New Brunswick Cancer Network

Cancer System Performance 2012

January 2014

New Nouveau Brunswick

TABLE OF CONTENTS

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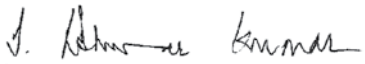
This report is available online at:

www.gnb.ca/health

ISBN - 978-1- 4605-0318-8

Message from the New Brunswick Cancer Network (NBCN) Co-CEOs

We are pleased to provide you with the first report on New Brunswick's cancer system performance since the establishment of the New Brunswick Cancer Network (NBCN) in 2006. The intention is to provide a short overview of what has been done during the period 2006-2012, what is planned and to stimulate discussion around cancer system performance indicators. It is our hope that this first report will provide a foundation for future consistent and coordinated provincial assessment of cancer control services, establish the basis for selecting and developing cancer control indicators, benchmarks and targets, achieve comparability with other jurisdictions across Canada and support continuous improvement of cancer control outcomes.



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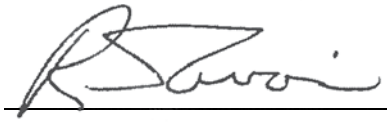

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ACKNOWLEDGEMENTS

This Report was made possible by the participation of many individuals involved in cancer control across New Brunswick, participants of the New Brunswick Cancer System Initiative Forum organized in September of 2011, staff of the NB Department of Health and NB Department of Healthy and Inclusive Communities, who provided information and comments on the structure of the Report. The New Brunswick Cancer Network would especially like to acknowledge the contribution of the New Brunswick Cancer System Performance Indicators Working Group.

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BACKGROUND

The New Brunswick Context

- In New Brunswick, 4,800 new cancer cases and 1,930 deaths from cancer were estimated for 2013.[1]
- The top four cancers in New Brunswick are lung, colorectal, breast and prostate accounting for approximately 57% of all cancers.[2]
- New Brunswick's population is aging and this will be reflected in the increasing number of new cases over the next few years. Based on the continuation of past and current trends, males will have an estimated five-year total of 12,343 new cases of cancer and 5,290 deaths from cancer for the period 2011 to 2015. This represents a 17.6% increase in incidence and 11.4% increase in mortality compared to the actual counts in 2002-2006. For females, the estimated new cancer cases are expected to be 10,725, representing an 18.3% increase in incidence and 4,453 deaths, representing a 9.1% increase in mortality for the same time frame.[2]
- Prostate, lung and colorectal cancers are expected to account for the majority of new cases in males between 2011 and 2015. Breast, lung and colorectal cancers are expected to account for the majority of new cases in females between 2011 and 2015. Lung and colorectal cancers will remain the first and second leading cause of cancer death for both genders.[2]
- New Brunswick has two Regional Health Authorities (RHAs), Vitalité Health Network and Horizon Health Network . The two RHAs have a broad mandate to deliver health services within New Brunswick. Throughout the report, the nomenclature for the sub-provincial levels of geography follows the original nomenclature for the sub-provincial levels of geography (health regions or health zones) as designated by the source databases.

New Brunswick Cancer Network (NBCN)

The New Brunswick Cancer Network (NBCN) is a branch of the Department of Health, overseeing the development and implementation of evidence-based provincial strategies for all elements of cancer care. The goal of NBCN is to reduce the incidence and mortality of cancer and improve outcomes for people affected by cancer.

- A key priority of NBCN in its efforts to reduce the burden of cancer in the province is the enhancement and establishment of integrated cancer prevention and screening programs that meet national quality standards and targets.
  - ***NB Breast Cancer Screening Service*** was established in 1994 and includes a total of 16 mammography facilities, with the majority providing digital mammography. The participation rate in the NBBCSS is among the highest in the country (57%).
  - ***NB Cervical Cancer Prevention and Screening Program*** is anticipated to be fully operational province-wide in 2014-15. A key initial accomplishment was the release of the New Brunswick Cervical Cancer Screening Clinical Practice Guidelines and the implementation of the Program's quality monitoring infrastructure.
  - ***NB Colon Cancer Screening Program*** is anticipated to be fully implemented province-wide in 2015.
- ***The NB Radiation Therapy Wait Time Guarantee*** was established in 2010, as the result of an agreement between the Governments of New Brunswick and Canada. This Guarantee ensures that NB patients will not wait more than eight weeks from being ready to treat with radiation therapy. Through this collaborative initiative with Health Canada, New Brunswick's capacity to meet current and future volumes in radiation therapy is being significantly enhanced. Associated with the Radiation Therapy Wait Time Guarantee, a Provincial Cancer Treatment Access Repository (CTAR) has been developed to monitor, manage and report on timely access to radiation therapy.
- ***The National Staging and Pathology Synoptic Reporting Initiative***, funded by the Canadian Partnership Against Cancer (CPAC), established the capture of electronic, population based Collaborative Stage (extent of tumour at diagnosis) for breast, colorectal, lung and prostate cancer. Pathology synoptic reporting tools were implemented in laboratories across the province using the cancer checklists and protocols developed by the College of American Pathologists (CAP). The use of the CAP cancer checklists has been endorsed by the Canadian Association of Pathologists and the NB Association of Laboratory Physicians as the reporting standard for cancer pathology specimens. Adoption of the provincial pathology reporting standard will ensure that required tumor and stage data are available in the pathology reports to facilitate diagnostic and treatment decisions. The NB Provincial Cancer Registry, under the

direction of NBCN continues to submit high quality patient and tumor information which is used for cancer surveillance and programs planning and evaluation.

- ***Pediatric Oncology Patient Navigator*** positions were established in 2010, one in each of the two Regional Health Authorities. Although some cancer treatments are available for children in New Brunswick, pediatric oncology patients are diagnosed and receive much of their treatment at specialized centers outside of the province. Pediatric Oncology Patient Navigators help childhood cancer patients and their families manage through the health care system to find available services as easily and expeditiously as possible. They also assist survivors of childhood cancers with long-term follow-up.
- ***The Provincial Oncology Formulary Advisory Committee***, advisory to NBCN, has been instrumental in making funding recommendations for new cancer drugs for the oncology programs within province's two RHAs. To assist with this process, NBCN participates in the pan-Canadian Oncology Drug Review (pCODR), a national initiative for the review and recommendation of new cancer drugs. This initiative strives to improve the consistency and transparency of drug funding decisions across the country.
- With regards to ***Palliative and End-of-Life Care***, NBCN is involved in the development of the Provincial Cancer Palliative Care Strategy, which will include recommendations for the performance measurement in this area of care.
- ***Cancer Control Performance Measurement*** has been identified as a priority at the very inception of the NBCN. [3] Although various databases record a wealth of data on services provided, this is collected mostly for administrative purposes and lack patient related outcome information. Creation and direct oversight of information technology solutions, such as the cancer screening programs integrated information system, CTAR and the Provincial Cancer Registry, will have major impacts on the ability of NBCN to report on cancer system performance measures. An equally important contribution to improved reporting capabilities is development of better linkages between various databases not under the direct auspices of NBCN, which collect information relevant to cancer control. NBCN has several activities underway to promote and facilitate the use of already available data sources to measure quality of cancer control services. All of these developments create an opportunity to move forward with a systematic and coordinated collection of cancer control data and setting the stage for continuous performance measurement reporting.

INTRODUCTION

Monitoring and reporting on key indicators of cancer system performance is an important part of NBCN's mandate. In carrying out this task, NBCN is actively involved with other Divisions of the Department of Health, the Regional Health Authorities, FacilicorpNB, Canadian Cancer Society and the NB Medical Society who, through participation in various Working and Advisory Groups organized by the NBCN, provide input and advice for the process of selection and reporting of indicators.

NBCN's efforts to define a cancer control performance measurement framework also draw from the experience of participating in the CPAC's Cancer System Performance Initiative. CPAC (Canadian Partnership Against Cancer) is an independent organization established in 2007 to implement a strategy for cancer control in Canada. One of the core CPAC functions is to assess and report on the performance of the cancer system across Canada and involves all provincial cancer agencies or their equivalents.[4] The list of the CPAC's cancer system performance publications in which NBCN has participated is available in Appendix B.

This first report is intended to provide an overview of the cancer system performance initiative within NBCN. Indicators were chosen based on the key activities aimed at improvement of the provincial cancer system and the availability of data. Detailed definitions for each indicator are provided in Appendix A.

Future work on the NBCN's cancer system performance initiative will continue within the framework defined by the NBCN's mandate. Although a lot has been accomplished, gaps continue to exist in the ability to report indicators that measure treatment patterns, patient experiences and palliative and end-of-life care. NBCN will continue to enhance and expand on cancer system performance initiative by:

- Working collaboratively with partners on continuous development of the performance measurement initiative and the use of its findings to inform cancer system improvements.
- Working with partners on strengthening the use of existing data collection mechanisms and continue building new ones to ensure availability of good quality data.
- Working with national partners such as CPAC and the Canadian Institute for Health Information (CIHI) on the development of indicators, benchmarks and targets for the cancer control system and continue participating in the efforts to assess cancer control in Canada.

LIST OF FIGURES

PREVENTION AND SCREENING INDICATORS

Research shows that a number of modifiable risk factors such as smoking, poor diet and lack of physical activity can contribute to increased cancer incidence and cancer mortality. Efforts to reduce exposure to these risk factors can prevent at least one third of all cancer cases.[5] These preventable risk factors are common to other chronic diseases, hence the integrated approach to chronic disease prevention and management. In New Brunswick, this approach is presented in various government strategies, such as the New Brunswick Wellness Strategy and the Comprehensive Diabetes Strategy for New Brunswickers, 2011-2015.[7,49] NBCN supports this approach as one of many stakeholders with a vested interest in promoting prevention activities. Due to its mandate, NBCN's activities are more focused on early detection of cancer.

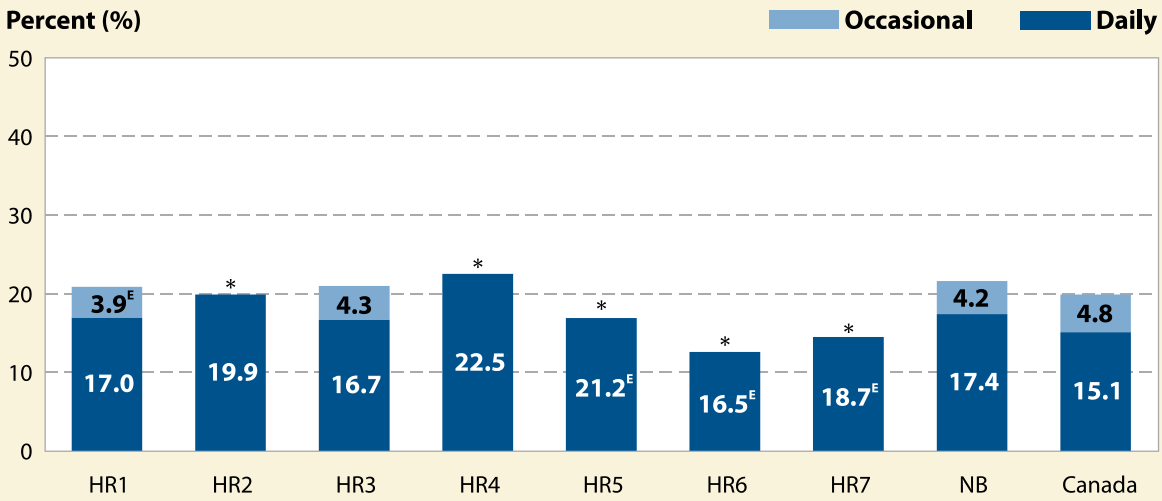
The following represents a high level selection of prevention indicators in keeping with other reports such as the CPAC's cancer system performance reports and Statistics Canada reports. These indicators have been compiled using the New Brunswick file of the Canadian Community Health Survey. Due to a small sample size, findings should be interpreted with caution while some indicators usually found in similar national or international reports could not be presented at all. Only data from NB residents who provided their consent is used, which can lead to slight differences in observations reported by Statistics Canada.

Smoking

Smoking is the major preventable cause of cancer. In 2011, 22% of New Brunswickers 12 years of age and older reported daily or occasional smoking compared to the national avarage of 20%.[8] The percentage of the population that reported smoking varies from 16% in Health Region 6 to 22% in Health Region 4 (Figure 1).

Quiting smoking and reducing exposure to second-hand smoke have been shown to decrease the risk of developing cancer. In 2011, 15% of New Brunswickers reported quitting smoking in the previous two years, compared to the national avarage of 18%. The percentage of non-smoking New Brunswickers (12 years of age and older) who reported second-hand exposure was 27% (combined exposure in the home, in vehicles and in public spaces).[8] New Brunswick has introduced the Smoke-free Places Act prohibiting smoking in indoor workplaces and enclosed public places.[9]

FIGURE 1
Percentage of population (age ≥ 12) reporting daily or occasional smoking
By Health Region, CCHS NB 2011

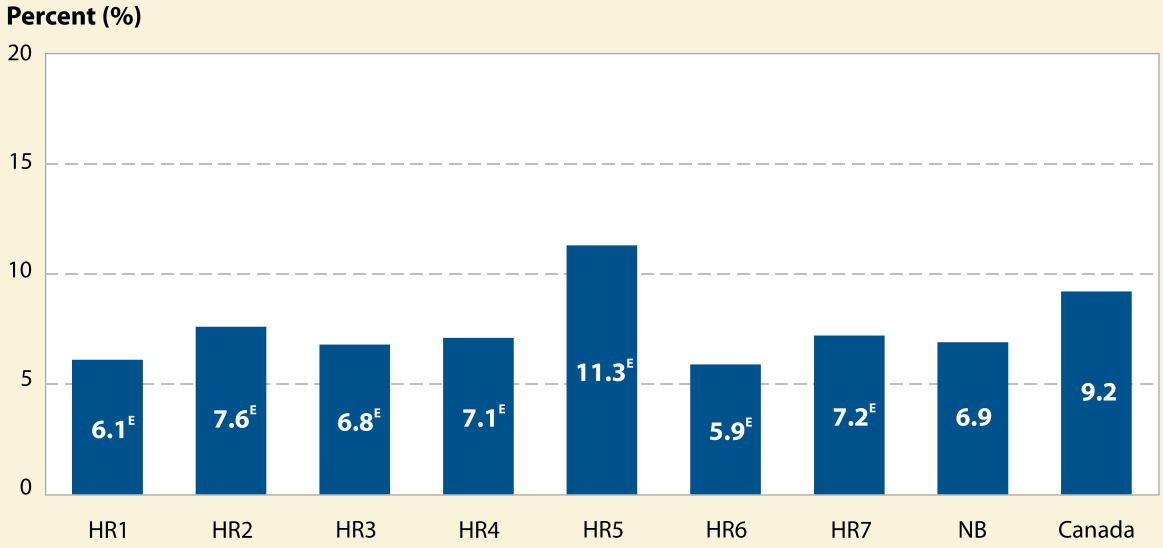


Data Source: Statistics Canada, Canadian Community Health Survey New Brunswick Data 2011
*Data suppressed due to statistical unreliability caused by small numbers
EInterpret with caution; coefficient of variation between 16.6% and 33.3%

Alcohol consumption and abstinence

Alcohol consumption increases the risk of some cancers such as cancer of the mouth, esophagus, throat, breast, liver and colorectal cancer.[10] The percentage of New Brunswickers 18 years of age and older who exceeded low-risk drinking guidelines (defined as an average of no more than two drinks per day for males, and an average of no more than one drink per day for females) was 7%, with the highest percentage reported for Health Region 5 (11%) and lowest percentage reported for Health Region 1 (6%) (Figure 2).

