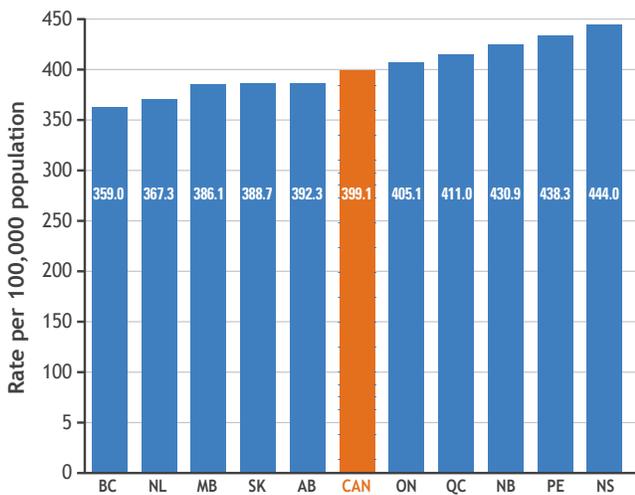


Data Sources: Statistics Canada, Canadian Cancer Registry, Vital Statistics

Across the country, there were differences among jurisdictions in incidence (FIGURE 20) and mortality (FIGURE 21). In 2005, for both incidence and mortality, British Columbia experienced the lowest rates. Atlantic Canada and Quebec tended to experience higher rates in comparison to Western Canada.

FIGURE 20

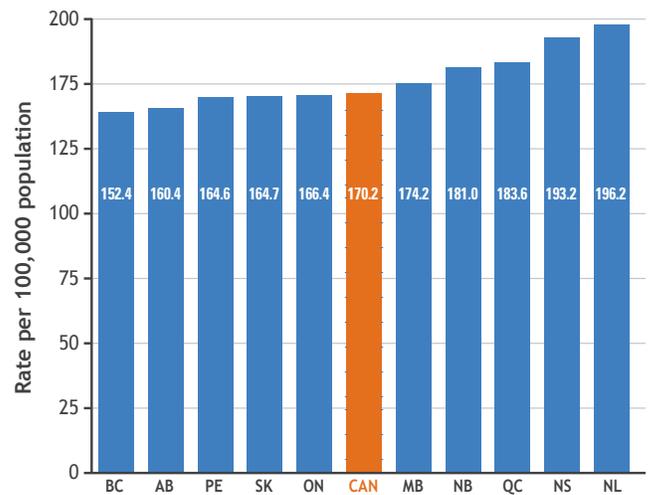
Age-standardized incidence rates - all cancers
By province - 2005



Data Sources: Statistics Canada, Canadian Cancer Registry

FIGURE 21

Age-standardized mortality rates - all cancers
By province - 2005



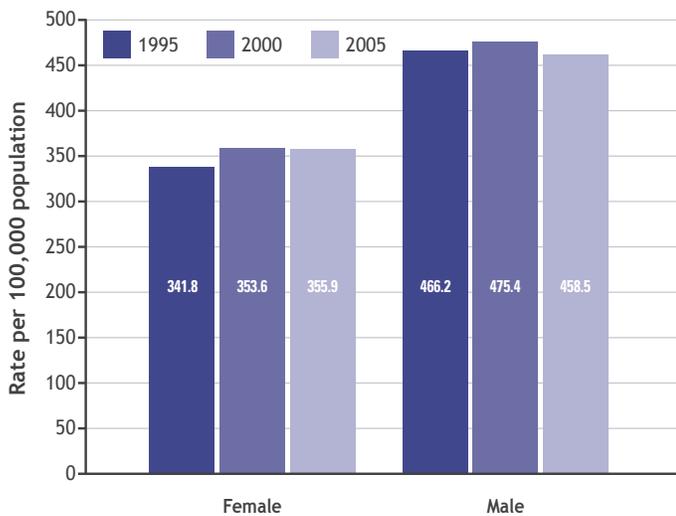
Data Sources: Statistics Canada, Vital Statistics - Death Database



There were also differences in cancer incidence and mortality in Canada between males and females. The most common cancers in females are breast, lung and colorectal cancer, and the incidence rates of these three cancers were fairly stable throughout the decade. The most common cancers in males are prostate, lung and colorectal cancer. Among men, there was a decrease in lung cancer, a slight increase in prostate cancer and little difference in the incidence of colorectal cancer throughout the last decade.

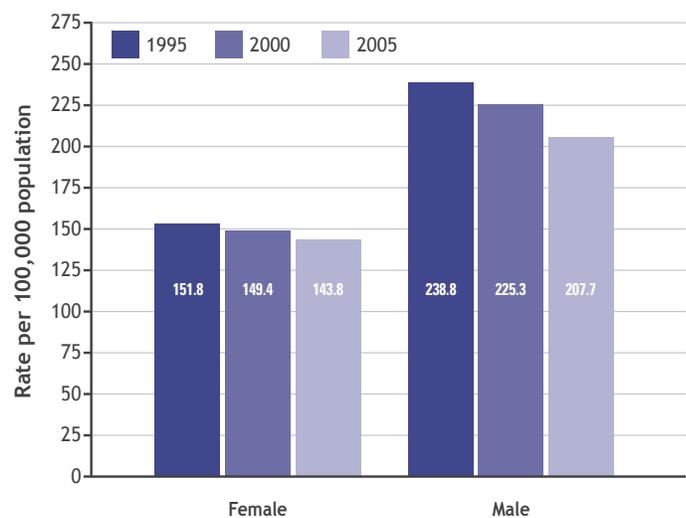
Most significantly for this time period, however, age-standardized incidence rates were higher among men than among women (FIGURE 22). Conversely, age-standardized mortality rates among men decreased by 13% from 1995 to 2005 as compared to a decrease of 5% for women (FIGURE 23). This difference may be due to a slight increase in lung cancer incidence and mortality among women, as compared to a substantial decrease in lung cancer incidence and mortality among men, reflecting the impact of earlier drops in smoking rates among men.

FIGURE 22
Age-standardized incidence rates - all cancers
Time trends by gender, Canada - 1995 to 2005



Data Sources: Statistics Canada, Canadian Cancer Registry

FIGURE 23
Age-standardized mortality rates - all cancers
Time trends by gender, Canada - 1995 to 2005



Data Sources: Statistics Canada, Vital Statistics - Death Database

Breast Cancer

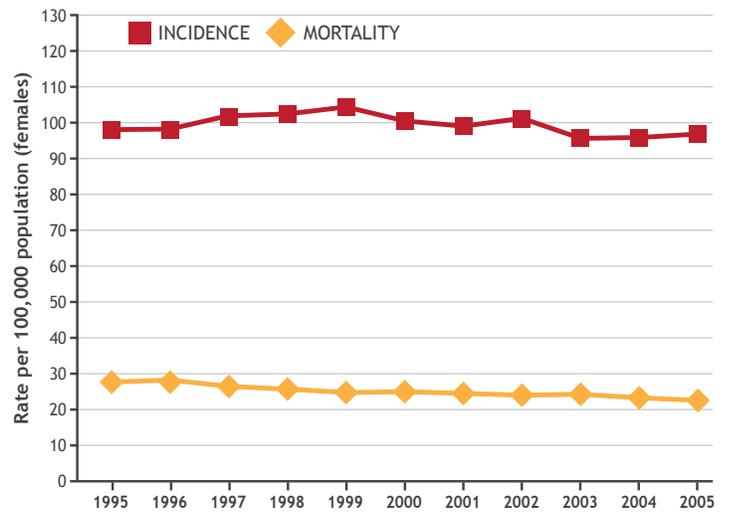
While there were some fluctuations in incidence of breast cancer from 1995 to 2005, overall rates remained fairly stable throughout the last decade.

Age-standardized mortality rates declined steadily in this same time period from 29 per 100,000 in 1995 to 23 per 100,000 in 2005 (FIGURE 24), probably reflecting improvements in early detection and treatment.

Similarly, the five-year relative survival ratio for breast cancer improved in the last decade from 85% for patients diagnosed in 1995-1997 to 87% for patients diagnosed in 2001-2003 (FIGURE 25).

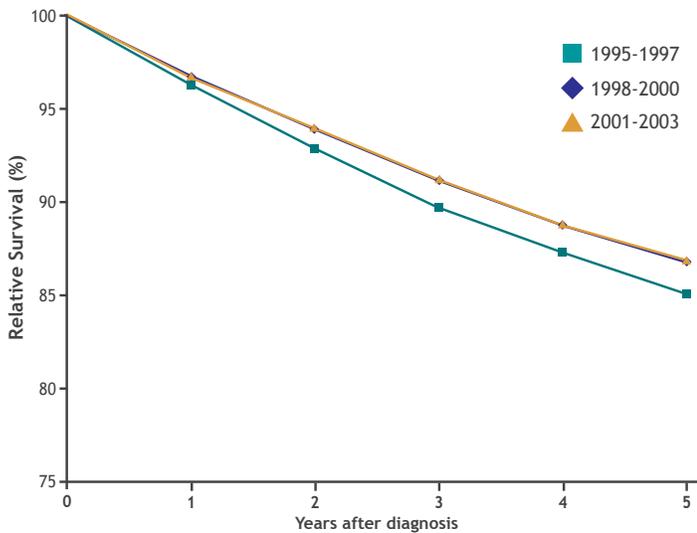
The risk of developing breast cancer increased with age. Differences in rates among income quintile were slight, as they were for urban versus rural residence.

