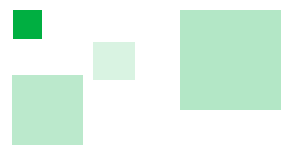


ORGANIZED CANCER SCREENING IN ALBERTA 2015





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For more information please visit www.screeningforlife.ca

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LIST OF ABBREVIATIONS

ABCSP	Alberta Breast Cancer Screening Program
ACCSP	Alberta Cervical Cancer Screening Program
ACRCSP	Alberta Colorectal Cancer Screening Program
AHS	Alberta Health Services
ASIR	Age-standardized incidence rate
ASMR	Age-standardized mortality rate
DBT	Digital breast tomosynthesis
EACS	Enhanced Access to Cancer Screening
FIT	Fecal Immunochemical Test
gFOBT	Guaiac Fecal Occult Blood Test
HPV	Human papillomavirus
PMS	Performance Management Strategy
PHAC	Public Health Agency of Canada
QMF	Quality Management Framework
TOP	Toward Optimized Practice



MESSAGE FROM THE SENIOR MEDICAL OFFICER OF HEALTH

I am pleased to present the first report on Organized Cancer Screening in Alberta providing an overview of the three population-based cancer screening programs coordinated by Alberta Health Services (AHS). AHS is committed to providing a patient-focused, quality healthcare system that is accessible and sustainable for all Albertans. In Alberta, cancer remains the leading cause of mortality and imposes a heavy physical and emotional burden on individuals, families, and communities. The magnitude of cancer in Alberta also impacts the healthcare system as a whole. Alberta's comprehensive cancer plan, entitled *Changing Our Future: Alberta's Cancer Plan to 2030*, provides the blueprint for Alberta's action on cancer over the next decade and beyond. Screening and early detection are a core strategy within the plan and are an important part of Alberta's cancer control system.

Screening Programs, a department within AHS, leads three population-based cancer screening programs in Alberta. These programs include the Alberta Breast Cancer Screening Program (ABCSP), the Alberta Cervical Cancer Screening Program (ACCSP), and the Alberta Colorectal Cancer Screening Program (ACRCSP). In collaboration with multidisciplinary healthcare providers, AHS Screening Programs works to strengthen cancer screening infrastructure and capacity across the province thereby increasing screening participation and reducing the burden of breast, cervical and colorectal cancers.

The three population-based cancer screening programs have distinct histories and are at varying levels of maturity. This report details milestones, successes, and areas of focus for future development and improvement.

I look forward to receiving feedback and comments regarding this first report. It will be very helpful in shaping future reports and strengthening collaboration on cancer screening priorities in Alberta.



Dr. Gerry Predy
Senior Medical Officer of Health
Senior Medical Director
Population, Public and Aboriginal Health



EXECUTIVE SUMMARY

Cancer is a significant cause of morbidity and mortality in Alberta. As part of a comprehensive cancer control system, screening plays an important role in reducing cancer burden. Screening provides an opportunity to detect cancers early when treatment options may be less invasive and more likely to be successful, often improving quality of life and survival. In some cases, screening combined with effective treatment can prevent pre-cancerous cells from developing into cancer.

Evidence indicates that population-based screening programs can significantly reduce the burden of cancer. Screening Programs, a department of Alberta Health Services (AHS), leads three population-based screening programs: the Alberta Breast Cancer Screening Program (ABCSP), the Alberta Cervical Cancer Screening Program (ACCSP) and the Alberta Colorectal Cancer Screening Program (ACRCSP). AHS Screening Programs coordinates program operation and delivery in collaboration with multiple partners across the province. These programs are guided by a quality management framework (QMF), which provides a coordinated and consistent approach to screening business functions to optimize screening program delivery.

Burden of cancers

Generally, incidence rates for breast, cervical and colorectal cancers in Alberta have been stable or have declined in recent years. Similarly, mortality rates in the province have also declined over time for these cancers. Further, survival from breast and colorectal cancers has improved in the province.