FIGURE 2
Percentage of adults exceeding low risk drinking guidelines
By Health Region, CCHS NB 2005



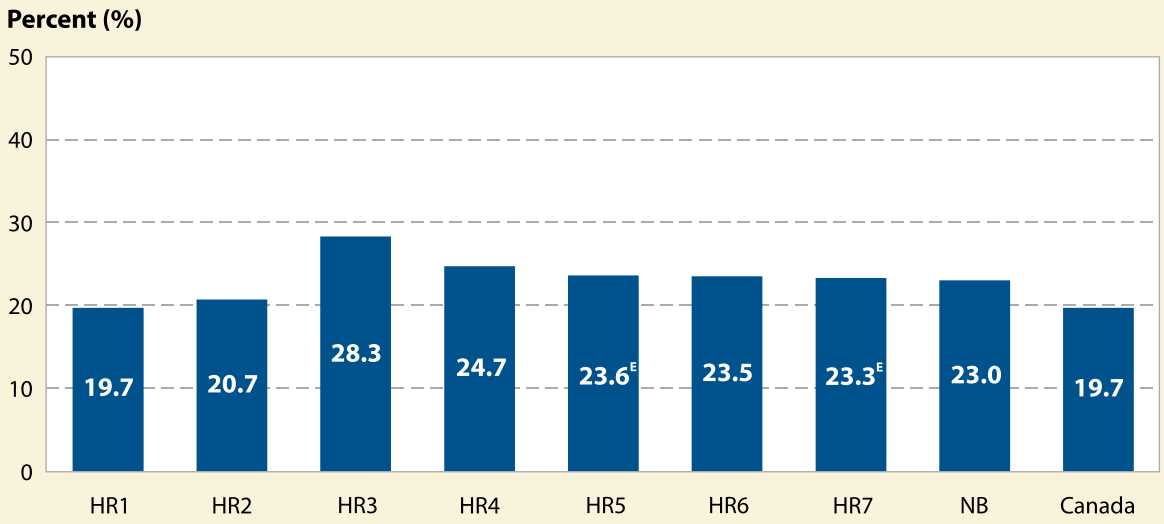
Data Source: Statistics Canada, Canadian Community Health Survey New Brunswick Data 2005
[E]Interpret with caution; coefficient of variation between 16.6% and 33.3%

Evidence that alcohol consumption increases the risk of many cancers has strengthened since the 1990s. Based on a report from the World Cancer Research Fund, consuming even small amounts of alcohol should be avoided.[11] In NB, the percentage of adults (age ≥ 18 years) who reported drinking no alcohol in the previous 12 months ranged from 20% in Health Region 1 to 28% in Health Region 3 (Figure 3). Several countries, including Canada, addressed alcohol use in their strategies for combating chronic diseases. The first national low-risk drinking guideline for Canada was published in 2011 as part of the National Alcohol Strategy.[12]

FIGURE 3

Percentage of adults (age ≥ 18) who report drinking no alcohol in previous 12 months

By Health Region, CCHS NB 2011



Data Source: Statistics Canada, Canadian Community Health Survey New Brunswick Data 2011

[E]Interpret with caution; coefficient of variation between 16.6% and 33.3%

Diet, physical activity and body weight

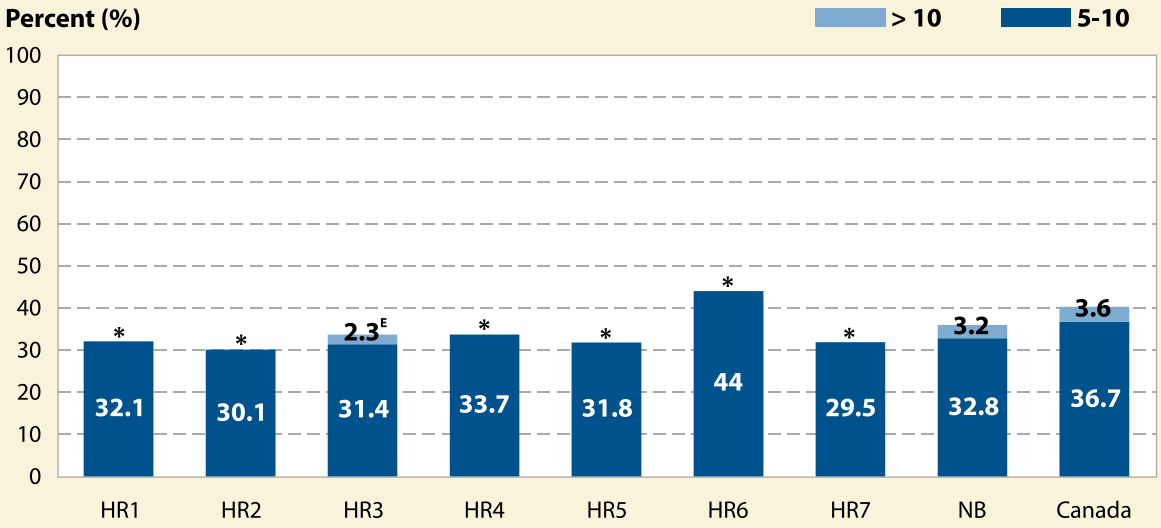
Unhealthy diet, lack of physical activity and excess body weight has been found to increase the risk of many types of cancer. It is estimated that about 30% to 40% of all cancer cases could be prevented by addressing these risk factors.[10]

The World Health Organization recommends consumption of a minimum of five servings of fruit and vegetables per day.[13] The percentage of New Brunswickers 12 years of age and older who reported consuming at least five servings of fruit and vegetables varied from 29% in Health Region 7 to 44% in Health Region 6 (Figure 4). The Provincial average was 36% compared to the national average of 40%.[8]

FIGURE 4

Percentage of population (age ≥ 12) reporting consuming five or more servings of fruit or vegetables daily

By Health Region, CCHS NB 2011



Data Source: Statistics Canada, Canadian Community Health Survey New Brunswick Data 2011
*Data suppressed due to statistical unreliability caused by small numbers
[E] Interpret with caution; coefficient of variation between 16.6% and 33.3%

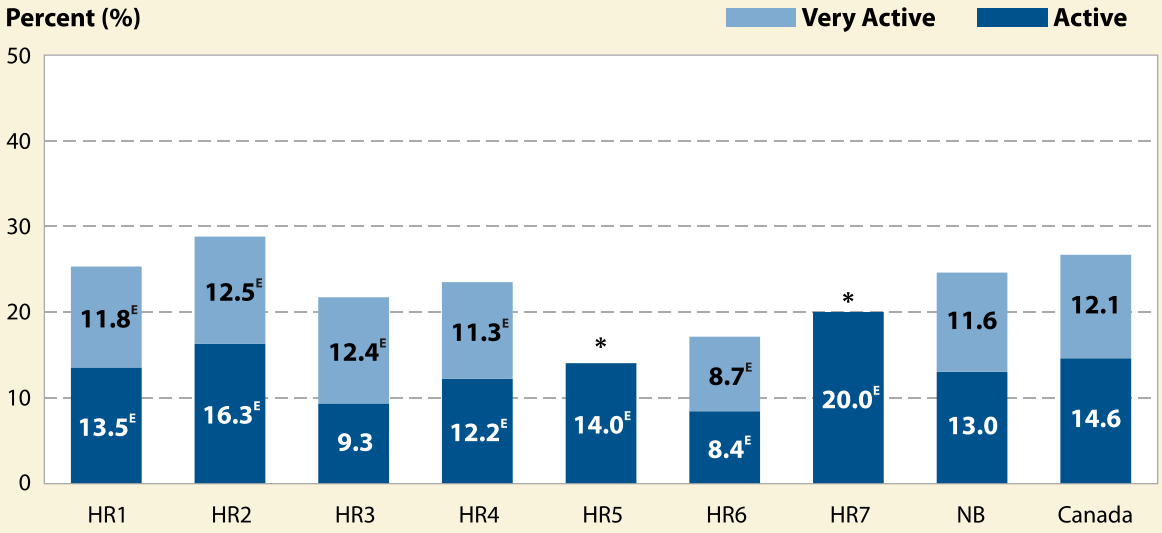
The percentage of New Brunswickers 18 years of age and older who reported being active was 25%, among the lowest levels of physical activity in Canada (Figure 5).[8]

The percentage of New Brunswickers 18 years of age and older who, based on self-reported weight and height, were clasified as overweight or obese was 59% , one of the highest rates in Canada.[8] The percentage of overweight and obese adults ranged from 57% in Health Region 1 to 70% in Health Region 7 (Figure 6).

FIGURE 5

Percentage of adults (age ≥ 18) who report being active or very active during their leisure time

By Health Region, CCHS NB 2011

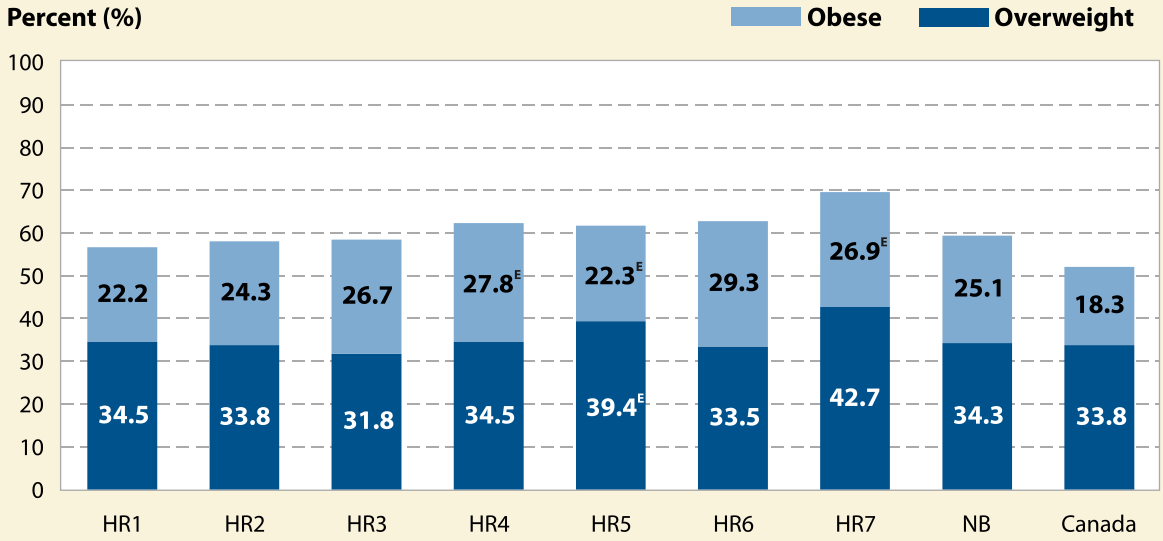


Data Source: Statistics Canada, Canadian Community Health Survey New Brunswick Data 2011
*Data suppressed due to statistical unreliability caused by small numbers
[E]Interpret with caution; coefficient of variation between 16.6% and 33.3%

FIGURE 6

Percentage of adults classified as overweight or obese

By Health Region, CCHS NB 2011



Data Source: Statistics Canada, Canadian Community Health Survey New Brunswick Data 2011
[E]Interpret with caution; coefficient of variation between 16.6% and 33.3%

Cancer Screening

Regular participation in organized, population based screening programs reduces the burden of breast, cervical and colorectal cancers.[14] New Brunswick established a breast cancer screening program in 1994 while work is on-going on developing and implementing organized cervical and colon cancer screening program. The positive impact of screening on morbidity and mortality of cancers is dependent on the level of participation and overall quality of screening services. The New Brunswick Cancer Network collaborates with various partners, provincial and national, to identify performance indicators for monitoring and evaluation of these screening programs.

Breast cancer screening

In New Brunswick, breast cancer is the most common cancer among women. In 2013, it is estimated that 550 new cases will be diagnosed and 110 women will die of the disease.[1]

New Brunswick Breast Cancer Screening Service is offered through 16 fixed mammography sites, of which 14 perform screening and diagnostic mammography, while two sites perform screening mammography only. The breast cancer screening target population is defined as asymptomatic women between the ages of 50 to 69 without prior diagnosis of breast cancer*. Women aged 40 to 49 years or greater than 69 years require a physician or nurse practitioner's referral to the program.

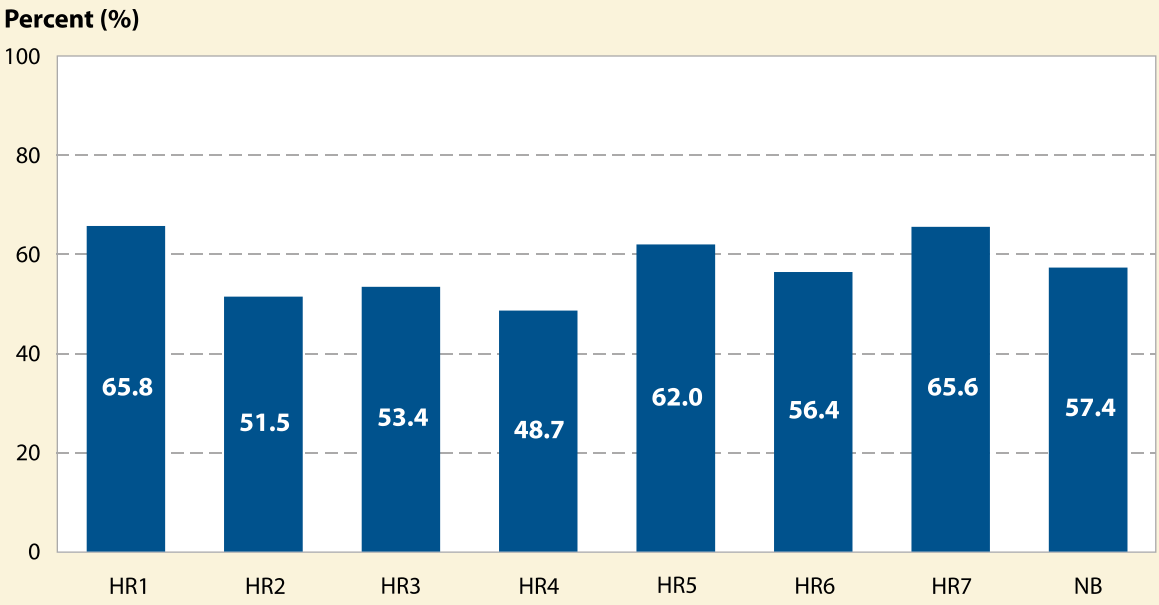
The target participation rate in Canadian organized breast cancer screening programs has been established at 70% of eligible women participating in biennial screening mammography. The participation rate has steadily increased in New Brunswick, reaching 57.4% in the 2010-2011 period (Figure 7), one of the highest biennial participation rate in Canada for women 50 to 69 years of age.[15] NBCN continues to explore opportunities to increase participation in breast cancer screening for women in the target age group in order to meet and/or exceed the national participation rate goal of 70%.

*Note: as of June 2013, the target age group of the NB BCSS expanded from 50-69 years to 50-74 years of age.