FIGURE 24
Age-standardized incidence and mortality rates - breast cancer
Canada - 1995 to 2005



Data Sources: Statistics Canada, Canadian Cancer Registry, Vital Statistics

FIGURE 25
Relative survival (%) for breast cancer
By diagnosis period - Canada



Data Sources: Statistics Canada, Canadian Cancer Registry



Colorectal Cancer

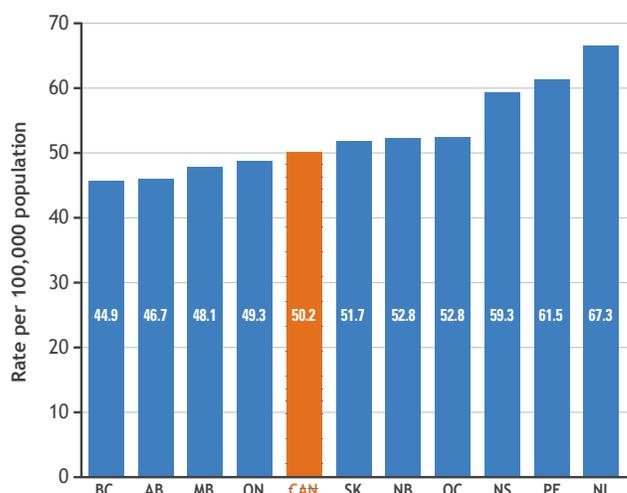
Age-standardized colorectal cancer incidence rates remained relatively stable in Canada between 1995 and 2005 at approximately 50 per 100,000 people. There was, however, considerable variation in rates across provinces.

In 2005, there was a 50% difference between the lowest rates (45 new cases per 100,000 in British Columbia) and the highest rates (67 new cases per 100,000 in Newfoundland and Labrador) (FIGURE 26). As described in the Prevention section of this report, colorectal cancer screening programs were not yet widely implemented at this time and are therefore unlikely to account significantly for these differences. Age-standardized mortality rates showed a slightly decreasing trend between 1995 and 2005; ASMRs also varied considerably between provinces.

Of note, age-standardized incidence rates were approximately 50% higher for males as compared to females (FIGURE 27). There was little variation in colorectal cancer incidence or mortality by income quintile; rural areas evidenced a slightly higher rate in incidence but not in mortality.

FIGURE 26

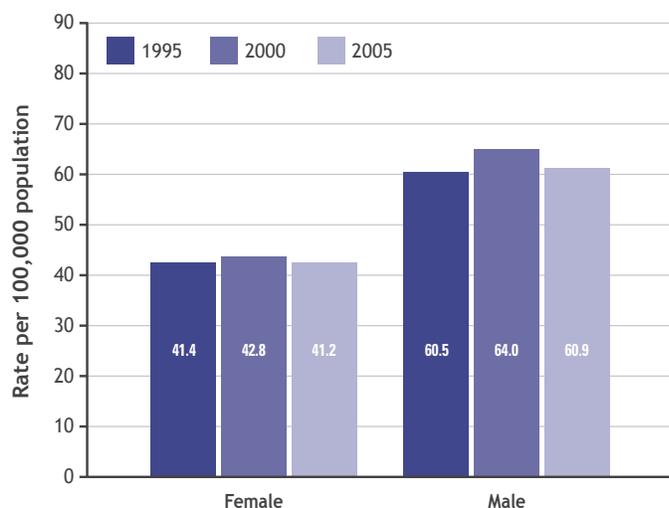
Age-standardized incidence rates - colorectal cancer
By province - 2005



Data Sources: Statistics Canada, Canadian Cancer Registry

FIGURE 27

Age-standardized incidence rates - colorectal cancer
Time trends by gender, Canada - 1995 to 2005

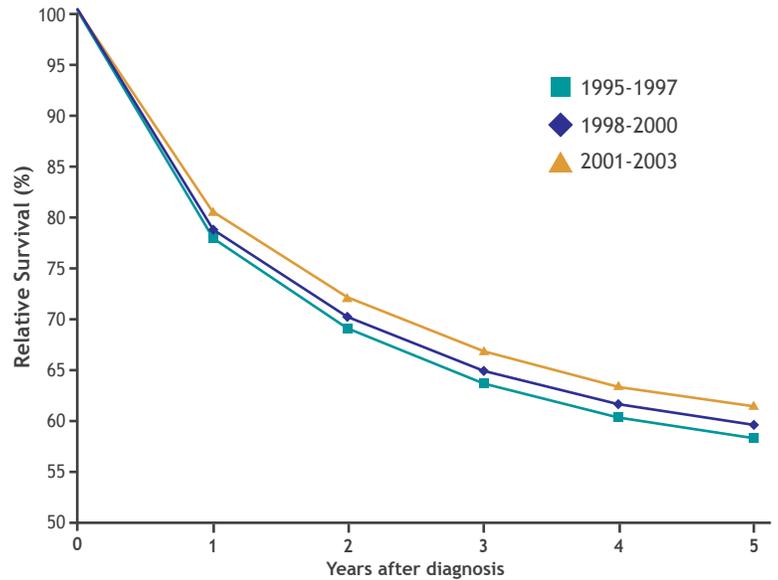


Data Sources: Statistics Canada, Canadian Cancer Registry

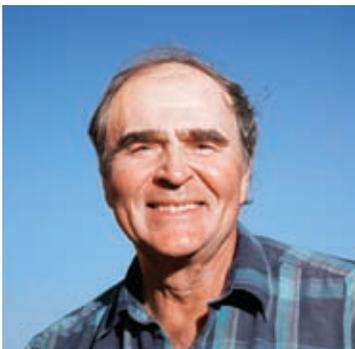
While there was considerable variation in incidence and mortality of colorectal cancer among provinces, five-year relative survival ratios were very similar and ranged from 58% in Nova Scotia to 63% in Ontario for patients diagnosed in 2001-2003. Survival ratios increased slightly over time (FIGURE 28). There was very little difference between males and females in relative survival in the measurement period.

FIGURE 28

Relative survival (%) for colorectal cancer
By diagnosis period - Canada



Data Sources: Statistics Canada, Canadian Cancer Registry



In 2008, colorectal cancer screening programs were in place (pilot programs included) in seven provinces and territories across Canada, with two additional programs announced or in the planning stage.

Lung Cancer

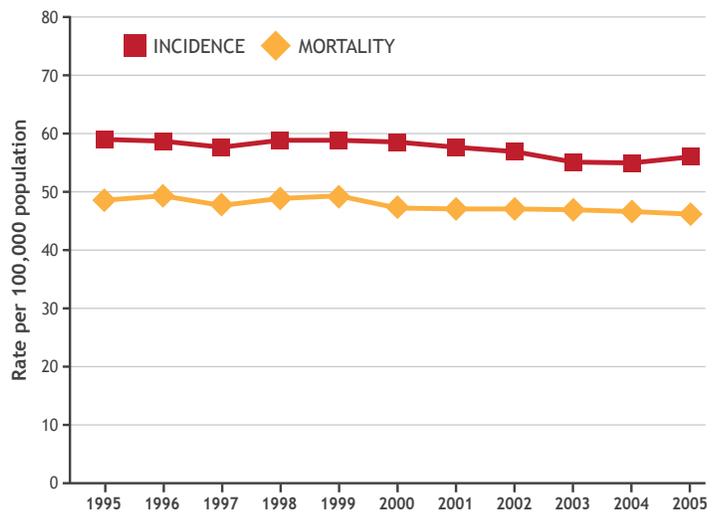
The age-standardized incidence and mortality rates of lung cancer declined slightly from 1995 to 2005. As rates for lung cancer are reflective of past use of tobacco, changes in incidence and mortality rates reflect differences in previous tobacco usage rates (which, in turn, may reflect differences in policies and programs put in place to control tobacco use) (FIGURE 29).

As with colorectal cancer, there were considerable interprovincial differences. In general, both incidence and mortality were higher in Atlantic Canada as compared to Western Canada.

Age-standardized incidence rates for lung cancer were markedly higher for males as compared to females (FIGURE 30). Interestingly, while incidence rates decreased for males from 1995 to 2005, they followed an increasing trend for females, which may largely reflect past patterns in tobacco use. In parallel, mortality rates decreased for males, while they increased slightly for females.