The Alberta Breast Cancer Screening Program (ABCSP)

The ABCSP was established in 2004; however, breast cancer screening in Alberta began with Screen Test in 1990. The ABCSP recommends that average-risk women aged 50-74 be screened every two years with mammography. During 2012-2013, screening participation for women aged 50-69 ranged from 48.9% to 64.4% while the provincial screening participation rate was 58.0%. In regards to wait-time, 93.3% of patients aged 50-69 with an abnormal screen result not requiring a tissue biopsy were able to obtain a definitive diagnosis within the target of five weeks in 2012.

The Alberta Cervical Cancer Screening Program (ACCSP)

The ACCSP was introduced in 2000. The program recommends that average-risk women aged 21-69 be screened every three years with the Pap test. The program's screening participation rate during 2011-2013 was 64.2%.

The Alberta Colorectal Cancer Screening Program (ACRCSP)

Established in 2007, the ACRCSP is the youngest of the three programs. The program recommends that average-risk men and women aged 50-74 have colorectal cancer screening (using the Fecal Immunochemical Test) every 1-2 years. During 2008-2012 the utilization rate of fecal testing increased. The overall provincial uptake of fecal testing was 30% during 2012-2014.

AHS is dedicated to ensuring Albertans continue to benefit from organized screening programs with the goal of reducing cancer burden in Alberta.



INTRODUCTION

The burden of cancer is significant. In addition to morbidity and mortality, cancer causes physical, emotional, and financial strain that can impact individuals, their family and friends, and the healthcare system as a whole. Cancer burden is largely attributed to the aging and growing population^(1,2). Lifestyle risk factors, including smoking and physical inactivity, could also contribute to cancer burden^(1,3). A comprehensive cancer control system is integral in reducing the burden of the disease. Comprehensive cancer control is an integrated approach focused on risk reduction, early detection, better treatment, enhanced survival and providing psychosocial support. Screening is defined as the use of tests that can be applied rapidly across defined target groups to identify unrecognized disease or precursors to potential disease^(4,5). Screening plays a principal role in cancer control systems as it enables early detection and permits timely intervention.

Given that Alberta faces an aging population and population growth, projections indicate that there will be an increased number of cancer cases in the coming years. Organized cancer screening programs play a vital role within a comprehensive cancer controls system to reduce cancer burden. Early detection of cancer through screening offers many benefits to those at risk of developing cancer including the opportunity to receive timely treatment and to increase the likelihood of treatment success⁽⁴⁾. Evidence shows that screening programs for breast, cervical and colorectal cancers can be successful in reducing morbidity and mortality⁽⁶⁻⁸⁾. Organized screening programs can be an effective strategy to encourage population-wide participation, which is essential to maximize the benefits of screening.

Screening Programs, a department of Alberta Health Services (AHS), currently provides leadership for three organized population-based cancer screening programs in Alberta. These programs include the Alberta Breast Cancer Screening Program (ABCSP), the Alberta Cervical Cancer Screening Program (ACCSP), and the Alberta Colorectal Cancer Screening Program (ACRCSP). The ABCSP, the ACCSP, and the ACRCSP are evidence-based organized programs that conduct screening of average-risk individuals in Alberta. AHS Screening Programs coordinates program operation and delivery in collaboration with multiple partners across the province.