FIGURE 7

Percentage of women (age 50 to 69) who participated in the provincial breast cancer screening program in the past 2 years

By Health Region, 2010-2011



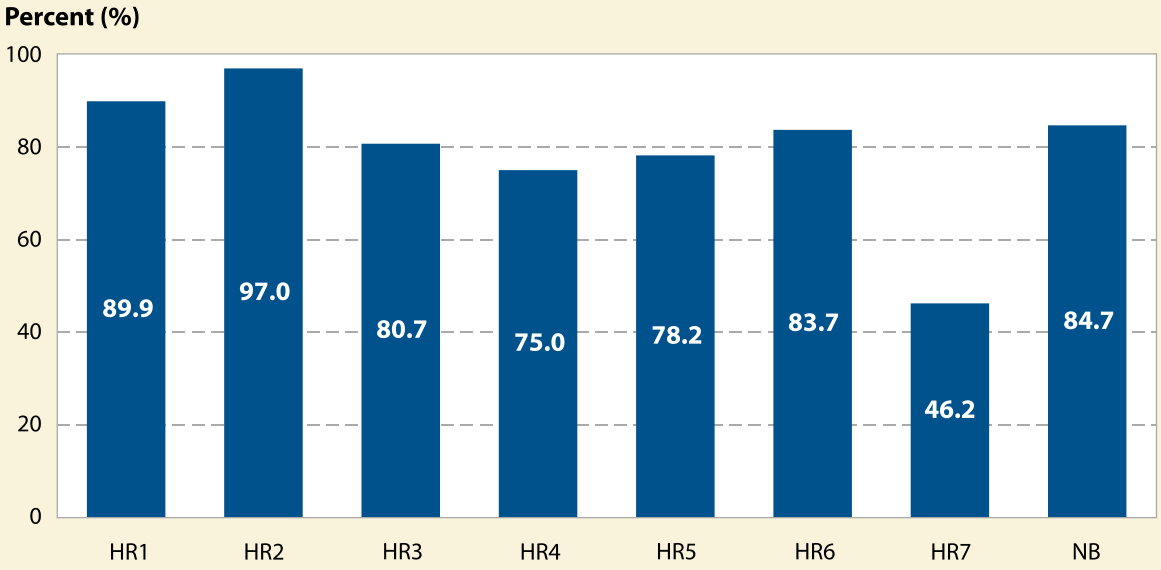
Data Source: New Brunswick Breast Cancer Screening Service Database

Timely provision of definitive diagnosis following abnormal breast cancer screening findings allows for earlier initiation of treatment. Canadian organized breast cancer screening programs have established targets for diagnostic intervals e.g. time from abnormal screen to resolution. The target is ≥ 90% of abnormal screens to be resolved within five weeks if no biopsy is required and ≥ 90% within seven weeks if a tissue biopsy is required.[16] The percentage of women whose diagnosis is resolved within the target timeframe of five weeks when a biopsy is not required ranged from 46% in Health Region 7 to 97% in Health Region 2 (Figure 8). The percentage of women whose diagnosis is resolved within the target timeframe of seven weeks when a biopsy is required ranged from 27% in Health Region 5 to 95% in Health Region 2 (Figure 9).

FIGURE 8

Percentage of women (age 50-69) not requiring a tissue biopsy with resolution of abnormal breast screen within target* wait time

By Health Region, 2010-2011

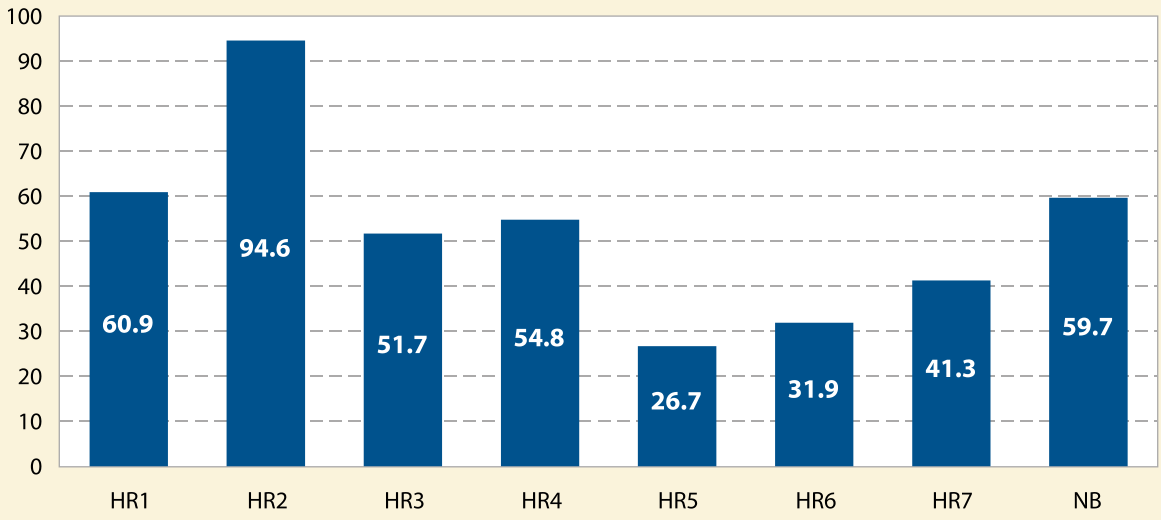


Data Source: New Brunswick Breast Cancer Screening Service Database
* Target time for resolution of abnormal breast screen for women not requiring a tissue biopsy is 5 weeks

FIGURE 9

Percentage of women (age 50-69) requiring a tissue biopsy with resolution of abnormal breast screen within target* wait time

By Health Region, 2010-2011



Data Source: New Brunswick Breast Cancer Screening Service Database
* Target time for resolution of abnormal breast screen for women requiring a tissue biopsy is 7 weeks

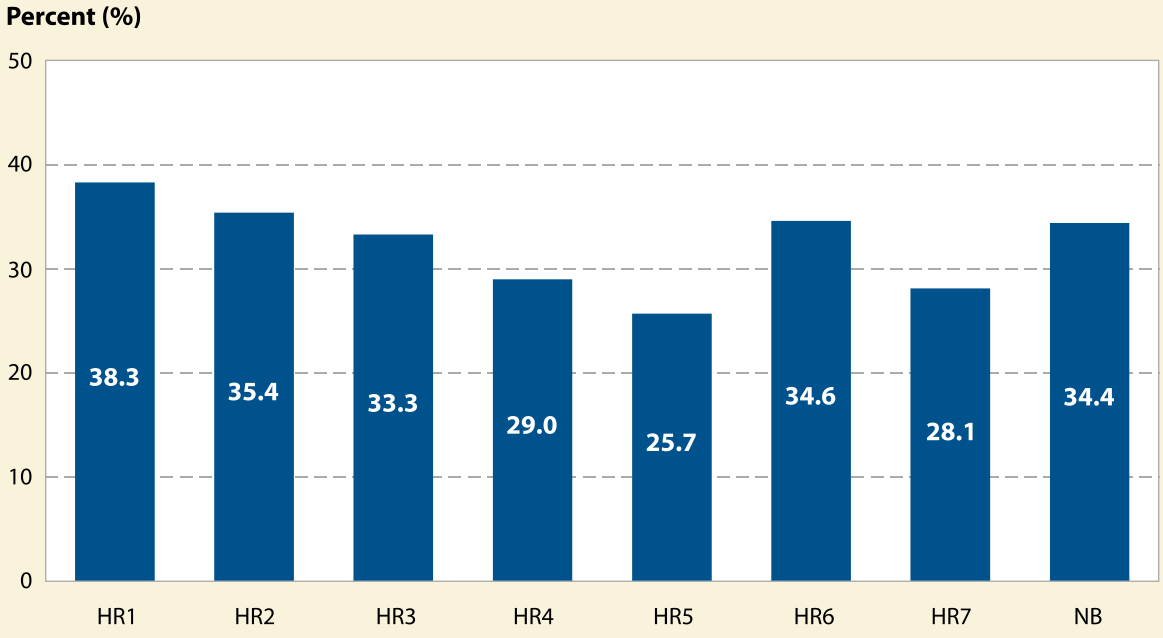
Cervical cancer screening

In 2013, it is estimated that 30 new cases of cervical cancer will be diagnosed in New Brunswick and 10 women will die of the disease.[1]

Cervical cancer screening in New Brunswick is currently done in an opportunistic fashion. Following the announcement of a provincial comprehensive cervical cancer prevention and screening strategy, the NBCN has been working on planning and implementation of an organized population based cervical cancer screening program. In 2011, New Brunswick Cervical Cancer Prevention and Screening Clinical Practice Guidelines were released followed by the implementation of the NB Cervical Cancer Prevention and Screening Data Repository to support ongoing evaluation.[17] The work continues on further development of information technology solutions, education, promotion and awareness strategies and operational structure of the program.

In 2011, a Pap (Papanicolaou) test data were collected for the first time in standardized and coordinated fashion. Figure 10 shows the percentage of women in the target age group of 20 to 69 who had Pap test in 2011. At present, New Brunswick does not have sufficient historical information to allow analysis by recomended screening interval. The next version of the NB Cervical Cancer Prevention and Screening Data Repository, currently under development, will support more detailed performance monitoring including follow-up, invitation and possibly HPV (human papillomavirus) vaccination status.

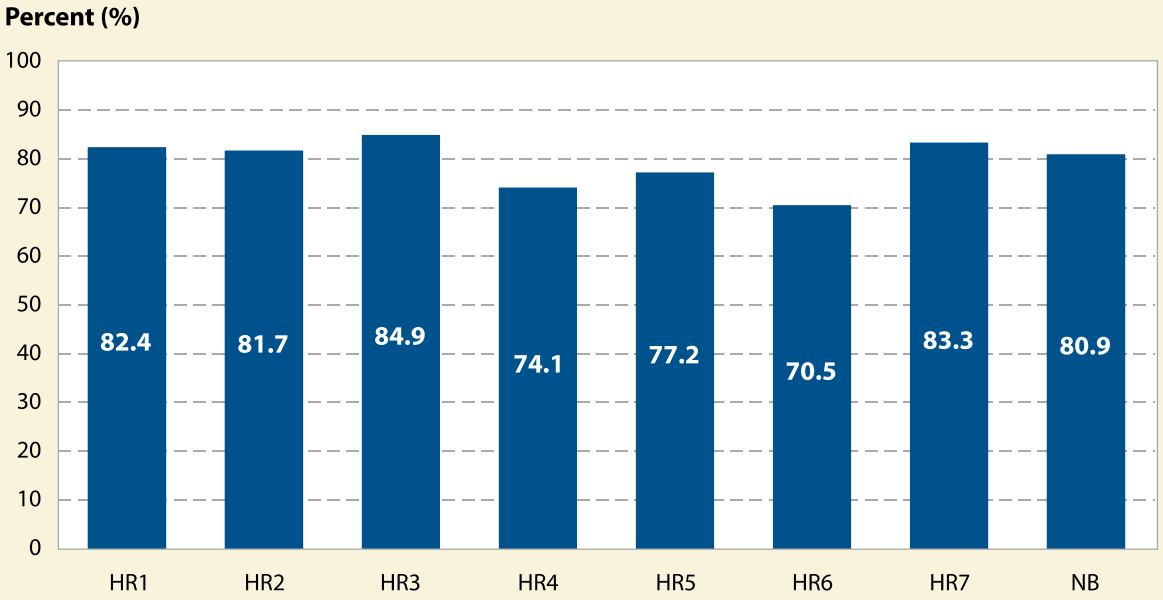
FIGURE 10
Percentage of women (age 20-69) who had Pap test
By Health Region, 2011



Data source: New Brunswick Cervical Cancer Prevention and Screening Data Repository, 2011

Cervical cancer screening should be performed every year until three consecutive negative Pap tests. After that, the recommended screening interval is every two to three years until the age of 69.[17] Until the New Brunswick Cervical Cancer Prevention and Screening Data Repository accumulates at least three full years' of data, NBCN will continue to use the Canadian Community Health Survey (CCHS) data to estimate participation rate. Figure 11 shows that the percentage of women aged 18 to 69 who self-reported having had a Pap test in the previous three years ranged from 85% in Health Region 3 to 71% in Health Region 6. The overall average was 81%, compared to the Canadian average of 79%.[18]

FIGURE 11
Percentage of women (age 18-69) reporting a Pap smear in the past 3 years
By Health Region, CCHS NB 2007



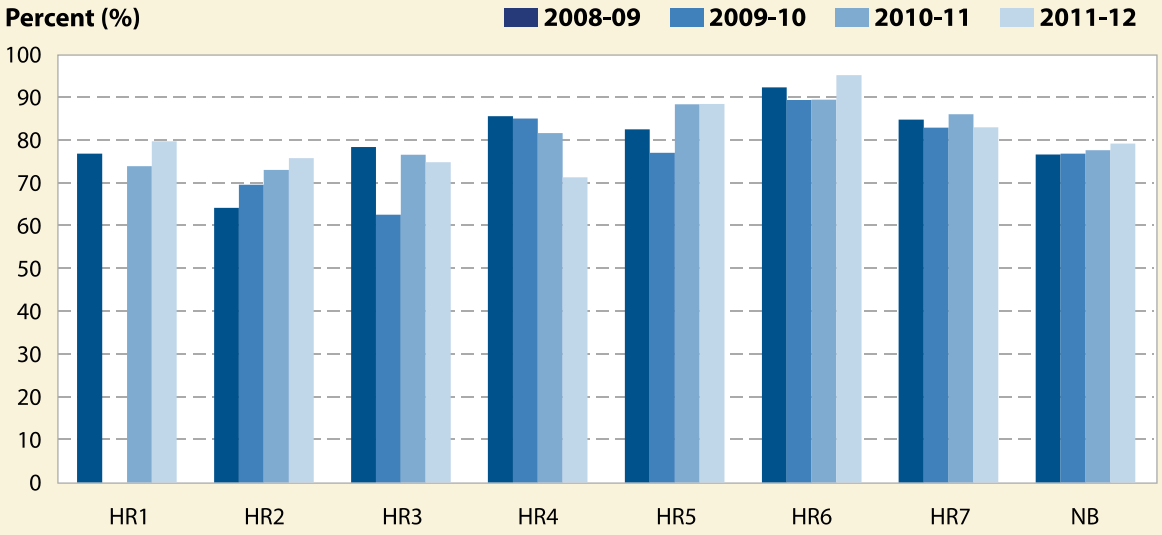
Data Source: Statistics Canada, Canadian Community Health Survey New Brunswick Data 2007

Persistent infection with one of the high-risk carcinogenic human papillomavirus (HPV) types is the main causative factor in the development of cervical cancer.[17] New Brunswick implemented an organized, publically funded school-based HPV immunization program in 2008 as integral part of the provincial comprehensive cervical cancer prevention and screening strategy. Public Health's HPV immunization program targets the Grade 7 female population.[19] Figures 12 and 13 show the percentage of the target population, by school year, that received at least one dose of HPV immunization and the percentage of the target population that received all three doses of the HPV immunization. Currently, there are no available tools to enable collection of information on the population vaccinated outside of the school-based program.

FIGURE 12

Percentage of Grade 7 female students immunized with at least one dose of HPV immunization

By Health Region and school year, 2008-2011

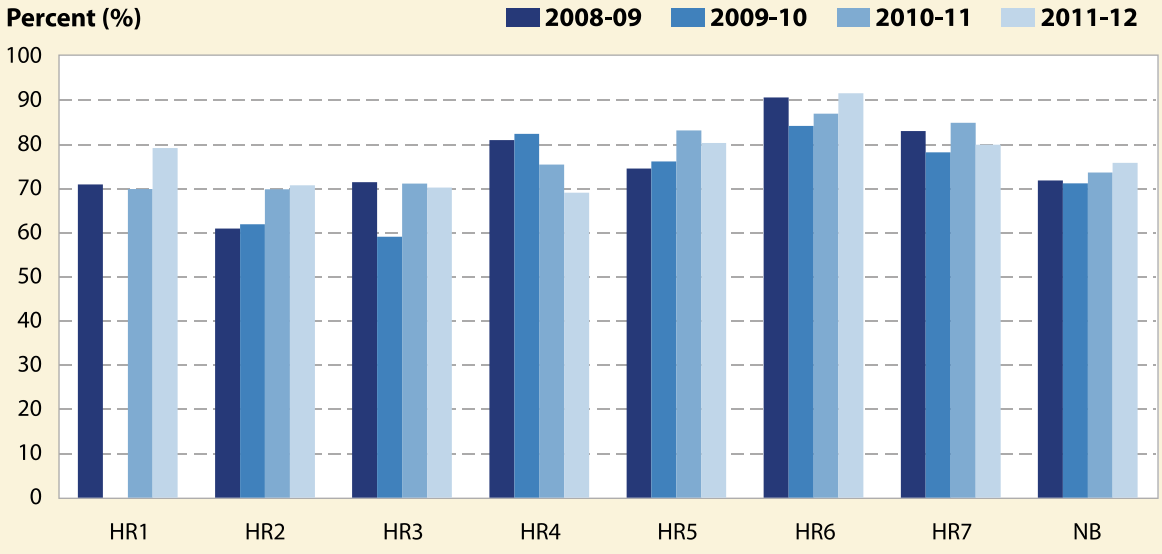


Data Source: New Brunswick Office of the Chief Medical Officer of Health
Note: a. Health Region 1 did not vaccinate for HPV in 2009-10 due to the flu pandemic; b. Only 3 schools vaccinated for HPV in Health Region 3 during 2009-10, hence the small numbers.