FIGURE 29

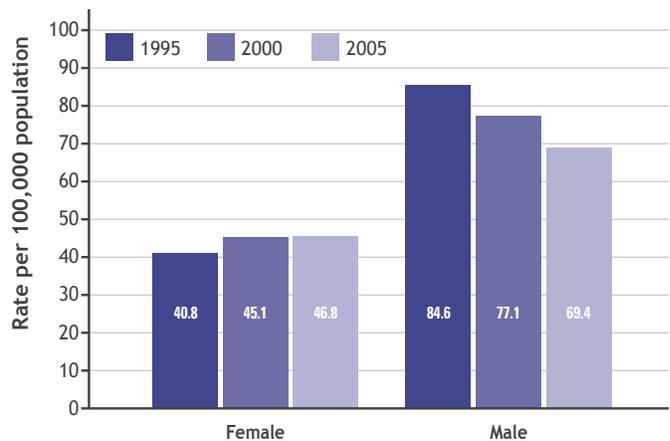
Age-standardized incidence and mortality rates - lung cancer
Canada - 1995 to 2005



Data Sources: Statistics Canada, Canadian Cancer Registry, Vital Statistics

FIGURE 30

Age-standardized incidence rates - lung cancer
Time trends by gender, Canada - 1995 to 2005



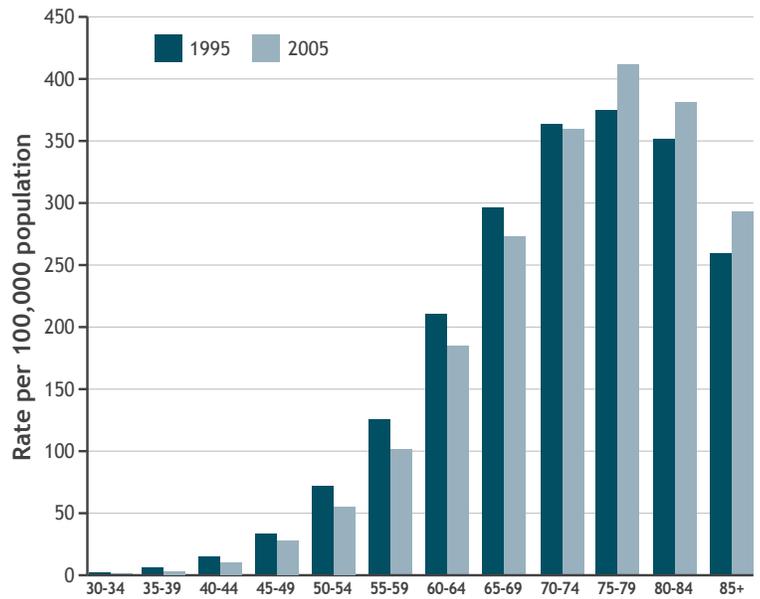
Data Sources: Statistics Canada, Canadian Cancer Registry

Lung cancer incidence increases with age. Interestingly, while overall incidence rates are falling, this trend is restricted to people under the age of 75 (FIGURE 31), and rates are still higher for individuals over 75 than they were ten years ago. This reflects secular patterns that occur when a population begins to reduce tobacco use; in general, rates fall first in younger populations.¹⁴

Lung cancer incidence rates are higher in lower income groups and in rural areas (FIGURE 32), and mortality rates follow the same pattern. This reflects socio-economic patterns for tobacco use and quit rates described earlier in this section.

FIGURE 31

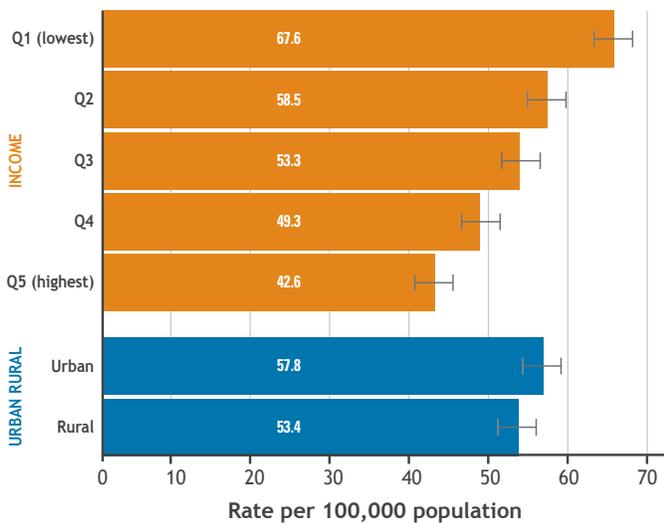
Age-standardized, age-specific incidence rates - lung cancer
By age group, Canada - 1995 vs 2005



Data Sources: Statistics Canada, Canadian Cancer Registry

FIGURE 32

Age-standardized incidence rates - lung cancer
By income quintile and urban/rural area, Canada - 2005



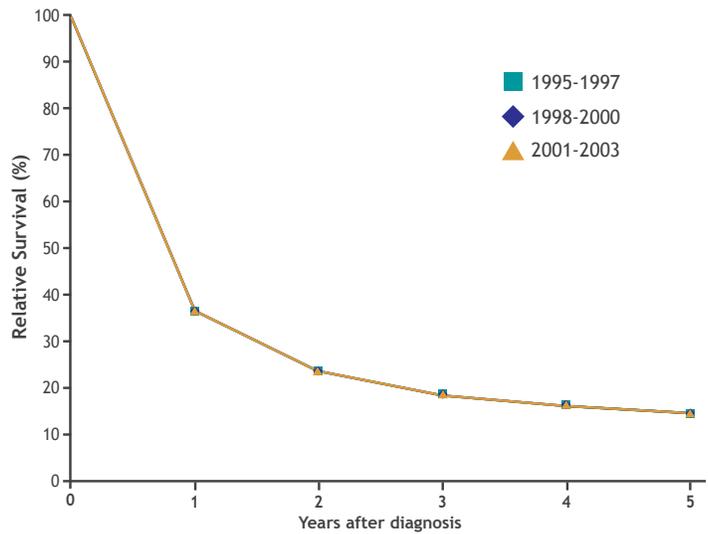
Note: 95% confidence intervals are indicated on figure
Data Sources: Statistics Canada, Canadian Community Health Survey



While there is good news in the decline of lung cancer incidence and mortality rates overall, five-year survival remains poor, and there is little evidence of improvement (FIGURE 33). For patients diagnosed in 2001-2003, five-year relative survival ranges from 12.5% in Alberta to 18.2% in Manitoba.

FIGURE 33

Relative survival (%) for lung cancer
By diagnosis period - Canada



Data Sources: Statistics Canada, Canadian Cancer Registry



Prostate Cancer

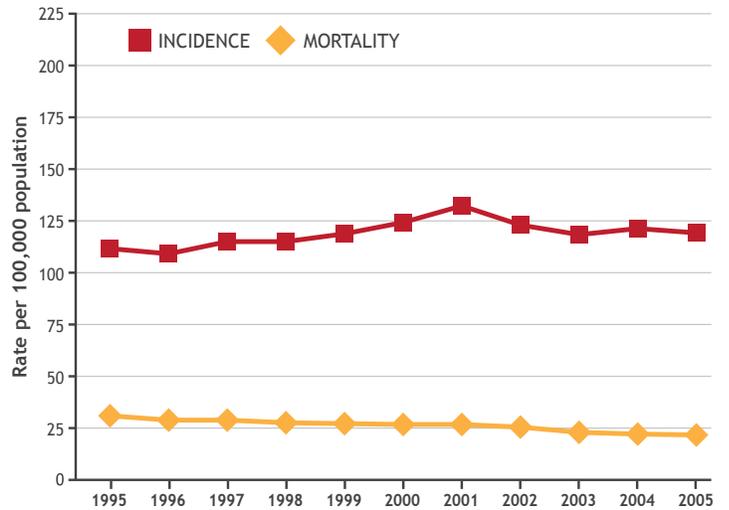
Prostate cancer incidence rose slightly between 1995 and 2005 while mortality rates declined substantially in the same time period (FIGURE 34).

Interprovincial rates for both incidence and mortality in 2005 were relatively varied, with incidence ranging from 93 per 100,000 to 150 per 100,000 and mortality from 17 per 100,000 to 29 per 100,000. The incidence rate variation may be partly due to differences in the use of the prostate specific antigen (PSA) test in different provinces.

In 2005, incidence rates were higher in higher income quintiles, which may be a reflection of patterns of PSA testing across the country; place of residence had no impact on prostate cancer incidence rates (FIGURE 35). In contrast, there was no clear relationship between prostate mortality rates and income, although mortality rates were higher for rural residents (FIGURE 36).