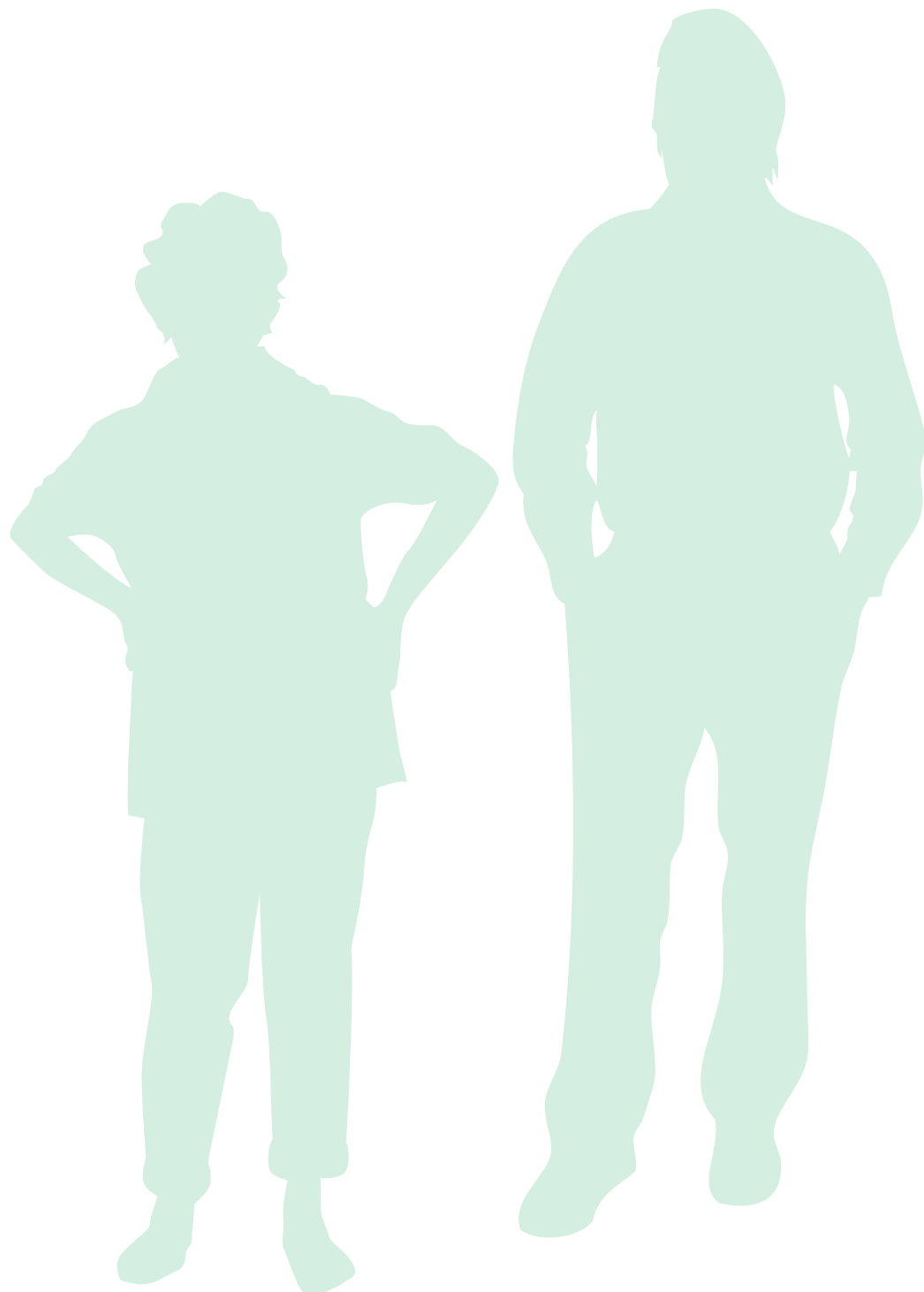
The purpose of this report is to provide an overview of each of the aforementioned organized cancer screening programs, of which each are at various stages of maturity. Divided into four main sections, this report provides an overview of the basic functions and activities (see *Cancer Screening Programs in Alberta Health Services*) and discusses the burden of breast, cervical and colorectal cancers in Alberta, highlighting the evolution, performance, and future directions of each.

This report is a preliminary step towards comprehensive program reporting for AHS's cancer screening programs.