FIGURE 13

Percentage of Grade 7 female students immunized with complete doses of HPV immunization

By Health Region and school year, 2008-2011



Data Source: New Brunswick Office of the Chief Medical Officer of Health
Note: Health Region 1 did not vaccinate for HPV in 2009-10 due to the flu pandemic.

All provinces and territories have implemented HPV vaccination programs, however the target populations vary. The Public Health Agency of Canada in cooperation with the Pan-Canadian Cervical Cancer Screening Initiative is developing quality indicators for HPV vaccination as part of the core set of indicators for cervical cancer control.[4]

Colon cancer screening

In 2013, it is estimated that 600 new cases of colorectal cancer will be diagnosed in New Brunswick and 210 New Brunswick residents will die of the disease.[1]

An organized, population-based colon cancer screening program for individuals aged 50-74 at average risk of developing colorectal cancer is being designed and implemented by the New Brunswick Cancer Network. Full provincial implementation is expected in 2015. Until the program is implemented, New Brunswickers can access colorectal cancer screening through their health-care providers. The primary screening modality, the Fecal Occult Blood Test (FOBT) is largely performed opportunistically (suspected as a result of patient symptoms or risk factors). Colonoscopy is the predominant diagnostic modality used to confirm colorectal cancer from a positive FOBT.

The National Colorectal Cancer Screening Network of CPAC commissioned two pan-Canadian surveys titled Colon Cancer Screening in Canada 2009 and Colon Cancer Screening in Canada 2011. These surveys provided information on the understanding and attitudes towards colon cancer screening among Canadians 50 to 74 years of age. According to the surveys, 36% of New Brunswickers were up-to-date with their colon cancer screening in 2011 compared to 32% in 2009. Up-to-date screening is defined as being screened within the past two years with a fecal occult blood test (FOBT) and/or colonoscopy within the previous five years.[4]

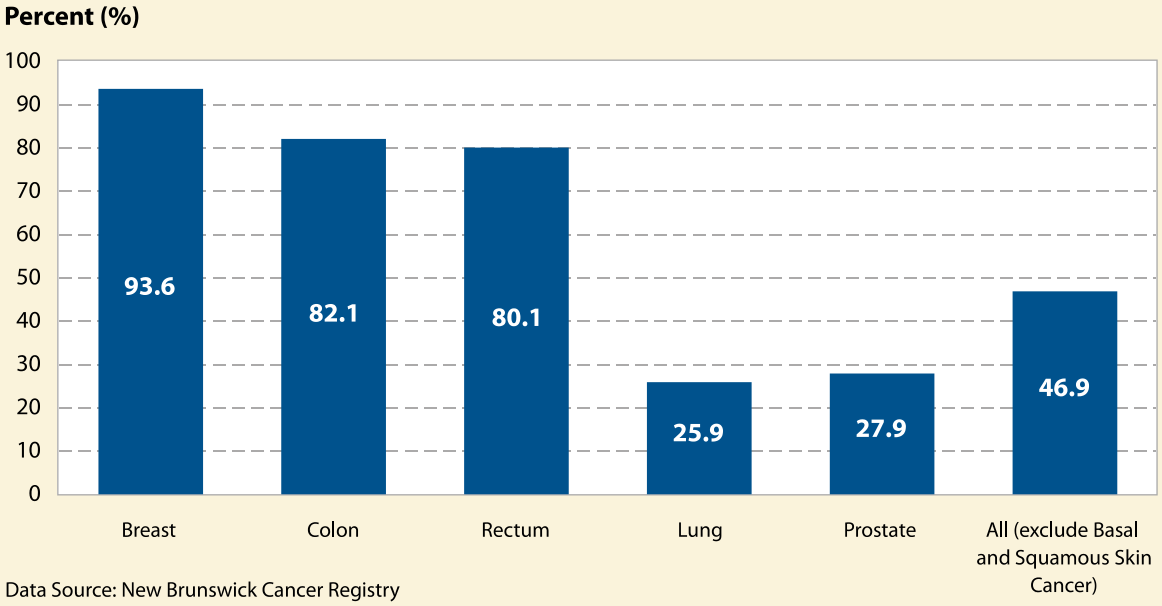
DIAGNOSIS AND TREATMENT

Surgery and pathology

Surgery is a major component of curative treatment for most cancers and has a vital role in securing cancer tissue necessary for establishing accurate diagnosis. The proportion of new cancer cases that had surgery in 2010 ranged from 94% for breast cancer patients to 26% for lung cancer patients (Figure 14). Figure 15 shows the distribution of cancer surgeries for top four cancers (breast, colorectal, lung and prostate) by the Health Region where the surgeries were performed.

Surgery is the primary treatment for breast, colon and rectal cancers. Lung cancer is usually diagnosed at advanced stage. There are several different types of lung cancer, with the most common being non-small cell lung cancer (NSCLC). Only Stage II (early stage) and some stage IIIA (locally advanced) NSCLC are usually treated by surgical resection of the tumor.

FIGURE 14
Percentage of incident cancer cases who had surgery
By tumor type, 2010

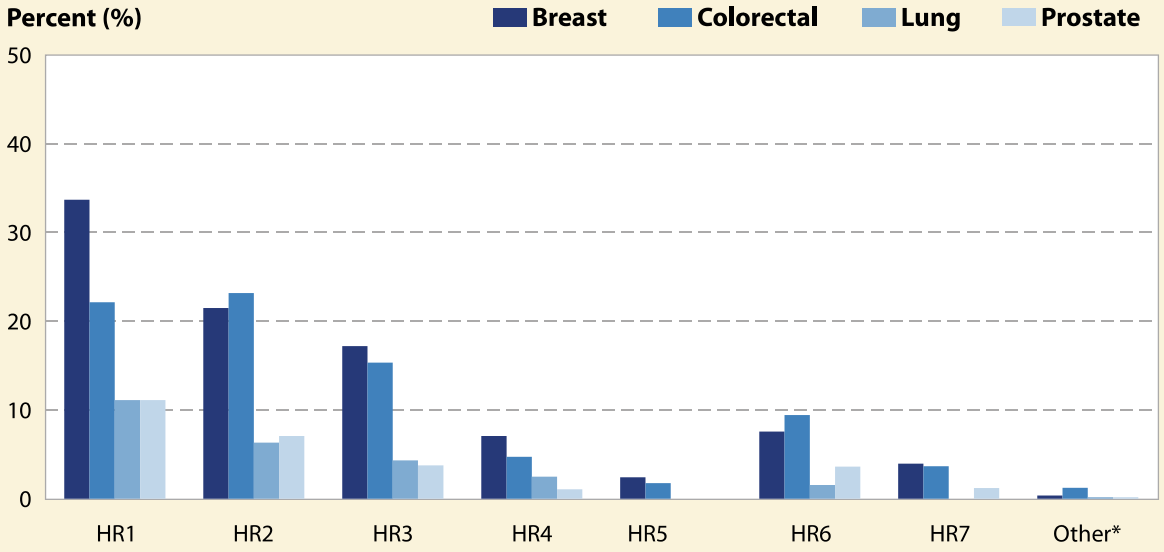


Data Source: New Brunswick Cancer Registry

FIGURE 15

Distribution of cancer surgeries performed for the Top 4 cancers (Breast, Colorectal, Lung, Prostate)

By Health Region (where the surgery was performed), 2010



Data Source: New Brunswick Cancer Registry
*Referral outside New Brunswick

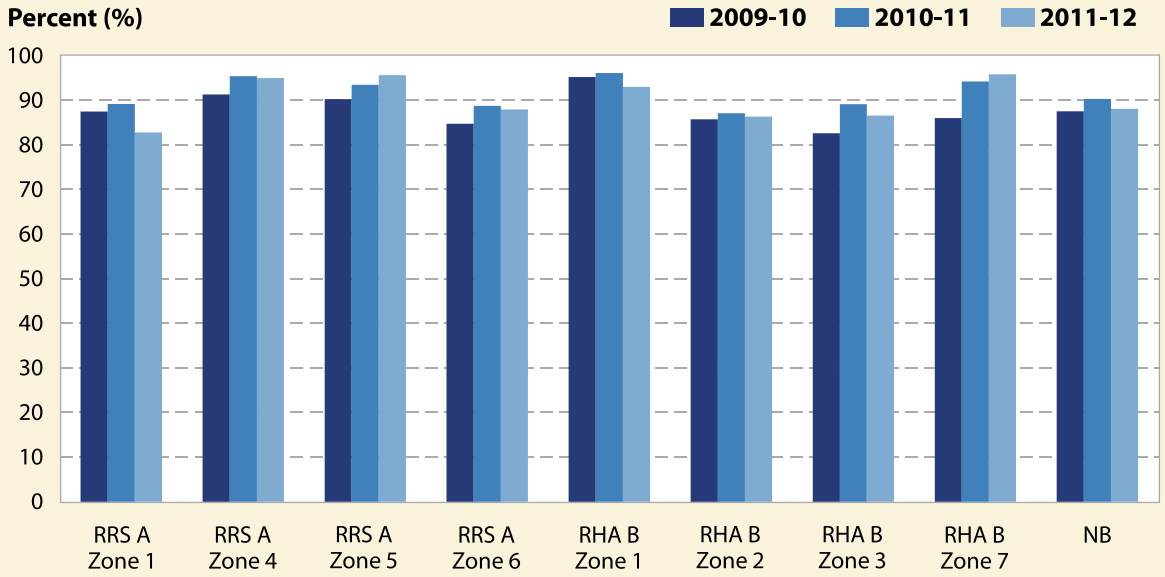
New Brunswick reports wait times for all surgical procedures as a response to Canada's First Ministers' agreement to reduce wait times in five priority areas.[20] Wait times for completed surgeries are reported against the target of six weeks and three months combined, where surgeons determine whether or not the case needs to be completed within six weeks or three months. Overall, cancer surgery wait times have been stable over the years (Figures 16 and 17).

In 2011, the provincial median wait time for the interval between the date that a booking request was received and the date of the surgery, stayed at 15 days as in previous years, except for 2008 when reporting started. Substantial variations exists between health zones, ranging from 28 days in RHA A Zone 1 to 8 days in RHA B Zone 7. There was an increase in median wait times for 2011/12 in RHA A Zone 1, RHA B Zone 1 and RHA B Zone 2.

FIGURE 16

Percentage of cancer surgeries completed within target of 6 weeks or 3 months combined, all cancer surgeries

By Health Zone and fiscal year, 2009-2011

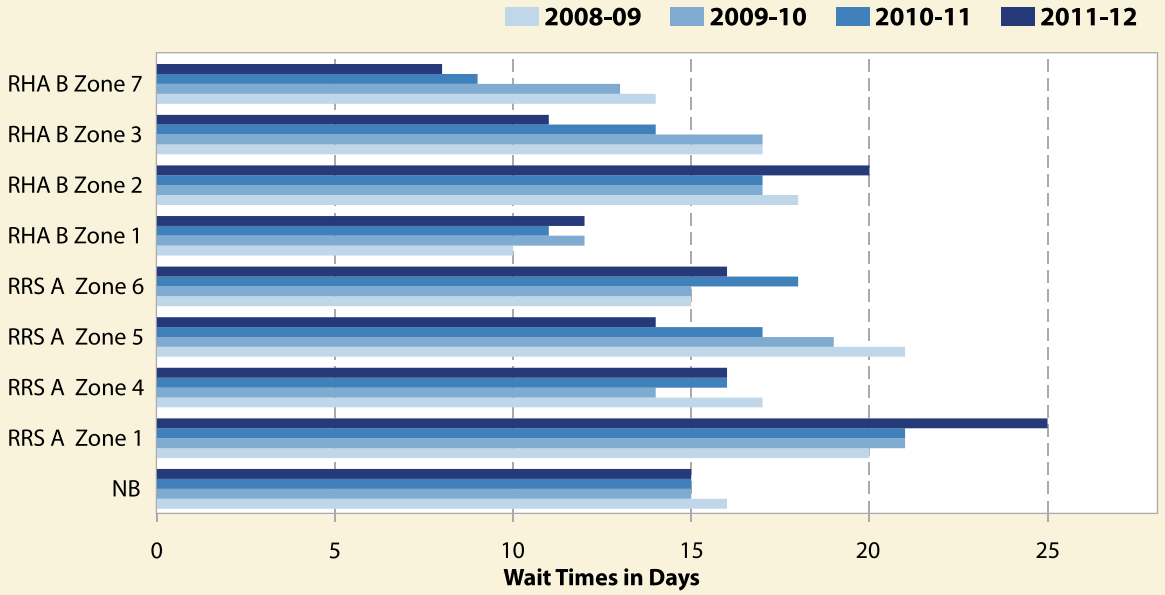


Data Source: New Brunswick Surgical Access Repository
Note: The wait time is measured from the date when the booking request is received to the date when the actual procedure is performed.

FIGURE 17

Median wait times, all cancer surgeries

By Health Zone and fiscal year, 2008-2011



Data Source: New Brunswick Surgical Access Repository
Note: The wait time is measured from the date when the booking request is received to the date when the actual procedure is performed.

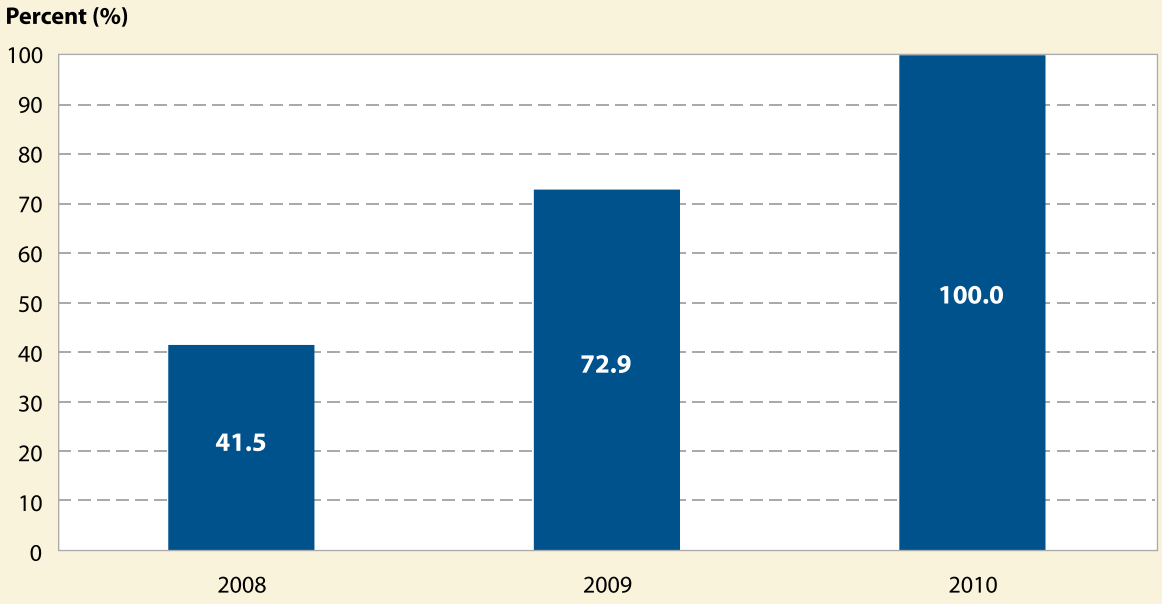
Stage is defined as the extent of disease at the time of diagnosis and pathology reports play a significant role in accurately determining cancer stage when surgical resections are performed. Stage at diagnosis, besides its clinical value, is an important indicator of cancer system performance, providing deeper insight into future interpretation of long-term outcomes and impact of early detection/screening practices.