FIGURE 34

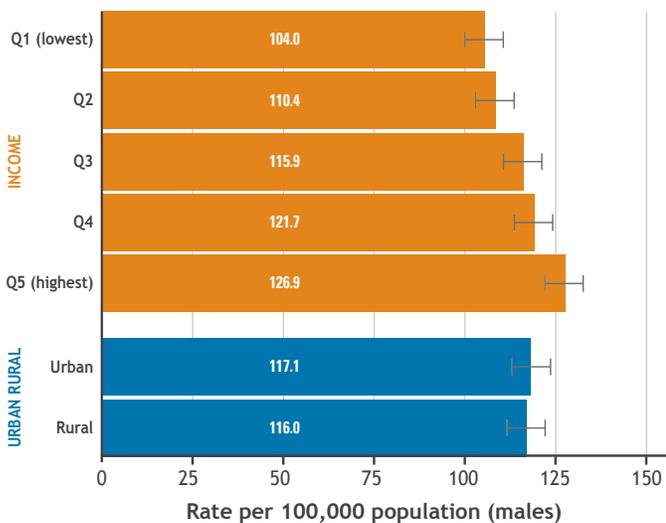
Age-standardized incidence and mortality rates - prostate cancer
Canada - 1995 to 2005



Data Sources: Statistics Canada, Canadian Cancer Registry, Vital Statistics

FIGURE 35

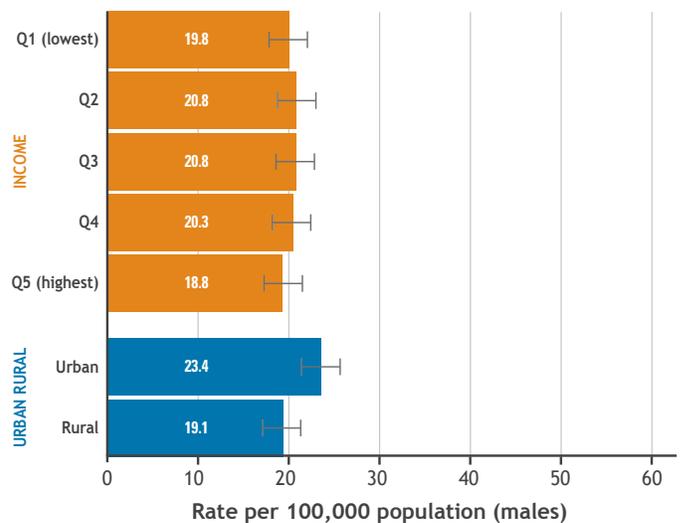
Age-standardized incidence rates - prostate cancer
By income quintile and urban/rural area, Canada - 2005



Note: 95% confidence intervals are indicated on figure
Data Sources: Statistics Canada, Canadian Cancer Registry

FIGURE 36

Age-standardized mortality rates - prostate cancer
By income quintile and urban/rural area, Canada - 2005



Note: 95% confidence intervals are indicated on figure
Data Sources: Statistics Canada, Vital Statistics - Death Database

Capture of Stage Data

Cancer stage at diagnosis identifies the extent of disease, such as tumour size and degree of spread, which in turn informs prognosis and treatment. The ability to accurately assess trends in incidence and outcomes (such as survival), as well as determine guideline concordance rates, is greatly enhanced by the presence of valid, accurate stage data.

In addition, the extent to which a screening program has contributed to the detection of early-stage cancers can best be assessed using stage at diagnosis data. The availability of stage data, therefore, will improve our ability to understand the impacts of system-based interventions on the cancer control system.

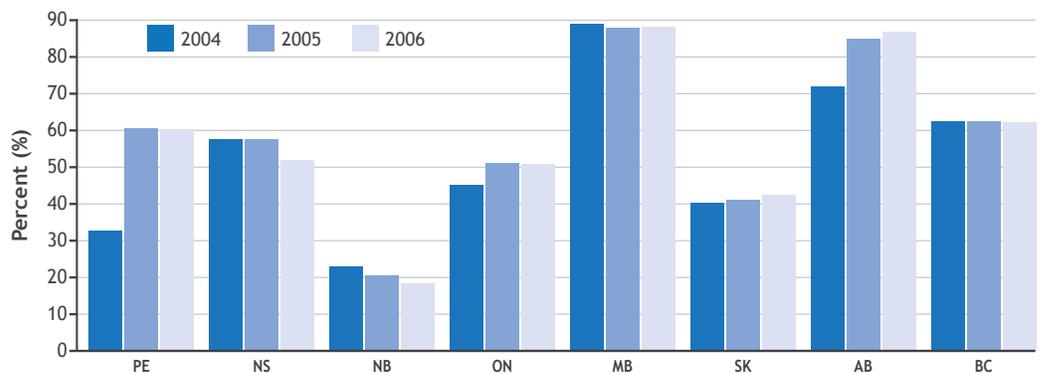
The Capture of Stage Data indicator provides a measure of the availability of valid stage at diagnosis data across Canada. The metric used is the per cent of new incident cancer cases with valid stage reported overall and for each of the top four disease sites. The indicator does not differentiate between staging collected using the AJCC/UICC TNM staging system and collaborative stage. Data were provided to the Partnership directly from the provincial cancer agencies.

Of the provinces that reported overall stage capture rates for all cancers, the per cent of cancer cases diagnosed in 2006 for which valid stage was reported ranged from 18% in New Brunswick to 88% in Manitoba (FIGURE 37). Over the three years measured, 2004-2006, the stage data capture rate held steady in most provinces and improved in some, particularly in Prince Edward Island, New Brunswick and Alberta for prostate, and in PEI and Saskatchewan for lung. The improvement may reflect the different strategies provinces have used for phasing in stage data collection, which often incorporate one or two additional disease sites per year.

There are ongoing efforts in Canada to improve the quality of stage data in provincial cancer registries. One such effort is the Partnership’s Staging Initiative, which is supporting provinces and territories to implement stage data collection and create common linkages across Canada, with the goal of collecting population-based, electronic stage data for colorectal, lung and breast cancer for 90% of patients diagnosed in 2010 and beyond.

As stage data becomes available, it will be reported more fully, which will in turn inform the status of cancer control, especially in the areas of diagnosis and treatment.

FIGURE 37
Incident cases with stage data reported to provincial cancer agencies (%)
Time trends by province, all cancers - 2004 to 2006



Note: Data not available for NL, QC, YK, NT, NV
Data Sources: Provincial Cancer Agencies

PET Scanner Capacity

This indicator measures the number of Positron Emission Tomography (PET) scanners per million population across Canada. PET availability was reported to the Partnership by each province for the July 1 date of 2005, 2006 and 2007.

A second indicator looks at the ratio of PET scanners per million people aged 54 or over. As 80 per cent of cancers occur in this age group, the ratio is an attempt to examine capacity relative to the population at risk.

The indicator is a crude measure of resource capacity. It does not differentiate between cancer and non-cancer related utilization of PET scanners, and in fact, a number of machines in Canada are restricted solely to research applications. It is also recognized that jurisdictions without PET scanners may be sending patients to other provinces for evaluation; data reflecting interprovincial services were not available for this report.

Currently, there is little evidence in the literature of an “ideal” per capita PET scanner ratio; nevertheless, the indicator is commonly reported and was included for that reason. Six provinces reported having at least one PET scanner in 2007, the latest data available. The number of PET scanners per million people 54 years of age and over ranged from 0.8 in British Columbia to 5.3 in Alberta.

It is recognized that more complete indicators are needed to better report on cancer system resources and capacity in the future.



Radiotherapy Capacity – LINACS

While the indicator is also a crude measure of capacity, it is also frequently reported on in Canada and internationally.

The indicator focuses on machine capacity (per capita or per cancer incident case) and does not take into account operational capacity or actual utilization. In addition, an attempt was made to gather information on treatment cycles, but the data were not readily available.

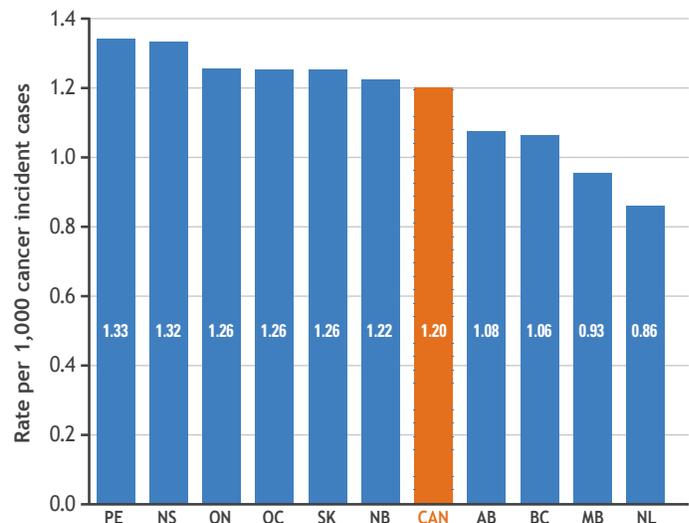
Nonetheless, the indicator is presented as a starting point from which to develop more meaningful and representative indicators of cancer control resources and capacity, and it is recognized that further development is necessary for future reporting. Data were provided to the Partnership directly from the provincial cancer registries.

The number of LINACS per million people in the provinces in 2007 ranged from 4 in Newfoundland to 7.5 in Nova Scotia. Of interest, in 2005, the Organization for Economic Co-operation and Development (OECD) reported an average of 6.2 LINACS per million for OECD member countries.¹⁵ No significant trends were identified in the three years of data included in the measurement.

When measuring the capacity as LINACS per 1,000 cancer incident cases, the Canadian average in 2005 was 1.2, with provincial results ranging from 0.86 in Newfoundland and Labrador to 1.33 in Prince Edward Island (FIGURE 38).

Note that this indicator does not take into account interprovincial services, which is a particular factor in the smaller provinces and all three territories. Also, as stated earlier, the indicator does not measure the operational capacity of the linear accelerators nor the availability of dedicated health human resources such as radiation oncologists and radiation therapists.

FIGURE 38
LINACS per 1,000 cancer incident cases
By province - 2005

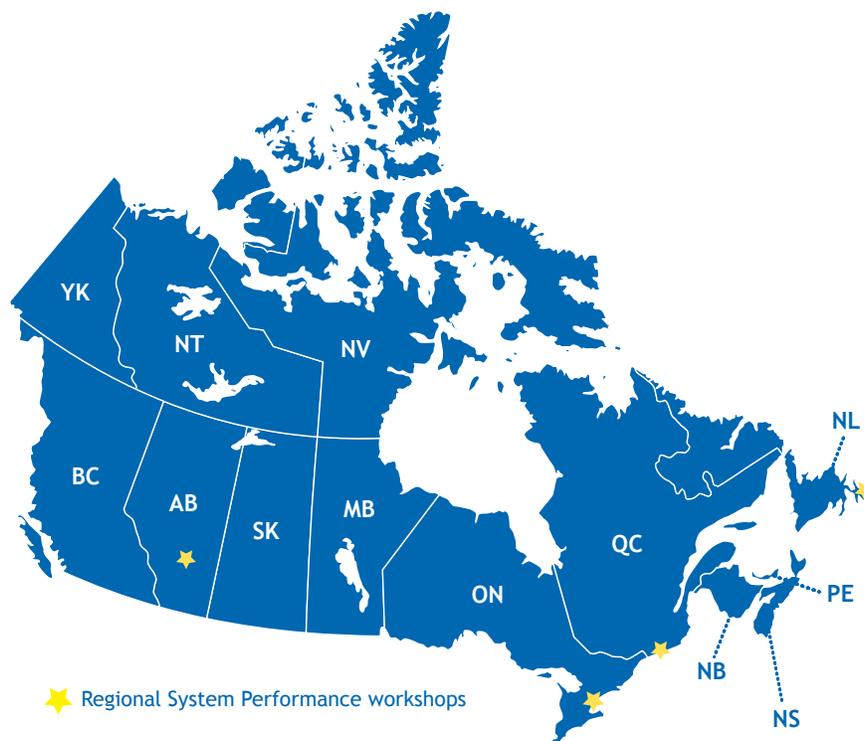


Data Sources: Provincial Cancer Agencies

WORKSHOP RESULTS AND MOVING FORWARD



Overview of Regional Workshops



Four regional workshops were held in June and July 2009 in Atlantic and Western Canada and in the provinces of Ontario and Quebec. They were attended by senior leaders, clinicians and information management and decision support directors from provincial cancer agencies or their equivalent, ministries and departments of health, and regional health authorities.

The workshops included presentations from guest speakers on the context for performance measurement in cancer control, a review of the process whereby the 2009 indicators were selected and the results of the indicators.

Province-specific binders were prepared for every jurisdiction and included comprehensive results of the indicators on a national and provincial level.

Group discussions were held to obtain guidance and feedback on the system performance initiative and for steps moving forward.

Four regional workshops were held in June and July 2009 in Atlantic and Western Canada and in the provinces of Ontario and Quebec. Group discussions were held to obtain guidance and feedback on the system performance initiative and for steps moving forward.

Key Findings of Regional Workshops

The workshops were highly collaborative, with 112 persons attending. Participant evaluations were very positive with 93% of respondents agreeing that the workshops were informative and useful and 80% rating the workshops overall as “very good” or “excellent”.

Strong support was voiced toward national system performance reporting, and cross-provincial comparisons and benchmarking initiatives were highly encouraged. Attendees supported the choice of the core group of indicators selected for 2009 reporting, agreeing, in principle, with the indicator selection process, calculation methodology and results.

The Partnership’s system performance initiative proposed the following as next steps, all of which received strong support:

- Plan for wider public reporting of indicator results in Year Two and beyond.
- Deepen the indicators recognized as requiring further refinement in Chapter Two of this report.
- Continue reporting on socio-economic status and education variables across selected indicators; expand urban/rural variable to also include “remote”.
- Begin to report on specific guideline concordance measure “exemplar” indicators, especially in the domains of surgery, chemotherapy and radiation, and also palliative care.

In addition, the following recommendations were identified at the regional workshops:

- Improve the timeliness and currency of results, especially for the Wait Times indicator administered by the Canadian Breast Cancer Screening Database. It was recommended that the Partnership approach provinces directly for Wait Times-Abnormal Breast screen to resolution data.
- Recognize that indicators are wanting in the domains of Supportive Care and Survivorship, Resources and Capacity, and Diagnosis and Treatment, either because they have not yet been developed, are not widely used, are not standardized or are in need of further refinement.
- Continue to use the Edmonton Symptom Assessment Scale (ESAS) or equivalent, but consider development of a new tool to measure the “fifth” and “sixth” vital signs, and possibly expand existing surveys to measure patient satisfaction.
- Consider further development of Resources and Capacity indicators in order to reflect operational efficiency, interprovincial referrals and the aggregation of results for smaller jurisdictions.
- Support expanding indicator reporting identified by the steering committee to include next tier of “developmental” indicators. This could include, as feasible, HPV Vaccination Rates in school based programs, Wait Times Fecal Occult Blood Test (FOBT) to Colonoscopy, Systemic Therapy Utilization Rates, Patient Reported Outcomes and Clinical Trial Participation. A plan will be implemented with partners to further develop these indicators.

The second year of the System Performance Initiative (2009-2010) will focus on refining and deepening existing indicators as well as developing exemplar indicators, especially in the treatment domain.

Moving Forward

This report focuses on the process and outcomes of the first year of the Partnership's system performance initiative. Steps for the second year are outlined below.

2009-2010

This next year (2009-2010) will focus on refining the existing indicators, including securing more reliable and timely data. As well, several new indicators will be developed, reflecting recommendations from the regional system performance workshops. And finally, scans will be undertaken to assess the feasibility of selected indicators for development in following years.

In order to provide the expert advice and consultation necessary for advancing the system performance effort, the following framework is proposed:

- A high-level quality and system performance Advisory Committee to provide guidance to this initiative and to other quality initiatives currently in development with partners. Membership will include provincial, federal and international representation with expertise in areas such as survivorship, health services research, health informatics, indicator development methodology and cancer control.
- A pan-Canadian System Performance Working Group, which will represent each province and collaboratively work to identify gaps in reporting, deepen indicators and access data.
- Domain-specific Working Groups that will guide the development of specific indicators, including indicator methodology and indicator definition and calculation. These may be new groups or existing groups within the Partnership's Action Group structure.

The second year of the system performance initiative is now underway, with an initial report planned for late spring 2010 and subsequent companion bulletins to be published as needed throughout the year.

We extend thanks to the collaborative efforts of advisors, stakeholders and participants across the country without whom the system performance initiative would not be possible.

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Technical Appendix

Prevention

INDICATOR:	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
DENOMINATOR:	Total population, aged 12+
DATA SOURCE:	Canadian Community Health Survey
DATA AVAILABILITY:	2000-2001 (CCHS Cycle 1.1); 2003 (CCHS Cycle 2.1); 2005 (CCHS Cycle 3.1); 2007 (CCHS Cycle 4.1) - Pan Canadian data
CCHS VARIABLES:	<ul style="list-style-type: none"> • 100 or more cigarettes during lifetime • Ever smoked a whole cigarette • Type of smoker at present time • Ever smoked cigarettes daily
STRATIFICATION VARIABLES:	Gender, age, income, education, urban/rural (see CCHS stratification variables)

INDICATOR:	SMOKING CESSATION
DEFINITION:	Percentage of recent smokers aged 20 and older that quit smoking in the last two years.
NUMERATOR:	Recent quitters (former smokers who are not currently smoking at the time of the survey) who have quit for 2 years or less
DENOMINATOR:	Recent quitters plus current smokers (those who are currently daily or occasional smokers)
DATA SOURCES:	Canadian Community Health Survey
DATA AVAILABILITY:	2003 (CCHS Cycle 2.1); 2005 (CCHS Cycle 3.1); 2007 (CCHS Cycle 4.1) - Pan Canadian data
CCHS VARIABLES:	<ul style="list-style-type: none"> • Current smoking status • Number of years stopped smoking daily • Number of years stopped smoking completely
STRATIFICATION VARIABLES:	Gender, age, income, education, urban/rural (see CCHS stratification variables)

Notes

1. This indicator could not be derived in Cycle 1.1 (2000-01) because respondents were only asked whether they had stopped smoking daily. As someone could have switched from being a daily smoker to an occasional smoker it was impossible to determine if they had stopped smoking completely. From Cycle 2.1 onward, an additional question "When you stopped smoking daily, was this when you completely stopped? If not, when did you stop smoking completely?" was asked.