In 2009, the use of the American College of Pathology Cancer Checklist Protocols was adopted as the pan-Canadian pathology content standard. In the same year, the Department of Health signed an agreement with CPAC for the National Staging and Pathology Synoptic Reporting Project.[29] The goal of this project was to develop data collection processes and tools to enable timely and standardized collection of population-based collaborative stage data from the provincial cancer registries in Canada for the top four cancers (breast, colorectal, lung and prostate).

The following Figures 18 to 21 represent a selection of diagnosis, stage and treatment indicators available from the New Brunswick Provincial Cancer Registry.

Capture of Collaborative Stage Data by the NB Cancer Registry (Figure 18) is one of the indicators reported at the national level, which measures collection and retention of stage data at the population based provincial cancer registries.[4] In New Brunswick, staging for all new incident cases for the top four cancers (breast, colorectal, lung, prostate) using the collaborative staging method was phased-in starting with breast and colorectal cancer cases in 2008, prostate in 2009 and lung in 2010. The National Staging Initiative and Pathology Synoptic Reporting Project set a target of 90% of incident cases for the top four cancers being staged by the 2010 diagnosis year.

FIGURE 18
Capture of incidence cases for which collaborative stage data is available, Top 4 cancers
By year of diagnosis, 2008-2010



Data Source: New Brunswick Cancer Registry

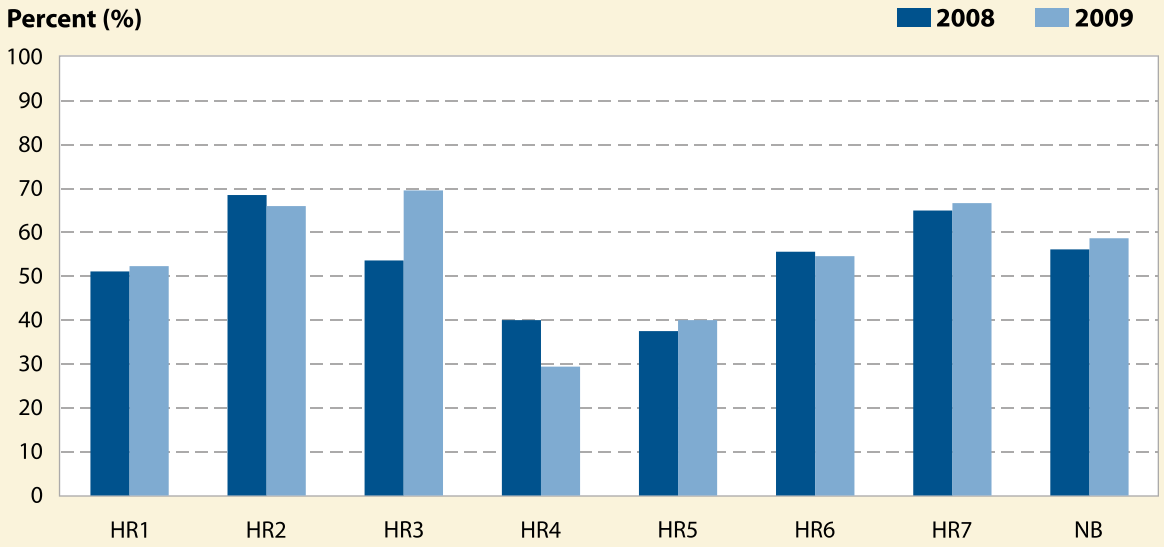
Removal and Examination of 12 or More Lymph Nodes in Colon Cancer Resections

Clinical guidelines recommend the examination of a minimum of 12 lymph nodes to allow for adequate staging in all patients with colon cancer who are undergoing surgery.[21] The percentage of colon resections that had 12 or more lymph nodes examined was 56% in 2008 and 58% in 2009 (Figure 19). Rates for the Health Regions ranged from 30% in Health Region 4 to 70% in Health Region 3. Currently, there is no established national target or benchmark for this indicator.[4]

FIGURE 19

Percentage of colon resections with 12 or more lymph nodes removed and examined

By Health Region and year of diagnosis, 2008-2009



Data Source: New Brunswick Cancer Registry
Note: For the purposes of this report, due to data limitations health regions reflect patient's region of residence at diagnosis not where the actual surgery was performed.

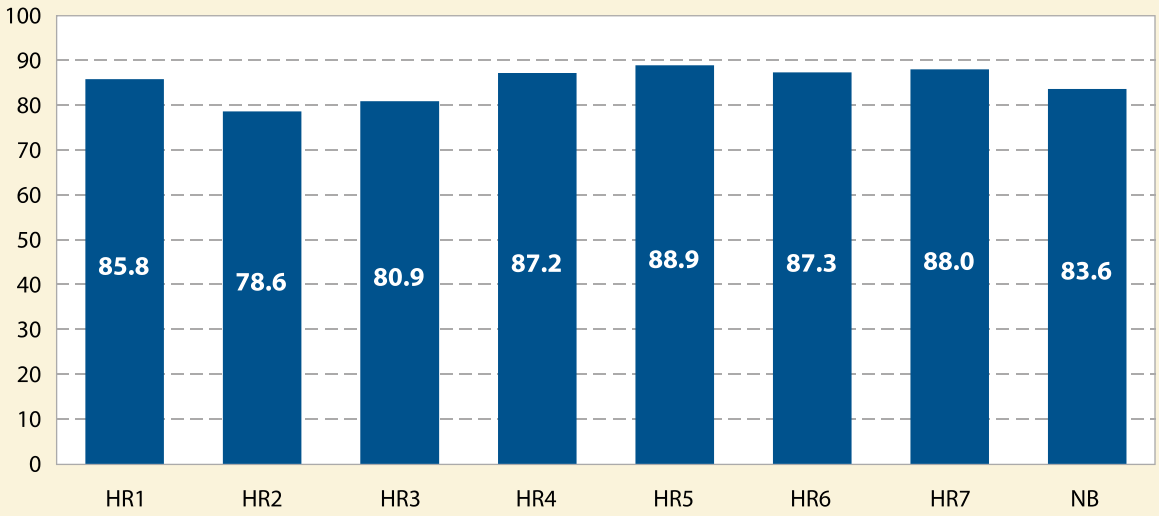
ER/PR Hormone Receptor testing and HER2 Positivity Status, Breast Cancer

Testing for hormone receptor status is critical for making decisions about treatment approach in breast cancer and whether the patient can benefit from hormonal therapy. Testing for ER/PR (estrogen and progesterone receptors) is done in most laboratories in New Brunswick and testing for HER2 (human epidermal growth factor receptor 2) is done in two laboratories (Dr. George-L.-Dumont University Hospital Centre and the Saint John Regional Hospital). In 2010, the percentage of women with invasive breast cancer who had ER/PR testing was 98% with 84% evaluated to be positive. Figure 20 shows little variation in the test positivity between Health Regions. ER/PR positivity among Canadian women with invasive breast cancer ranged from 84% to 89% with an overall Canadian average of 85% as reported by the CPAC's Breast Cancer Control in Canada Report.[15]

FIGURE 20

Percentage of women newly diagnosed with breast cancer in 2010, staged and who were tested ER or PR positive

By Health Region



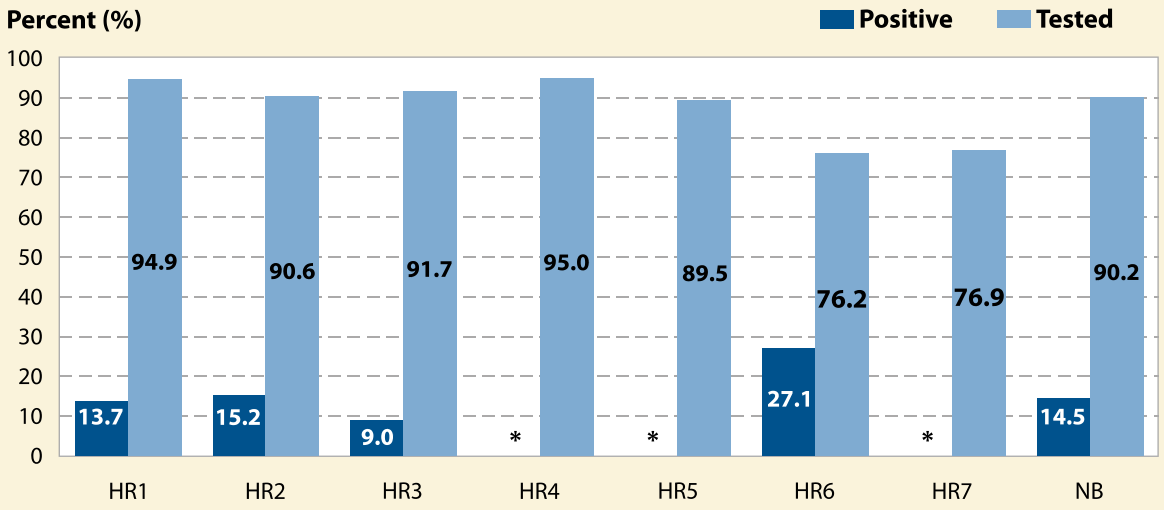
Data Source: New Brunswick Cancer Registry
Note: For the purposes of this report, due to data limitations health regions reflect patient's region of residence at diagnosis not where the actual test was performed.

The percentage of women with invasive breast cancer who had HER2 testing was 90% in 2010 with 15% being found positive (Figure 21). HER2 positivity among Canadian women with invasive breast cancer ranged from 8.7% to 14.8% with the Canadian average of 13.8% as reported by the CPAC's Breast Cancer Control in Canada Report.[15]

FIGURE 21

Percentage of women newly diagnosed with breast cancer in 2010, staged and who were tested HER2 positive

By Health Region



Data Source: New Brunswick Cancer Registry
*Results for HR4, HR5 and HR7 are suppressed due to a small number of cases tested (<5) however are included in the provincial total.
Note: For the purposes of this report, due to data limitations health regions reflect patient's region of residence at diagnosis not where the actual test was performed.

Surgical margin status is an indicator of the quality of surgery and pathology.[22] A positive surgical margin is defined as the presence of tumor at the edge of the resected specimen and as such implies incomplete removal of cancerous tissue.

Circumferential Resection Margin (CRM) - Colon and Rectal cancer

A positive Circumferential Resection Margin (CRM) in rectal cancer is highly predictive of poor prognosis.[24] Data shows that a similar relationship may exist for colon cancer.[25] Guidelines recommend negative margins in all patients.[21] In New Brunswick, the percentage of incident cases who had resection and positive CRM was 8.5% for rectal cancer and 8.4% for colon cancer in 2010.

Surgical Margin Status - Prostate cancer

Positive surgical margins in men undergoing radical prostatectomy for prostate cancer are associated with an increased risk of disease recurrence.[22,26] The percentage of incident prostate cancer cases in 2010 who underwent radical prostatectomy and had positive surgical margins was 16.8% (pT2 stage) and 32.3% (pT3 stage).

Visceral Pleural Invasion (VPI) - Lung cancer

Visceral pleural invasion (tumor extension beyond the elastic layer of visceral pleura) is a critical component in the staging of non-small cell lung carcinoma and is the most important prognostic factor for patients who undergo resection. Presence of VPI is an indicator of poor prognosis. In 2010, 50.7% of non-small cell lung cases with T1/T2 stage were assessed for visceral pleural invasion and 35.9% of these were found to have visceral pleural invasion involvement. Various studies report VPI being observed in 11.5% to 26.8% of non-small cell lung cancer specimens.[27]

Radiation therapy

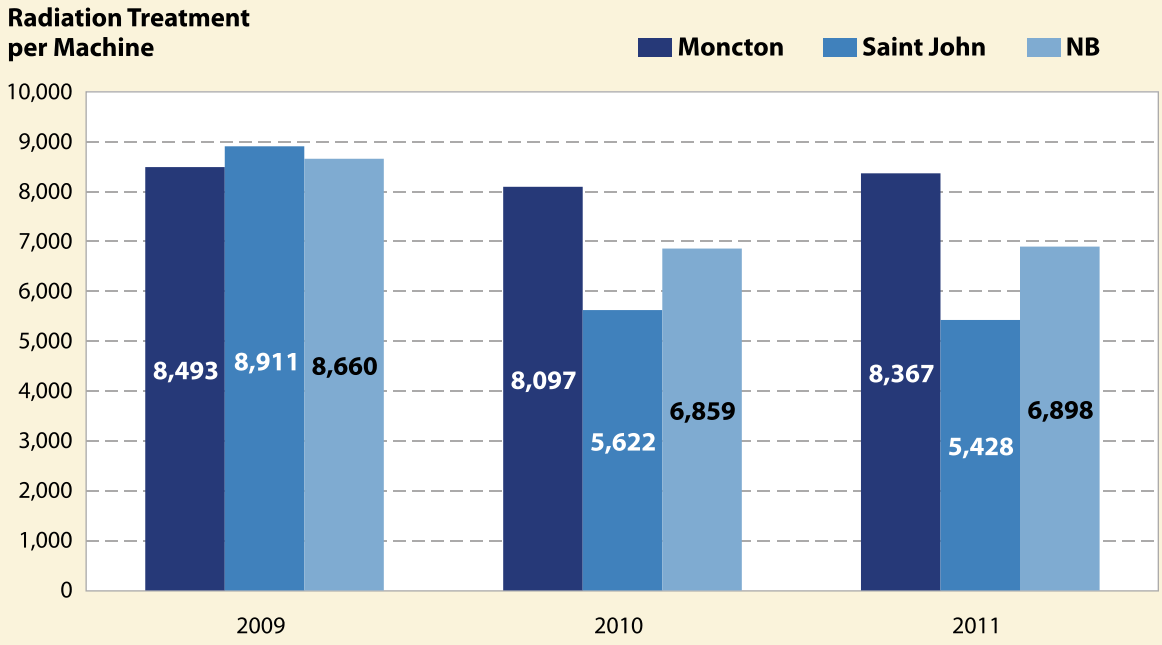
Radiation therapy is a major component of cancer treatment services. New Brunswick has two tertiary cancer centres that provide radiation therapy to cancer patients: Saint John Regional Hospital in Saint John and Dr. Georges-L.-Dumont University Hospital Centre in Moncton. New Brunswick has established the New Brunswick Radiation Therapy Wait Time Guarantee, to ensure that NB patients will not wait more than eight weeks from being ready to treat to the start of the first treatment.[20] The cornerstone of the Guarantee is increased capacity for treatment delivery and better management of patients' wait times.