Prevention (CONTINUED)

INDICATOR:	OVERWEIGHT & OBESITY RATES
DEFINITION:	Percentage of adults aged 18 years and older in each BMI group - underweight (BMI < 18.00); normal weight (BMI 18.01-24.99); overweight (BMI 25.00-29.99) or obese (BMI 30.00+)
NUMERATOR:	Number of adults underweight, normal weight, overweight or obese
DENOMINATOR:	Total number of adults with valid height and weight responses
POPULATION EXCLUSIONS:	Pregnant women, lactating women, persons less than 3 feet tall or greater than 6 feet 11 inches.
DATA SOURCE:	Canadian Community Health Survey
DATA AVAILABILITY:	2003 (CCHS Cycle 2.1); 2005 (CCHS Cycle 3.1); 2007 (CCHS Cycle 4.1) - Pan-Canadian data
CCHS VARIABLES:	<ul style="list-style-type: none"> • Self-reported weight (kg) • Self-reported height (m) • Calculated BMI values: BMI= weight/(height)²
STRATIFICATION VARIABLES:	Gender, age, income, education, urban/rural (see CCHS stratification variables)

Notes

1. Distributions of the BMI values without grouping into categories are also presented
2. Although heights and weights were reported in CCHS Cycle 1.1 (2000-01) they are not included in this analysis because the age range differed from subsequent years (Adults: 20-64)

Technical Appendix

Prevention (CONTINUED)

INDICATOR:	ALCOHOL CONSUMPTION
DEFINITION:	Percentage of adults aged 18 and older that reported exceeding the low risk drinking guideline as defined below: <i>Low Risk Drinking Guideline:</i> 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 (>18 years) who reported exceeding the low risk drinking guideline
DENOMINATOR:	Total population (>18 years)
POPULATION EXCLUSIONS:	Respondents who had missing alcohol consumption information for any day during the week preceding the interview.
DATA SOURCE:	Canadian Community Health Survey
DATA AVAILABILITY:	2000-01 (CCHS Cycle 1.1); 2003 (CCHS Cycle 2.1); 2005 (CCHS Cycle 3.1) - Pan-Canadian Data 2007 (CCHS Cycle 4.1) - Optional content available for: NL, NS, ON, BC, NV
CCHS VARIABLES:	<ul style="list-style-type: none"> • During the past 12 months have you had a drink of beer, wine, liquor or any other alcoholic beverage? • Thinking back over the past week did you have a drink of beer, wine, liquor or any other alcoholic beverage? • How many drinks did you have on each day during the past week?
STRATIFICATION VARIABLES:	Gender, age, income, education, urban/rural (see CCHS stratification variables)

Notes

1. A national estimate was not calculated for 2007 as data is not available for all provinces/territories

Screening

INDICATOR:	SELF-REPORTED MAMMOGRAPHY
DEFINITION:	The proportion of asymptomatic females aged 50-69 receiving a mammogram within the past 2 years where asymptomatic is defined as: <i>Asymptomatic:</i> Respondents who indicated going for a mammogram for any of following reasons: <ul style="list-style-type: none"> • Family history; Routine screen/check-up; Age; HRT while answering NO for ALL of the following: <ul style="list-style-type: none"> • Lump; Breast problem; Follow-up to breast cancer treatment; Other
NUMERATOR:	Asymptomatic females aged 50-69 who indicated going for a mammogram within the past 2 years.
DENOMINATOR:	Asymptomatic females aged 50-69.
DATA SOURCES:	Canadian Community Health Survey
DATA AVAILABILITY:	2000-2001 (CCHS Cycle 1.1); 2003 (CCHS Cycle 2.1); 2005 (CCHS Cycle 3.1) - Pan-Canadian data 2007 (CCHS Cycle 4.1) - Optional content available for: NL, NS, NB, ON, SK and NT
CCHS VARIABLES:	<ul style="list-style-type: none"> • Ever had a mammogram • Reasons for having mammogram (mark all that apply): Family history; Routine screen; Age; HRT; Lump; Follow-up to breast cancer treatment; Breast problem; Other. • Last time respondent had undergone a mammogram
STRATIFICATION VARIABLES:	Age, income, education, urban/rural (see CCHS stratification variables)

Notes

1. 2007 (CCHS Cycle 4.1) is not included in figures as data is not available for all provinces/territories.

Technical Appendix

Screening (CONTINUED)

INDICATOR:	CERVICAL CANCER SCREENING
DEFINITION:	Percentage of women aged 18-69 that reported having received a Papanicolaou (PAP) smear in the previous three years
NUMERATOR:	Number of individuals (18-69) that reported a PAP smear test in the past three years
DENOMINATOR:	Total number of women aged 18-69
POPULATION EXCLUSIONS:	Women who had a hysterectomy
DATA SOURCE:	Canadian Community Health Survey
DATA AVAILABILITY:	2000-01 (CCHS Cycle 1.1); 2003 (CCHS Cycle 2.1); 2005 (CCHS Cycle 3.1) - Pan-Canadian Data 2007 (CCHS Cycle 4.1) - Optional content available for the following provinces: NB, ON, SK and NT
CCHS VARIABLES:	<ul style="list-style-type: none"> • Have you ever had a PAP smear test? • When was the last time? • Have you had a hysterectomy?
STRATIFICATION VARIABLES	Age, income, education, urban/rural (see CCHS stratification variables)

Notes

1. Overall percentages were age standardized to the 1991 Canadian population
2. Crude rates are stratified by age group and by socio-demographic variables (education, income quintile, urban/rural area)
3. A national estimate was not calculated for 2007 as data is not available for all provinces/territories

Screening (CONTINUED)

INDICATOR:	COLORECTAL CANCER SCREENING
DEFINITION:	Percentage of asymptomatic individuals aged 50-74 who reported undergoing a colorectal cancer (CRC) screening test where asymptomatic is defined as: <i>Asymptomatic:</i> Respondents who reported having a CRC screening test for any of the following reasons: <ul style="list-style-type: none"> • Family history; Part of routine check-up/ screening; Age; Race And not for any of the following reasons: <ul style="list-style-type: none"> • Follow-up of a problem; Follow-up of colorectal cancer treatment; Other Reason
MEASURES:	Two different indicators were derived to measure “up-to-date” screening: 1. Fecal Occult Blood test (FOBT) within the previous two years 2. FOBT within the previous two years and/or a colonoscopy/sigmoidoscopy within the previous five years
NUMERATOR:	1. Number of asymptomatic individuals aged 50-74 reporting having had an FOBT within the past two years 2. Number of asymptomatic individuals aged 50-74 reporting having had an FOBT within the past two years and/or a colonoscopy/sigmoidoscopy within the past five years
DENOMINATOR:	Total number of asymptomatic individuals aged 50-74
DATA SOURCE:	Canadian Community Health Survey
DATA AVAILABILITY:	CRC data was available as optional content and selected by the following provinces: 2005 (CCHS Cycle 3.1) - NL, PE, NS, NB, ON, YK, NT, NV 2007 (CCHS Cycle 4.1) - NL, PE, ON, SK, NT, NV
CCHS VARIABLES:	<ul style="list-style-type: none"> • Have you ever had an FOBT test? When was the last time? Why did you have it? • Have you ever had a colonoscopy or sigmoidoscopy? When was the last time? Why did you have it?
STRATIFICATION VARIABLES:	Gender, age, income, education, urban/rural (see CCHS stratification variables)

Notes

1. CRC Screening was available as optional content in CCHS 2003 (Cycle 2.1) but not all health regions were coordinated. Therefore province wide estimates were not derived for CCHS 2003.
2. National or overall estimates were not calculated as data is not available for all provinces/territories and participating provinces differ between CCHS cycles.