Since 2009, NBCN has participated with the CPAC's System Performance Initiative in assessing the capacity and utilization of radiation therapy at the national level. Literature suggests that approximately 50% of all new cancer patients should receive radiation treatment at some point during their disease.[36] Due to current limitations in data collection, NBCN reports radiation therapy utilization as a ratio of all courses of radiation therapy (given to all cancer patients, new and recurrent cases, for any indication) to incident cases diagnosed in a year. For the period 2008 to 2010, the radiation therapy utilization ratio in NB has been on average 60%.[8]

Linear accelerator capacity is measured by the number of linear accelerators available for treatment per capita and the number of radiation treatments per machine. Through implementation of the Radiation Therapy Wait Time Guarantee, New Brunswick's treatment delivery capacity has increased by approximately 40%. New Brunswick now has seven linear accelerators (LINACS), which represents a rate of 7.9 LINACS per million people compared to the Canadian average of 6.6 LINACS per million people for 2011.[4]

The average number of radiation treatments per linear accelerator was 6,898 in 2011 (Figure 22). The number has decreased since 2009, following the same trend observed at the national level in the CPAC's 2011 System Performance Report.[8] During this reporting period, the number of available machines increased and new, more complex treatment techniques were implemented. At this time, with the current data collection methodology, it is not possible to account for the impact of the increasingly complex new technologies on machine utilization. New processes for data collection, being implemented by NBCN, will result in better assessment of radiation therapy utilization.

FIGURE 22
Radiation therapy treatments per linear accelerators
By Radiation Treatment Facility, 2009-2011



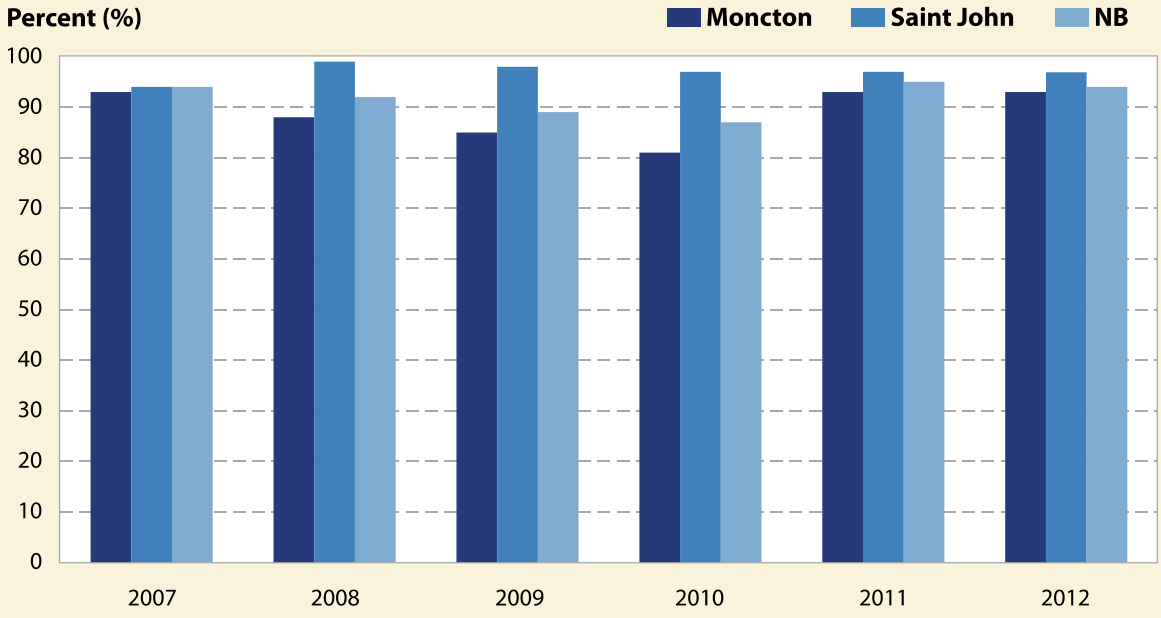
Data Source: New Brunswick Radiation Treatment Facility

NBCN has been publicly reporting wait times for radiation therapy since 2007. The nationally recognized benchmark is that patients will receive first treatment within four weeks of being ready to treat.[20] The ready to treat date is defined as the date when the patient is ready to begin treatment from social/personal and medical perspective. Radiation therapy wait times in New Brunswick have improved since installation of new linear accelerators and better wait time management processes. As of December 2012, 94% of NB patients started radiation treatment within four weeks of being ready to treat compared to 85% and 87% in December 2008 and December 2009 respectively (Figure 23). The provincial target is 90% or more patients being treated within four weeks of being ready to treat.

FIGURE 23

Percentage of patients receiving radiation therapy within 4 weeks of being ready to treat

By Radiation Treatment Facility, 2007-2012



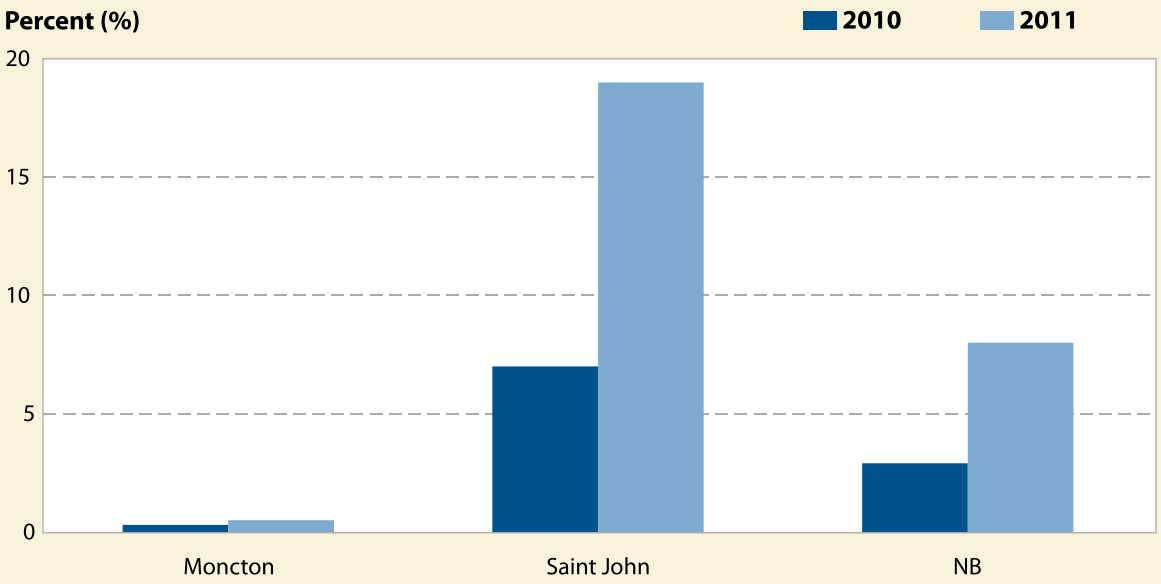
Data Source: New Brunswick Radiation Treatment Facility

The introduction of more complex treatment techniques has improved the delivery of radiation treatment. One of those techniques is Intensity Modulated Radiotherapy (IMRT), a relatively new method of delivering high doses of radiation with increased precision while reducing damage to surrounding healthy tissues. The introduction of IMRT started gradually and is used for select cases, mostly for prostate and head and neck cancers. At the time of reporting, most IMRT treatments were provided at the Saint John Regional Hospital. The percentage of all courses delivered using IMRT technique has increased from 3% in 2010 to 8% in 2011(Figure 24). Other recent improvements in treatment delivery include Stereotactic Radiosurgery (SRS) and expansion of brachytherapy services in Saint John. The Dr. Georges-L.-Dumont University Hospital Centre in Moncton has provided HDR (High Dose Rate) prostate and gynecologic brachytherapy programs since 2003 and 2009 respectively.

FIGURE 24

Percentage of external beam radiation therapy courses delivered using IMRT technique, all cancers, all intent

By Radiation Treatment Facility, 2010-2011



Data Source: New Brunswick Radiation Treatment Facility

Systemic therapy

Chemotherapy and use of other systemic therapies are an integral part of cancer treatment. The increase in the number of new cancer patients, availability of new drugs and changes in practice are some of the factors contributing to the overall rise in systemic therapy utilization.[3]

Currently, the only source of information on chemotherapy activity in New Brunswick is the Hospital Financial and Utilization Management System (HFUMS). The main purpose of HFUMS is to facilitate the measurement of financial and clinical activities based on available resources. Although a considerable amount of information about services provided is collected, it is not possible to link this information to individual cancer patient information and report on patient centered performance outcomes. New initiatives to improve processes and strengthen data collection capabilities have been planned or are currently being implemented.

Antineoplastic therapy visits (a cancer-related visit to the ambulatory setting for protocol based systemic therapy) reported through the HFUMS give a close estimation of chemotherapy treatments given. A total of 25,671 visits were reported across the province for the 2011/2012 fiscal year. Table 1 provides an overview of data for the last three fiscal years, by facility.

Table 1. Antineoplastic Therapy Visits by Regional Health Authority, Zone and Facility, Fiscal Year 2009-2010, 2010-2011 and 2011-2012

Anti-neoplastic Treatment Visits	2009-10	2010-11	2011-12
New Brunswick Total, All Locations	**23,847**	**25,022**	**25,671**
Vitalité Health Network	**6,357**	**6,102**	**6,787**
Centre hospitalier universitaire Dr. Georges-L.-Dumont	3,485	3,597	4,020
Hôpital général de Grand-Sault	166	176	239
Hôpital régional d'Edmundston	825	755	979
Hotel-Dieu Saint-Joseph de Saint-Quentin	98	110	52
Dalhousie*	26	-	-
Hôpital Régional de Campbellton*	399	-	-
Hôpital de l'Enfant-Jésus RHSJ	621	676	699
Hôpital régional Chaleur	737	788	798
Horizon Health Network	**17,490**	**18,920**	**18,884**
The Moncton Hospital	4,824	4,665	4,697
Charlotte County Hospital	248	271	343
Saint John Regional Hospital	8,588	9,752	8,109
Sussex Health Centre	176	347	311
Dr. Everett Chalmers Regional Hospital	2,347	2,531	2,624
Hotel-Dieu of St. Joseph	246	275	379
Upper River Valley Hospital	437	452	602
Miramichi Regional Hospital	624	627	1,819

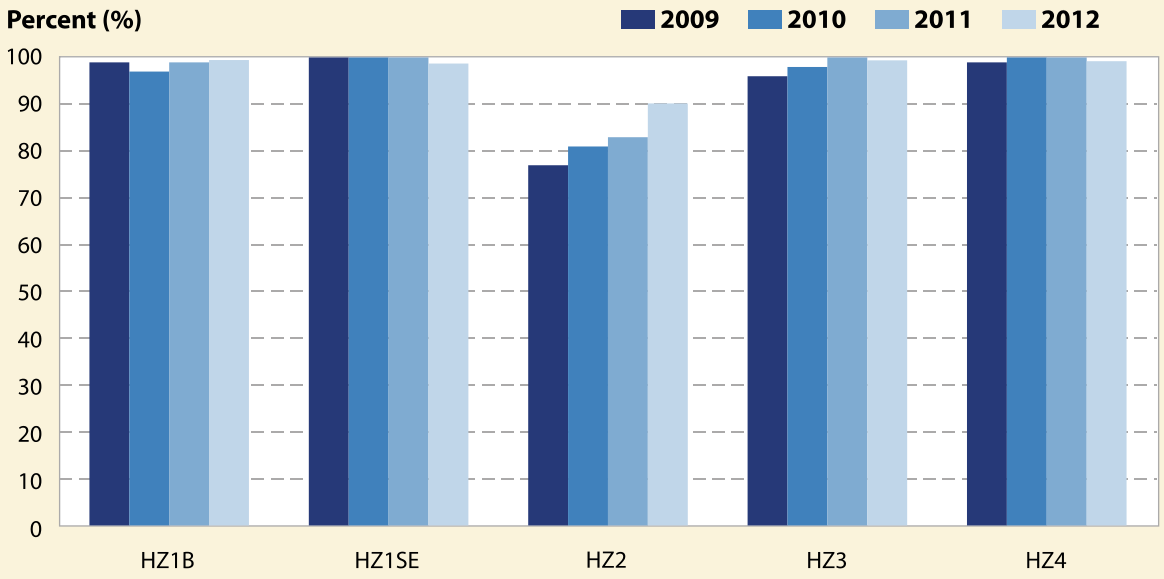
*Note: Data not available at the time of publishing this report.

NBCN monitors radiation therapy wait times and actively collaborates with the Surgical Wait Times Initiative in developing and monitoring cancer surgery wait time indicators. NBCN is making efforts to extend wait times monitoring and measurement to the area of chemotherapy treatment as well. As a first step, a Pilot Project for Monitoring Systemic Therapy Wait Times was initiated with the Regional Health Authorities. The Project developed common definitions and processes for reporting systemic therapy wait times from the time the patient is considered ready to treat to when the patient receives first treatment. Figure 25 shows that the vast majority of patients receive their first treatment within seven days except for RHA B Zone 2 where the percentage of patients receiving the first treatment within seven days, although improving, is consistently below 90%.

FIGURE 25

Percentage of patients receiving first systemic treatment within 7 days of being ready to treat

By Health Zone, 2009-2012



Data Source: Health Zones
Note: full wait time data for Zone 1B were not available for October, November and December of 2009; August and October of 2011; March, April, May, June, September and October of 2012.

Provincial Stem Cell Transplantation Program

One of the recent improvements in providing cancer care was the establishment of the Provincial Stem Cell Transplantation Program in 2011. The program is located at the Saint John Regional Hospital. Autologous stem cell transplantation is a critical component of care for cancers such as leukemia, lymphoma and multiple myeloma. Since the initiation of the Program, 40 stem cell transplants have been performed.

Clinical Trials

Clinical trials and clinical research are vital in developing and improving cancer treatments. Cancer clinical trials are performed at four NB oncology clinics: Dr. Georges-L.-Dumont University Hospital Centre, Saint John Regional Hospital, The Moncton Hospital and Dr. Everett Chalmers Regional Hospital. Patient participation is crucial and studies have shown that centers that participate in clinical trials tend to have better patient outcomes.[41] Provincial clinical trials participation data has been collected by the New Brunswick Cancer Network since 2009 as part of the CPAC's National Cancer System Performance Initiative. Through this Initiative, all Canadian provinces report clinical trial participation as a ratio of patients (19 year and older) newly enrolled in cancer-related therapeutic trials or clinical research studies to the total number of new cases referred to cancer centers.[4] This ratio for NB remained 0.02 for 2009, 2010 and 2011. National pediatric clinical trials participation ratio is reported, at this time, by CPAC using data collected by the C[17] Council through tertiary pediatric cancer centers located in eight provinces. With the current methodology, this ratio is not reported based on the patients' province of residence. The overall Canadian average ratio of pediatric patients enrolled in clinical trials to newly registered pediatric cancer center patients was 0.27.[4]

Conducting clinical trials is faced with many challenges such as high costs, increased trial complexity and changes in regulatory and ethical framework.[42] To increase awareness and ultimately recruitment to clinical trials, CPAC has developed a tool, the Canadian Cancer Trials Portal. The Portal is available at www.CanadianCancerTrials.ca and it allows users (public, physicians, and administrators) to search trials that are currently active within at least one of the Canadian Centers.

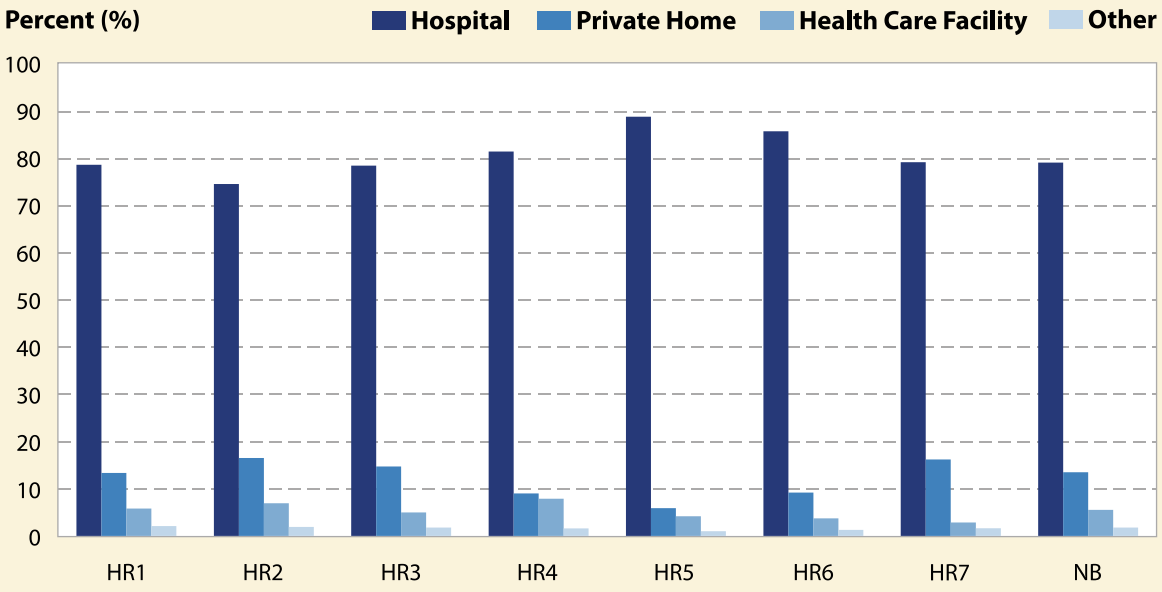
PALLIATIVE AND END-OF-LIFE CARE

Palliative and End-of-Life Care is defined by the World Health Organization as "an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual".[43] In New Brunswick, palliative care services are provided in individual homes, special care homes, community residences, nursing homes, hospitals and select community health centers. NB's only residential hospice is located in Saint John. The level and consistency of services varies across the province and for the most part, initiatives to date have focused primarily on the end-of life component of palliative care.

Differences in the organization and delivery of palliative and end-of-life services and the lack of a provincial palliative care strategy to date make assessing these services challenging. This is similar to the situation across Canada.[44] Most of the published indicators of the quality of palliative and end-of-life services are based on data collected through administrative databases (such as hospital-based discharge abstract data). Although these data are very valuable, many limitations have been documented, such as poor comparability of data and availability of data related to the patient experience.[46]

Cancer is the leading cause of death in New Brunswick (31%), similar to 2007 national patterns, as reported in the 2011 CIHI's Health Care Use at the End of Life in Atlantic Canada publication.[45] Place of death is an indicator regularly reported, as literature indicates that cancer patients prefer to die at home or home-like settings. Figure 26 shows that over the period of five years, on average 79% of NB cancer patients died in hospital and 14% died at home. The percentage of cancer patients who died in hospital ranged from 75% in Health Region 2 to 90% in Health Region 5. In Canada, a higher proportion of cancer patients die in hospital, with variations among provinces ranging from 50% to 90%. These variations may be related to differences in reporting practices across provinces rather than the actual trends.[8]

FIGURE 26
Place of death, cancer patients
By Health Region, 2006-2010



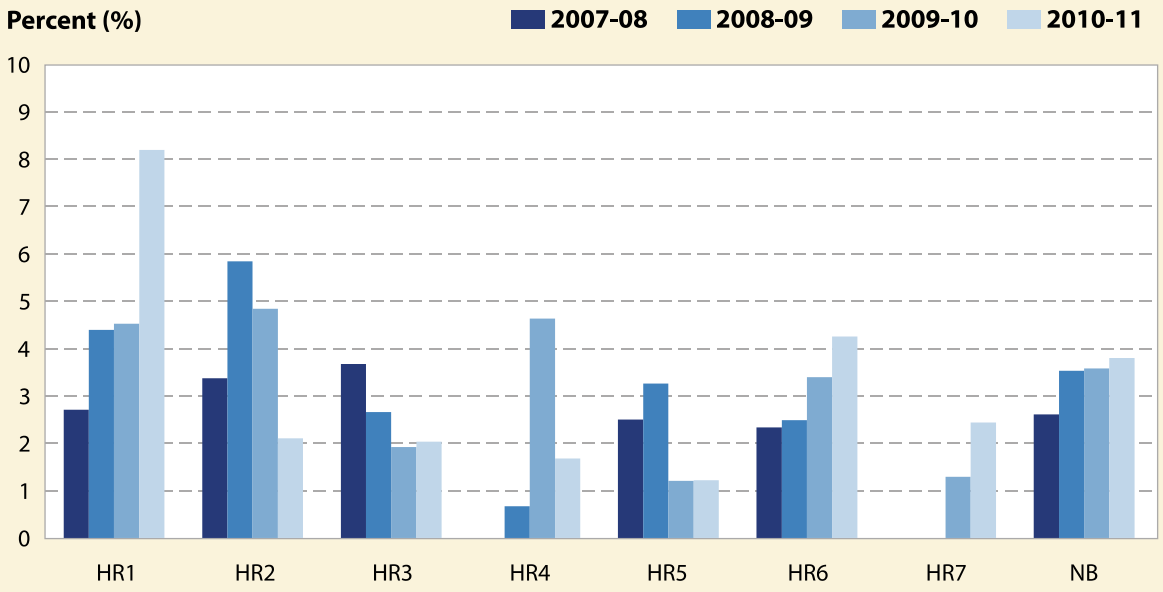
Data Source: Vital Statistics, Service New Brunswick

One of the often cited indicators in this area of care is the assessment of admissions and deaths in intensive care units (ICU). Research suggests that many of these admissions could be prevented by using different approaches such as providing better assistance at home or the use of the hospice services at the end of life. In the 2010/11 fiscal year, 3.8% of cancer deaths were recorded for patients who were admitted to the ICU. This rate ranges from 8.2% in Health Region 1 to 1.2% in Health Region 5 (Figure 27).

FIGURE 27

Percentage of cancer deaths in Intensive Care Unit (ICU)

By Health Region and fiscal year, 2007-2010



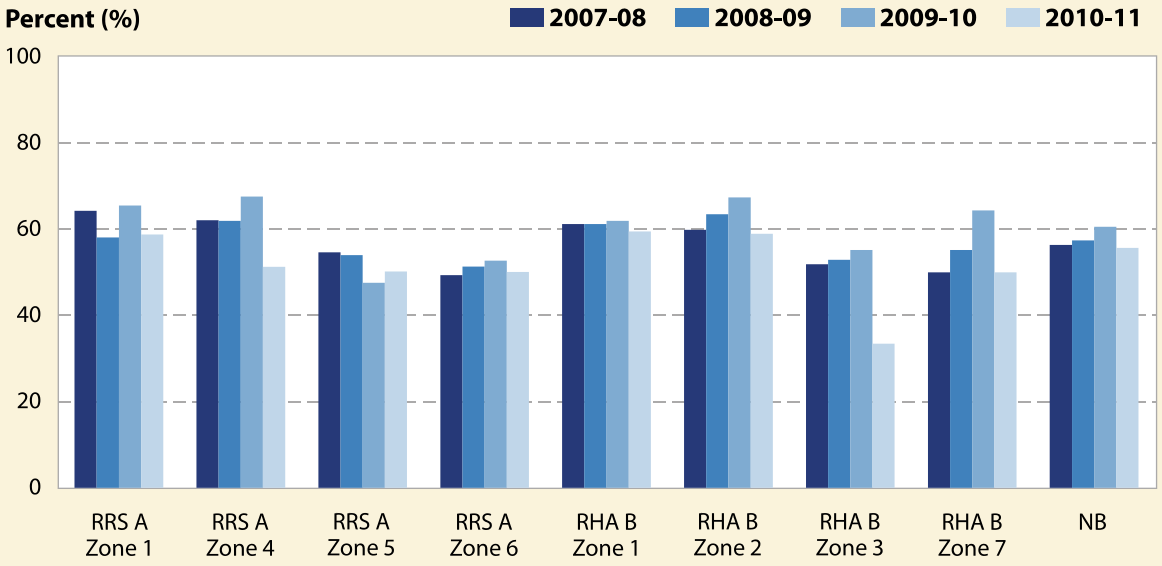
Data Source: Vital Statistics, Service New Brunswick and Discharge Abstract Database

Cancer patients represent the majority of those who receive palliative and end-of-life services.[47] Figure 27 depicts data from the NB Discharge Abstract Database (DAD) which represents only inpatient, acute care services. Information on patients receiving palliative care in the community (individual homes, special care homes, community residences, nursing homes or hospice) is not routinely collected in a systematic and coordinated way. In New Brunswick hospitals, during the period 2007/2008 to 2010/2011, on average 57% of palliative care discharges had a diagnosis of cancer assigned to it (Figure 28).

FIGURE 28

Percentage of patients admitted to acute care hospitals with cancer diagnosis for palliative care

By Health Zone and fiscal year, 2007-2010



Data Source: New Brunswick Discharge Abstract Database

NBCN has identified a need for a provincial approach to cancer related palliative and end-of-life care as integral part of its mandate. One of the first initiatives was organizing and hosting a provincial forum on palliative cancer care that involved key stakeholders from across the province. This forum provided NBCN with key themes to help focus the palliative cancer care agenda in NB. One of the pressing needs identified was education in palliative and end-of-life care. NBCN, in cooperation with the Canadian Partnership Against Cancer, organized two regional workshops (2011 and 2012) titled Education in Palliative and End-of-Life Care - Oncology TM Canada (EPEC-OTM Canada).

Work on the Provincial Palliative Care Strategy started in March 2012, co-lead by NBCN and the Addiction, Mental Health, Primary Health Care and Extra-Mural Services Division of the Department of Health.

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APPENDIX A - TECHNICAL NOTES

Prevention and Screening

INDICATOR: Smoking Prevalence

Definition: Percentage of population aged 12 years and older in each health zone reporting daily or occasional smoking.

Numerator: Number of daily, occasional, former, or never smokers, aged 12 years and older.

Denominator: Total population, aged 12 and older.

Data Source: Canadian Community Health Survey, New Brunswick data.

Measurement timeframe: 2011

INDICATOR: Alcohol Consumption (Low –Risk Drinking Guideline)

Definition: Percentage of adults aged 18 years and older that reported exceeding the low-risk drinking guideline.

Numerator: Number of people aged 18 years and older who reported exceeding the low-risk drinking guideline.

Denominator: Total population, aged 18 years and older.

Data Source: Canadian Community Health Survey, New Brunswick data.

Measurement timeframe: 2005

Low-Risk Drinking Guideline:

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.

INDICATOR: Alcohol Consumption (Abstinence)

Definition: Percentage of adults aged 18 years and older that reported no alcohol drinking in the past 12 months.

Numerator: Number of people aged 18 years and older who reported drinking no alcohol in the past 12 months.

Denominator: Total population, aged 18 years and older.

Data Source: Canadian Community Health Survey, New Brunswick data.

Measurement timeframe: 2011

INDICATOR: Fruit and Vegetable Consumption

Definition: Percentage of population aged 12 years and older in each level of fruits and vegetables consumption: 5-10 times daily or >10 times daily.

Numerator: Number of population aged 12 years and older reporting consuming fruits and vegetables 5 to 10 times daily or > 10 times daily.

Denominator: Total population, aged 12 years and older.

Data Source: Canadian Community Health Survey, New Brunswick data.

Measurement timeframe: 2011

INDICATOR: Physical Activity (Adults)

Definition: Percentage of population aged 18 years and older in each physical activity level - inactive, moderately active, active and very active.

Numerator: Number of people aged 18 years and older who are inactive, moderately active, active and very active.

Denominator: Total population, aged 18 years and older.

Data Source: Canadian Community Health Survey, New Brunswick data.

Measurement timeframe: 2011

INDICATOR: Overweight and Obesity

Definition: Percentage of population aged 18 years and older in each BMI group: underweight, normal weight, overweight, obese.

Numerator: Number of adults age 18 years and older in each BMI group: underweight, normal weight, overweight or obese.

Denominator: Total number of adults age 18 years and older with valid height and weight responses.

Data Source: Canadian Community Health Survey, New Brunswick data.

Measurement timeframe: 2011

BMI groups are defined as:

under 18.5 (underweight); 18.5 to 24.9 (normal weight); 25.0 to 29.9 (overweight); 30.0 to 34.9 (obese-Class I); 35.0 to 39.9 (obese-Class II); 40 or greater (obese - Class III).

INDICATOR: Breast Cancer Screening Participation Rate

Definition: Percentage of asymptomatic women aged 50 to 69 who received at least one screening mammogram within 24 months through the organized breast cancer screening program.

Numerator: Total number of asymptomatic women aged 50-69 who received al least one screening mammogram in a two year period.

Denominator: Total number of eligible women.

Target: 70% biennial participation rate in women aged 50-69 years.

Measurement timeframe: 2010 -2011

Data source: NB Breast Cancer Screening Service Database; NB Medicare Resident Registry.

Note: Participation rate may be a slight underestimate as it includes only women consenting to have their screening information included in the NB Breast Cancer Screening Service Database.

INDICATOR: Wait Times – Abnormal Breast Cancer Screen to Resolution

Definition: Time in weeks from abnormal breast screen to resolution (definitive diagnosis).

Population: Women aged 50-69 with an abnormal breast screen result , requiring tissue biopsy and not requiring tissue biopsy.

Target time: 7 weeks for women requiring tissue biopsy; 5 weeks for women not requiring tissue biopsy.

Measure: Percentage with resolution within the target time.

Measurement timeframe: 2010-2011

Data source: NB Breast Cancer Screening Service Database.

INDICATOR: **Cervical Cancer Screening - Percentage of Women who had Pap Test**

Definition: Percentage of women aged 20-69 who had Pap test.

Numerator: Number of women aged 20-69 who had Pap test.

Denominator: Total number of eligible women.

Measurement timeframe: 2011

Data Source: New Brunswick Cervical Cancer Prevention and Screening Data Repository; Statistics Canada Population Estimates, March 2012.

INDICATOR: **Cervical Cancer Screening– Self-Reported Papanicolau (Pap) Testing**

Definition: Percentage of women aged 18-69 who self-reported having had at least one Papanicolaou (Pap) smear in the previous 3 years.

Numerator: Number of women aged 18-69 who reported a Pap smear test in the past three years.

Denominator: Total number of female respondents aged 18-69.

Exclusion: Women who had a hysterectomy.

Data Source: Canadian Community Health Survey, New Brunswick data.

Measurement timeframe: 2007

INDICATOR: **HPV Vaccination Program Uptake**

Definition: a) the percentage of females in the target cohort who received at least one dose of the HPV vaccine.

b) the percentage of females in the target cohort who received all three doses of the HPV vaccine.

Numerator: a) Number of females in Grade 7, who received at least one dose of the HPV vaccine; b) Number of females in Grade 7, who received all three doses of the HPV vaccine.

Denominator: Number of females enroled in Grade 7.

Target cohort: females in Grade 7

Data source: NB Office of the Chief Medical Officer of Health

Stratified by Health Regions and by school year (2008/09-2011/12).

Surgery and Pathology

INDICATOR: Percentage of Invasive Cancer Incident Cases who had Surgery

Definition: Percentage of invasive cancer incident cases who had resection surgery.

Numerator: Number of invasive cancer incident cases who had resection surgery.

Denominator: Total number of invasive cancer incident cases.

Measurement timeframe: 2010 year

Data Source: NB Cancer Registry

Exclusions: non-melanoma skin cancers

Stratification: by tumor type; by hospital where the surgery was performed.

INDICATOR: Wait Times for Cancer Surgery

Definition: 1) Percentage of cancer surgeries completed within target of 6 weeks and 3 months, combined.

Numerator: Number of cancer surgeries completed within target of 6 weeks or 3 months.

Denominator: Total number of cancer surgeries completed.