Technical Appendix

Diagnosis and Treatment

INDICATOR: WAIT TIMES, ABNORMAL BREAST SCREEN TO RESOLUTION

DEFINITION:	Time from abnormal breast screen to resolution measured in weeks
POPULATION:	Women aged 50-69 participating in the Organized Breast Screening Programs in Canada with an abnormal breast screen result (mammogram or clinical breast examination): <ol style="list-style-type: none"> 1. Requiring a tissue biopsy 2. Not requiring a tissue biopsy
MEASURES:	<ol style="list-style-type: none"> 1. Median 2. 90th percentile 3. Percentage with resolution within the target wait time - Targets were 7 weeks for women requiring a tissue biopsy and 5 weeks for women not requiring a tissue biopsy.¹
DATA SOURCE:	Canadian Breast Cancer Screening Database (CBCSD)
DATA REPORTED:	2004: NL, PE, NS, NB, ON, MB, SK, AB, BC
STRATIFICATION VARIABLES:	<ul style="list-style-type: none"> • Age group (50-54), (55-59), (60-64), (60-69) • The highest level of education obtained is recorded when a client enters an organized screening program for the following provinces: NL, NB, MB, AB, BC. • Income quintile and urban/rural area of residence were derived using Statistic Canada's Postal Code Conversion File (PCCF+) (see Canadian Census 2006 Stratification Variables).

Notes

1. Quebec and the Northwest Territories were not included in the wait time indicators as wait time data from these jurisdictions were not available at the time of analyses
2. Yukon does not keep electronic records and Nunavut does not have an organized program so these jurisdictions are excluded from the Canadian Breast Cancer Screening Database.²
3. The wait times presented must be evaluated in the context of the overall participation in organized breast cancer screening programs. Participation in organized breast cancer screening programs across Canada was calculated in two year intervals due to biennial recall. The figure (next page) displays the participation rate by province, for women aged 50-69, for the 2003 and 2004 screen years. Statistics Canada data for 2003 and 2004 (from the July 2008 population file) was used for the denominator values. These values are slightly different from the denominators used in previously published reports and therefore the participation rates are not identical to those published. Northwest Territories data are not included in this figure as data was only available for 2004.

Participation in organized breast cancer screening program (%), Women ages 50-69, by province - 2003/2004



Data Sources: Public Health Agency of Canada. Canadian Breast Cancer Screening Database

1. Public Health Agency of Canada, "Organized Breast Cancer Screening Programs in Canada - Report on Program Performance in 2001 and 2002", July 4, 2005. http://www.phac-aspc.gc.ca/publicat/obcsp-podcs01/pdf/Breast-En_2001-2002.pdf
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INDICATOR: WAIT TIMES, RADIATION TREATMENT

DEFINITION:	Time from ready to treat to radiation therapy measured in days. Data collected by disease site: breast, colorectal, lung and prostate.
MEASURES:	<ol style="list-style-type: none"> 1. Median 2. 90th percentile 3. Percentage of patients starting treatment within target time frame (4 weeks after ready to treat)
INCLUDED POPULATION:	All cancer patients receiving radiation therapy who have wait time data collected.
DATA SOURCE:	Provincial cancer agency submissions.
DATA AVAILABILITY:	2005, 2006, and 2007, from select provinces

Notes

- Data only collected from provinces (not territories). 8 of 10 provinces provided some data.
1. This source data for this indicator was submitted by the provincial cancer agencies based on definitions provided by the Canadian Partnership Against Cancer.
 2. 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. Target wait times are defined as the interval between the patient being "Ready to Treat" and the start of radiation treatment.
 3. Several provinces did not submit data for this indicator or submitted partial data.

Technical Appendix

Diagnosis and Treatment (CONTINUED)

INDICATOR:	RADIATION THERAPY UTILIZATION
DEFINITION:	Number of courses of Radiation Therapy (any reason, any indication, any treatment centre in a jurisdiction) divided by the number of new cases of invasive cancer in that jurisdiction (all cancers combined)
NUMERATOR:	Number of courses of Radiation Therapy (palliative, curative, benign disease, first and subsequent courses) in each province.
DENOMINATOR:	Number of new invasive cancer cases in each province (restricted to patients resident in a given province)
DENOMINATOR EXCLUSIONS:	<ul style="list-style-type: none"> • Non-invasive and in-situ cases (these are handled differently by different cancer registries) • Non-Melanoma Skin Cancer
DATA SOURCE:	Provincial cancer agency submissions.
DATA AVAILABILITY:	2005, 2006, and 2007, from select provinces

Notes

1. This source data for this indicator was submitted by the provincial cancer agencies based on definitions provided by the Canadian Partnership Against Cancer. Eight of the ten provinces provided data for this indicator. Only four of the eight provided complete data (all years and by age).
2. A course of treatment usually includes a series of radiation therapy sessions over a defined period of time, in accordance with a treatment or symptom management plan. The same patient may receive multiple radiation treatment courses as part of the treatment and management of the disease, and within each course will be multiple radiation treatment sessions.
3. The numerator includes radiation treatments provided for all causes, including non cancer cases. The denominator includes only invasive cancer cases. This is due to the inability to identify specific cancer related treatment in some provincial data sets or to identify treatment intent (e.g., curative versus palliative). Moreover, the radiation courses in the numerator are not linked to the incident cases in the denominator which would be required to accurately assess the percent of new cases receiving radiation therapy. Efforts to improve the data capabilities will be made to allow the calculation of more meaningful indicators in the near future.

Supportive Care and Survivorship

INDICATOR:	SYMPTOM ASSESSMENT
DEFINITION:	<ol style="list-style-type: none"> 1. The number of cancer centres using standardized symptom assessment tool 2. The percent of patients assessed using the tool
DATA SOURCE:	Reported by provinces to the Canadian Partnership Against Cancer for this report
DATA AVAILABILITY:	2005 and on

Notes

1. Indicator is based on data reported directly by the provinces.
2. In the provinces for which the results indicate “None” for standardized symptom assessment tool implementation, some local implementation of system assessment at the cancer clinic level may be in place.

Technical Appendix

Surveillance

INDICATOR:	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 population at risk.
NUMERATOR:	Number of new cancer cases (all ages) 1. All cancers 2. Breast (female) 3. Colorectal 4. Lung 5. Prostate
DENOMINATOR:	1., 3., 4. Annual population estimates in hundreds of thousands 2. Annual female population estimate in hundreds of thousands 5. Annual male population estimate in hundreds of thousands
AGE STANDARDIZATION	Direct method using the 1991 Canadian Census population
DATA SOURCES:	Canadian Cancer Registry (CCR) Database (July 2007 file) - cancer incidence data Demography Division of Statistics Canada - population estimates.
DATA AVAILABILITY:	1995 to 2005.
STRATIFICATION VARIABLES:	Gender (except Breast and Prostate), age, income, urban/rural (see Canadian Census 2006 stratification variables)

Notes

- 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) and prostate (ICD-O-3 C61.9). The four categories are excluding morphology types M-9050 to M-9055, M-9140, and M-9590 to M-9989. Included are all invasive sites and in situ for bladder.
- Cells with small counts were suppressed as well as any cell that could result in the disclosure of a previously suppressed cell by using the column or row total. If the variables which defined the rows and columns were province and age group, then the program suppressed low counts first within each province. If any province contained only one suppressed cell, the next lowest count in that province was suppressed. This process was repeated within each age group. Records where age was not specified were included in the total.

Surveillance (CONTINUED)

INDICATOR:	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 population at risk
NUMERATOR:	Number of deaths from cancer (all ages) 1. All cancers 2. Breast (female) 3. Colorectal 4. Lung 5. Prostate
DENOMINATOR:	1., 3., 4. Annual population estimates in hundreds of thousands 2. Annual female population estimate in hundreds of thousands 5. Annual male population estimate in hundreds of thousands
AGE STANDARDIZATION:	Direct method using the 1991 Canadian Census population
DATA SOURCES:	Canadian Vital Statistics - Death Database (annual file) - cancer mortality data. Demography Division of Statistics Canada - population estimates.
DATA AVAILABILITY:	1995 to 2005.
STRATIFICATION VARIABLES:	Gender (except Breast and Prostate), age, income, urban/rural (see Canadian Census 2006 stratification variables)

Notes

- Up to the year 1999, causes of death were coded according to World Health Organization (WHO), International Classification of Diseases, Ninth Revision (ICD-9): All cancers (ICD-9 : 140-208), colorectal (ICD-9 153-154), lung (ICD-9 162), female breast (ICD-9 : 174), and prostate cancer (ICD-9 : 185).
- 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): All Cancers (ICD-10 : C00-C97), colorectal (ICD-10 :C18-C20), lung (ICD-10 : C33-C34), female breast (ICD-10 : C50) and prostate cancer (ICD-10 : C61).
- Cells with small counts were suppressed as well as any cell that could result in the disclosure of a previously suppressed cell by using the column or row total. If the variables which defined the rows and columns were province and age group, then the program suppressed low counts first within each province. If any province contained only one suppressed cell, the next lowest count in that province was suppressed. This process was repeated within each age group. Records where age was not specified were included in the total.