2) Median wait times in days: median waiting time (in days) from the date of booking request received to the date of surgery completed.

Measurement timeframe: 2009-2010 to 2011-2012 fiscal year

Data Source: NB Surgical Access Repository

Note:
- The wait time is measured from the date the booking request is received to the date when the actual procedure is completed.
- In 2008/09 NB had one target only, 6 weeks, for all cancer surgeries. In 2009/2010 another target category of 3 months was created, and surgeons determine whether or not the case needs to be completed within 6 weeks or within 3 months. In 2008/2009 all cancer surgeries were categorized under the 6 week time frame and those wait times are not included in Figure 16.
- Time frames when a patient was not available to have surgery are excluded from calculations.
- Surgical cases done emergently are excluded from calculations.

INDICATOR: Capture of Collaborative Stage Data (breast, colorectal, lung and prostate)

Definition: Percentage of invasive incident cancer cases, top four cancer sites, (breast, colorectal, lung and prostate) staged using collaborative stage method.

Numerator: Number of invasive incident cancer cases, top four cancer sites, (breast, colorectal, lung and prostate) staged using collaborative stage method. Cases with stage category "UNK" (unknown) are included.

Denominator: Total number of invasive incident cancer cases, top four cancer sites (breast, colorectal, lung and prostate).

Measurement timeframe: 2008, 2009, 2010 diagnosis year

Data Source: NB Cancer Registry

INDICATOR: **Removal and Examination of 12 or More Lymph Nodes in Colon Cancer Resections**

Definition: Percentage of colon cancer resections for which 12 or more lymph nodes were examined.

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

Denominator: Total number of colon cancer cases diagnosed during the year and resected within 1 year of diagnosis.

Measurement timeframe: 2008 and 2009 year of diagnosis

Stratification: by Health Regions

Note: Health Region reflect patient's region of residence at diagnosis not where the actual surgery was performed.

Data Source: NB Cancer Registry; NB Discharge Abstract Database

Exclusions: cases with unknown number of nodes removed and examined were excluded.

INDICATOR: **ER/PR Hormon Receptor and HER2 Positivity Status, Breast Cancer**

Definition: Percentage of women newly diagnosed with breast cancer who had ER/PR and HER2 test done and were positive.

1. Numerator: Number of staged, invasive breast cancer cases who were ER/PR tested and were positive.

Denominator: Total number of staged, invasive breast cancer cases.

2. Numerator: Number of staged, invasive breast cancer cases who were HER2 tested and were positive.

Denominator: Total number of staged, invasive breast cancer cases.

Measurement timeframe: 2010 year of diagnosis

Stratification: by Health Regions

Note: Health Region reflect patient's region of residence at diagnosis not where the actual test was performed.

Data Source: NB Cancer Registry

INDICATOR: **Circumferential Resection Margin Status in Rectal/Colon Cancer Surgery**

Definition: Percentage of incident rectal or colon cancer cases who had resection surgery and circumferential resection margin (CRM) involvement.

Numerator: Number of incident rectal or colon cancer cases who had resection surgery and CRM involvement.

Denominator: Total number of incident rectal or colon cancer cases who had resection surgery.

Measurement timeframe: 2010 year of diagnosis

Data Source: NB Cancer Registry

INDICATOR: **Visceral Pleural Invasion, Lung Cancer**

Definition: Percentage of incident non-small cell lung cancer cases with T1/T2 stage who had resection surgery and visceral pleural invasion involvement.

Numerator: Number of incident non-small cell lung cancer cases with T1/T2 stage who had resection surgery and visceral pleural invasion involvement.

Denominator: Total number of non-small cell lung cancer cases with T1/T2 stage who had resection surgery.

Measurement timeframe: 2010 year of diagnosis

Data Source: NB Cancer Registry

INDICATOR: **Surgical Margin Status, Prostate Cancer**

Definition: Percentage of incident prostate cancer cases (pT2 or pT3) who underwent prostatectomy and had positive surgical margin.

Numerator: Number of incident prostate cancer cases (pT2 and pT3) who underwent prostatectomy and had surgical margin involvement.

Denominator: Total number of incident prostate cancer cases (pT2 and pT3) who underwent prostatectomy.

Measurement timeframe: 2010 year of diagnosis

Data Source: NB Cancer Registry

Radiation therapy

INDICATOR: Radiation Therapy Utilization Ratio

Definition: Ratio of the number of all courses of radiation therapy (given to all cancer patients, new or recurrent cases, for any indication, any time during the course of illness) to number of incident cancer cases diagnosed in a year.

Numerator: Number of courses of radiation therapy given to all cancer patients, new or recurrent cases, for any indication, any time during the course of illness.

Denominator: Total number of incident cancer cases diagnosed in a year.

Data Source: Radiation treatement cancer centers; NB Cancer Registry

Measurement timeframe: 2007-2010 calendar year

Exclusions: In-situ and non-melanoma skin cancer cases.

INDICATOR: Linear Accelerator Capacity

Definition: Per capita availability of linear accelerators in New Brunswick.

Numerator: Number of operational linear accelerators in New Brunswick.

Denominator: Total New Brunswick population.

Data Source: Radiation treatement cancer centers; Estimates of Population by Age and Sex for Canada, Provinces and Territories, Statistics Canada at www.statcan.gc.ca

INDICATOR: Linear Accelerator Utilization Rate

Definition: Linear accelerator utilization rate.

Numerator: Number of radiation therapy treatements delivered through linear accelerators.

Denominator: Number of operational linear accelerators in New Brunswick.

Data Source: Radiation treatement cancer centers

Measurement timeframe: 2009 - 2011 calendar year

INDICATOR: Radiation Therapy Wait Times

Definition: Percentage of radiation therapy patients receiving their first treatment within four weeks of being ready to treat.

Numerator: Number of radiation therapy patients who received first treatment within four weeks of being ready to treat.

Denominator: Total number of radiation therapy patients receiving first treatment.

Data Source: NBCN Radiation Treatment Database, radiation treatment cancer centers.

Measurement timeframe: 2007-2012 calendar year

Definition of ready to treat:

the date when any planned delay is over and the patient is ready to begin treatment from both social/ personal and medical perspective.

INDICATOR: IMRT Utilization

Definition: Percentage of external beam radiation therapy courses delivered using IMRT technique, all intent, all cancers.

Numerator: Total number of external beam radiation therapy courses, all intent, all cancers, delivered using IMRT technique.

Denominator: Total number of external beam radiation therapy courses delivered, all intent, all cancers.

Data Source: Radiation treatment cancer centers

Measurement timeframe: 2010 and 2011 calendar year

Systemic therapy

INDICATOR: **Systemic Therapy Wait Times**

Definition: Percentage of inpatients and outpatients receiving first treatment within 7 days of being ready to treat.

Numerator: Total number of inpatients and outpatients receiving first treatment within 7 days of being ready to treat.

Denominator: Total number of inpatients and outpatients receiving first treatment.

Measurement timeframe: 2009 - 2012

Data Source: Information on systemic therapy wait times is submitted directly by facilities which provide first treatment. Information was analyzed by the NBCN and the accuracy of the reported information is dependent on the data submitted by the facilities.

Note: Pilot Project for Monitoring Systemic Therapy Wait Times encompasses adult inpatient and outpatient population only, receiving IV chemotherapy in hospital care settings. There are known issues affecting quality of chemotherapy wait time data such as variations in oncology clinics set-up and resources available to maintain data collection process.

Definition of ready to treat:

the date when any planned delay is over and the patient is ready to start treatment e.g. any planned wait due to patient's personal and/or medical reasons is over.

Palliative and End-of-Life Care

INDICATOR: Place of Death

Definition: The percentage of patients who die of cancer by location of death*: hospital, other health-care facility, private home and other.

Numerator: Number of patients who die of cancer by location of death: hospital, other health-care facility, private home and other.

Denominator: Total number of patients who die of cancer.

Data Source: NB Vital Statistics, Service New Brunswick

Measurement timeframe: 2006-2010

*Location of death as specified on the death certificate.

INDICATOR: Percentage of Patients with Cancer Diagnosis Who were Admitted and Died in the Intensive Care Unit (ICU)

Definition: The percentage of patients with cancer diagnosis who were admitted and died in the intensive care unit (ICU).

Numerator: Number of patients with cancer diagnosis who were admitted and died in the intensive care unit (ICU).

Denominator: Total number of patients who died of cancer.

Data Source: NB Discharge Abstract Database; NB Vital Statistics, Service New Brunswick

Measurement timeframe: 2007/08-2010/11 fiscal year

INDICATOR: Percentage of Patients with Cancer Diagnosis Who were Admitted to Acute Care Hospitals for Palliative Care

Definition: The percentage of patients admitted to NB acute care hospitals with cancer diagnosis (main diagnosis or subsequent diagnosis) for palliative care or for whom palliative care was initiated any time during the admission.

Numerator: Number of patients with cancer diagnosis admitted to NB acute care hospitals for palliative care.

Denominator: Total number of patients with cancer diagnosis admitted to NB acute care hospitals.

Data Source: NB Discharge Abstract Database

Measurement timeframe: 2007/2008-2011/2012 fiscal year

Note: Palliative cancer care discharges for the purpose of this report were identified as patients admitted to NB acute care hospitals with cancer diagnosis (main diagnosis or subsequent diagnosis, ICD - 10 –CA codes C000 to D4890) and for which the intent of admission was palliative care or palliative care was initiated any time during the admission (code Z51.5, CIHI Canadian Coding Standards, Version 2009).

About the Canadian Community Health Survey (CCHS)

Data for prevention indicators and some of the screening indicators are obtained from the Canadian Community Health Survey (CCHS), in cooperation with the Division of Accountability & Health Information Management, NB Department of Health. The CCHS is a cross-sectional survey that occurs every year as of 2007. Prior to 2007 surveys were conducted every two years and data are available for 2001, 2003 and 2005. The target population of the CCHS is all Canadians aged 12 years and older. Responding to the survey is voluntary and data are collected directly from survey respondents. Excluded from the sampling frame are individuals living on First Nations and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions. The CCHS uses set of questions that remain relatively unchanged over several years while additional questions may be optional or change from cycle to cycle. For administrative purposes, each province is divided into health regions. New Brunswick is divided into seven Health Regions as per Regional Health Authorities Act (Chapter R-5.05).[48]

About Performance Measurement Terminology

For the purposes of this report, the NBCN has broadly used the following definitions:

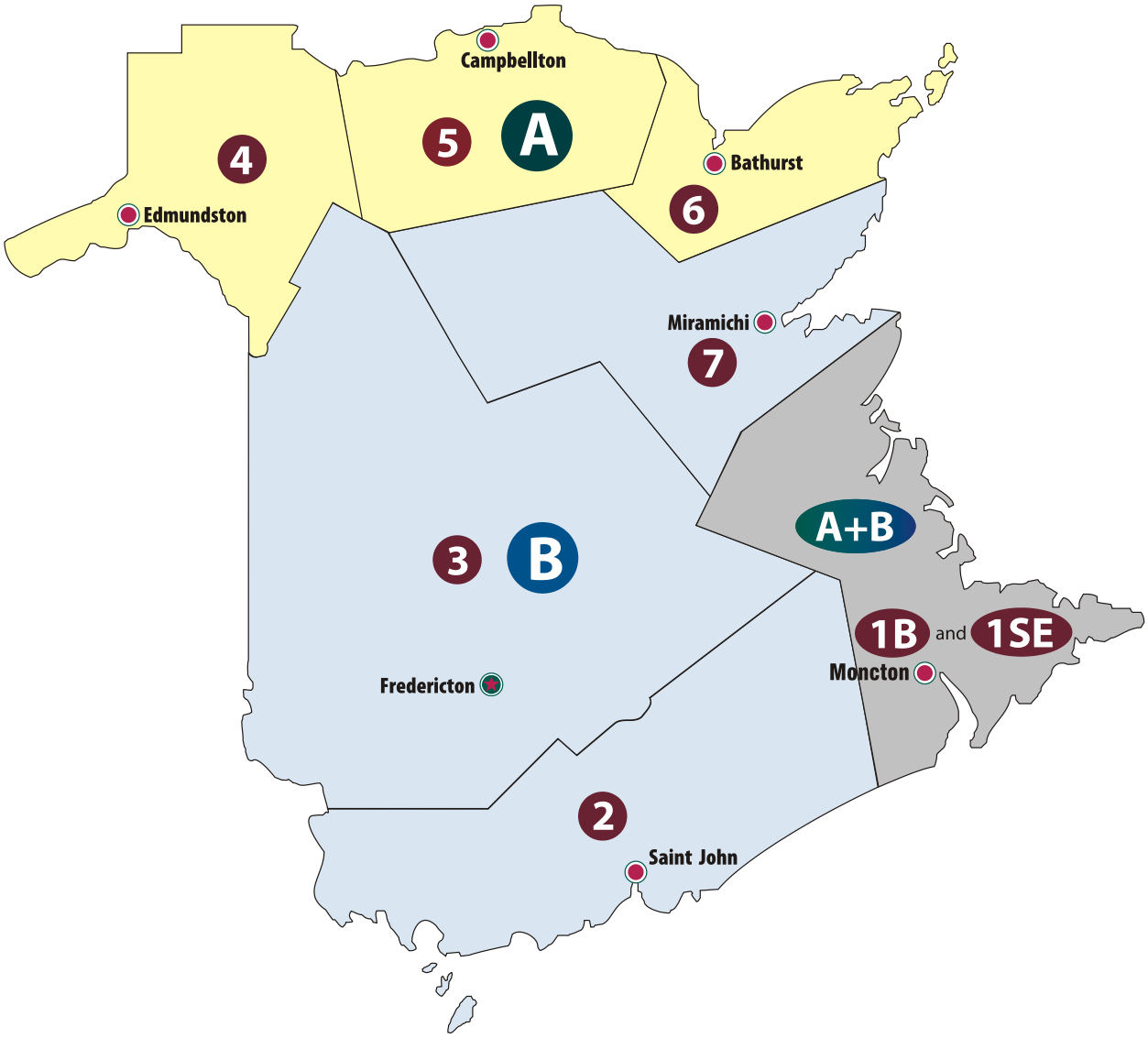
Performance Measurement: use of statistical evidence to assess progress towards goals as defined by the NBCN mandate.

Performance Indicator: a tool to measure how well a system is performing in relation to benchmarks and targets. Comparable indicators have the additional benefit of allowing comparisons across health systems, for example from one province to another. Indicators rely on data collected consistently from one site to another.

Benchmark: an evidence based level of performance considered to be the best. The nature of a benchmark, due to the evidence that supports it, is such that it does not change from one system to another.

Target: represents a goal that a system or organization can set over a period of time to guide work towards the achievement of the benchmark. A target is discretionary and can take the form of a performance goal.

NEW BRUNSWICK HEALTH ZONES



New Nouveau Brunswick

APPENDIX B

CPAC System Performance Initiative - List of publications

Canadian Partnership Against Cancer's (CPAC) Cancer System Performance publications in which NBCN has participated:

1. Canadian Partnership Against Cancer (2009). The System Performance Initiative – A First Year Report. Toronto, Canadian Partnership Against Cancer.

2. Canadian Partnership Against Cancer (2010). The 2010 System Performance Report. Toronto, Canadian Partnership Against Cancer. Canadian Partnership Against Cancer.

3. Canadian Partnership Against Cancer (2011). The 2011 Cancer System Performance Report. Toronto, Canadian Partnership Against Cancer.

4. Canadian Partnership Against Cancer (2012). The 2012 Cancer System Performance Report. Toronto, Canadian Partnership Against Cancer.

5. Canadian Partnership Against Cancer (2012). Breast Cancer Control in Canada: A System Performance Special Focus Report. Toronto, Canadian Partnership Against Cancer.

The Reports are available at http://www.cancerview.ca