Technical Appendix

Surveillance (CONTINUED)

INDICATOR:	RELATIVE SURVIVAL RATIOS
DEFINITION:	Relative survival 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 (referred to as the comparison population).
NUMERATOR:	Observed survival of cancer patients (aged 15-99) who were alive 1, 2, 3, 4 and 5 years after diagnosis for each of three diagnosis cohorts: 1995-1997; 1998-2000; and 2001-2003. 1. All cancers 2. Breast (female) 3. Colorectal 4. Lung 5. Prostate
DENOMINATOR:	Expected survival of comparison population that was alive for 1, 2, 3, 4 and 5 years for each of three cohorts: 1995-1997; 1998-2000; 2001-2003. 1., 3., 4. Both sexes 2. Females 5. Males
POPULATION EXCLUSIONS:	<ul style="list-style-type: none"> • age < 15 or > 99 at time of diagnosis; • subjects diagnosed through autopsy only or death certificate only; • subjects with an unknown year of birth or death
DATA SOURCES:	Canadian Cancer Registry (January 2008 with death clearance complete up to 2004), Provincial life tables (Statistics Canada)
DATA AVAILABILITY:	3 cohorts of cancer patients diagnosed between: 1995 and 1997; 1998 and 2000; 2001 and 2003
STRATIFICATION VARIABLES:	Gender (except Breast and Prostate), age, income (see Canadian Census 2006 stratification variables)

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) and prostate (ICD-O-3 C61.9). The four categories are excluding morphology types M-9050 to M-9055, M-9140, and M-9590 to M-9989. Included are all invasive sites and in situ for bladder.

2. "Canada" represents all provinces and territories, minus 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. Survival estimates from Newfoundland and Labrador are included in the national average but are not shown in this report. In the years under study, there was a known under reporting of cancer cases in Newfoundland and Labrador. There is likely to be some overestimation of survival for this province as the survival of such "missed" cases is generally less favourable than that of cases in the registry population
4. Cells with small counts were suppressed as well as any cell that could result in the disclosure of a previously suppressed cell by using the column or row total. If the variables which defined the rows and columns were province and age group, then the program suppressed low counts first within each province. If any province contained only one suppressed cell, the next lowest count in that province was suppressed. This process was repeated within each age group. Records where age was not specified were included in the total.
5. Cohort analysis was used for cases diagnosed in 1995-1997 and 1998-2000. Cases diagnosed in the year 2000 could only be followed up for a 4 year period. Period analysis was used for cases diagnosed in 2001-2003 (Cancer Care Statistics, 2009).
6. Expected survival proportions were derived, from sex-specific complete provincial life tables produced by Statistics Canada, using the Ederer II approach. (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).

Technical Appendix

Stage

INDICATOR:	CAPTURE OF STAGE DATA
NUMERATOR:	Number of incident cases for which a stage value is available <ol style="list-style-type: none"> 1. All cancers 2. Breast 3. Colorectal 4. Lung 5. Prostate
DENOMINATOR:	Total number of incident cases <ol style="list-style-type: none"> 1. All cancers 2. Breast 3. Colorectal 4. Lung 5. Prostate
DATA SOURCE:	Reported by provinces to the Canadian Partnership Against Cancer for this report
DATA AVAILABILITY:	2004, 2005, 2006

Notes

1. Indicator is based on data reported directly by the provinces for this report. No separate validation or verification of the submitted data was done.
2. Staging can be based on AJCC TNM staging reported directly by clinicians or based on the Collaborative Staging methodology. Data from other staging systems or standards was not included as valid stage in the indicator.
3. While some provinces reported data for clinical and pathological stage, the indicator was based on overall stage.
4. The Canadian Partnership Against Cancer has recently launched an initiative to support the implementation of Collaborative Staging across the country. Upon the completion of this initiative, complete staging is expected to be available from the participating hospitals for the top four disease sites: Breast, Prostate, Lung, and Colorectal.

Resources/Capacity

INDICATOR:	PET SCANNER CAPACITY
NUMERATOR:	Number of PET Scanners reported operational in each province
DENOMINATOR:	<ol style="list-style-type: none"> 1. Total population in millions 2. Total population above 54 years of age (the 20th percentile age at cancer diagnosis in Canada) in millions.
DATA SOURCE:	Reported by provinces to the Canadian Partnership Against Cancer for this report
DATA AVAILABILITY:	2005, 2006, 2007

Notes

1. Indicator is based on data reported directly by the provinces, validated by published reports where available.
2. Indicator does not measure number of scans, only number of machines.
3. PET Scanners are used in research as well as for diagnosis of cancer and other medical condition. Information is not available on the proportion of PET scanner use dedicated to cancer diagnosis. Moreover, some studies have suggested that this proportion varies significantly across provinces. As such, inter-provincial comparisons of the results of this indicator should be made with caution.

INDICATOR:	LINEAR ACCELERATOR CAPACITY
NUMERATOR:	Number of Linear Accelerators reported operational in each province
DENOMINATOR:	<ol style="list-style-type: none"> 1. Total population in millions 2. Total population above 54 years of age (the 20th percentile age at cancer diagnosis in Canada) in millions. 3. Total cancer incident cases in thousands
DATA SOURCE:	Reported by provinces to the Canadian Partnership Against Cancer for this report
DATA AVAILABILITY:	2005, 2006, 2007

Notes

1. Indicator is based on data reported directly by the provinces.
2. Indicator does not measure number of radiation treatments, only number of machines. As such, it is a capacity measure and not a utilization measure.
3. Indicator does not include Cobalt machines which are an older technology still in use in some provinces to deliver radiation treatment for cancer.

Technical Appendix

CCHS STRATIFICATION VARIABLES

1.	INCOME QUINTILES (SOCIOECONOMIC STATUS)
DEFINITION:	A relative measure of each respondent's household income to the household incomes of all other respondents. The measure is a ratio of the total household income to the Low income cut-off (LICO) (varies according to the size of the household and the community where the household is located). After calculating the ratio between the household income and its corresponding low income cut-off (LICO), the ratios are standardized across all regions of Canada and then ordered from lowest to highest and then divided into five equal groups to get the quintiles.
2.	URBAN/RURAL STATUS
DEFINITION:	Whether the respondent lives in an urban or rural area. Urban areas are those continuously built-up areas having a population concentration of 1,000 or more and a population density of 400 or more per square kilometre based on current census population counts. Missing for approximately 1% of the postal codes in Canada.
3.	HIGHEST LEVEL OF EDUCATION
DEFINITION:	Highest level of education acquired by the respondent: <ul style="list-style-type: none">• Less than secondary school graduation• Secondary school graduation, no post-secondary education• Some post-secondary education• Post-secondary degree/diploma• Don't know, refusal, not stated

Canadian Census 2006 Stratification Variables

1.	NEIGHBOURHOOD INCOME QUINTILES (SOCIOECONOMIC STATUS)
DEFINITION:	Neighbourhood income per person equivalent is a household size-adjusted measure of household income, based on 2006 census summary data at the Dissemination Area (DA) level, and using person-equivalents implied by the 2006 low income cut-offs (LICOs). <ol style="list-style-type: none">1. The postal code of each subject's (non-institutional population) usual place of residence at the time of diagnosis was ascertained with the Postal Code Conversion File 5C+³.2. Quintiles of population by neighbourhood (Dissemination Area) are derived within Census Metropolitan Areas, Census Agglomerations, or Residual areas within each province and then pooled across areas. The reason for creating the quintiles within each area is that housing costs vary enormously across Canada.
2.	URBAN/RURAL STATUS
DEFINITION:	Canada's rural population is defined as the population living in towns and municipalities outside the commuting zone of larger urban centres (i.e. outside the commuting zone of centres with population of 10,000 or more). <ol style="list-style-type: none">1. The postal code of each subject's (non-institutional population) usual place of residence at the time of diagnosis was ascertained with the Postal Code Conversion File 5C+ (see reference 1 below).2. Community Size is defined in terms of the 2006 census population in each census metropolitan area or census agglomeration (CMA or CA), as shown above. Community Size 1 consists of Toronto, Montreal and Vancouver CMAs. Community Size 2 consists of Ottawa-Gatineau, Edmonton, Calgary, Québec, Winnipeg and Hamilton CMAs. Community Size 3 includes all 18 other CMAs plus 7 of the larger CAs. Community Size 4 includes all 106 other CAs. Community Size 5—"rural and small town Canada"--includes all places not included in any CMA or CA. (i.e., places with an urban area population less than about 10,000, plus rural areas).3. For rural postal codes and for urban postal codes of outlying suburban and rural areas, the same postal code is generally used for multiple enumeration areas or dissemination areas. The selection of a single such area for coding purposes is random but with probabilities respecting the proportions of population with that postal code in each of the possible small areas. Thus, the coding is far less precise than for centralized urban postal codes, which are usually only linked to a single enumeration area or dissemination area.
3.	EDUCATION LEVEL
	Note this variable was not available from the census data

3 Russell Wilkins. *PCCF+ Version 5C User's Guide. Automated Geographic Coding Based on the Statistics Canada Postal Code Conversion Files, Including Postal Codes through March 2008*. Catalogue 82F0086-XDB. Health Information and Research Division, Statistics Canada, Ottawa, November 2008.



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