CANCER SCREENING PROGRAMS IN ALBERTA HEALTH SERVICES





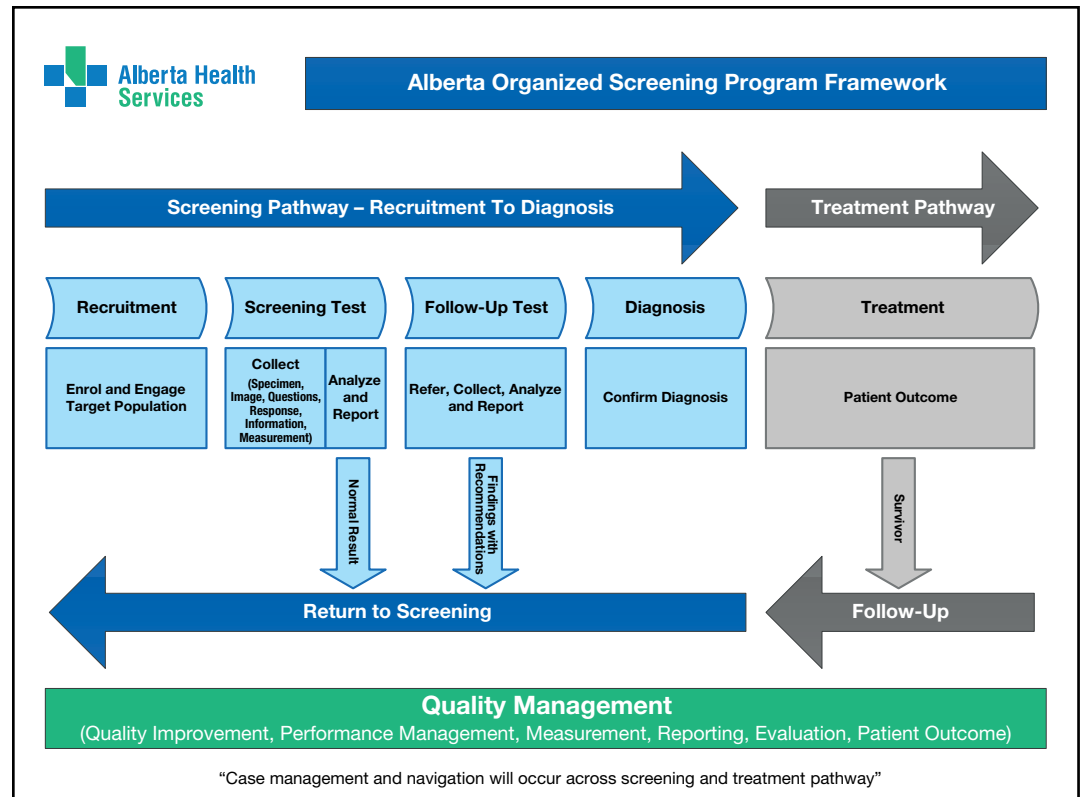
CANCER SCREENING PROGRAMS IN ALBERTA HEALTH SERVICES


The overarching goal of AHS Screening Programs is to prevent and detect cancer or conditions early to improve treatment outcomes. AHS Screening Programs uses an evidence-based, systematic strategy to maximize its reach to individuals in defined target populations. In addition, cancer screening programs uses the most effective technology to facilitate efficient program delivery. Consistent with organized population-based screening⁽⁹⁾, the core functions of AHS Screening Programs are to

- identify Albertans eligible to participate
- generate written correspondence to eligible Albertans including invitations, results, follow-up reminders, and screening reminders to maximize participation and retention
- promote the three organized cancer screening programs in Alberta
- provide education to support participants, professionals and community stakeholders
- assist in follow up of Albertans requiring further medical intervention as recommended
- provide quality improvement and quality assurance
- conduct program evaluations and reporting

The core functions of AHS Screening Programs are achieved through a series of organized and integrated processes along a defined screening pathway which consists of four key elements: recruitment, screening test, follow-up test, and diagnosis. The three cancer screening programs in AHS are guided by a common provincial program framework (Figure 1).

Figure 1 | The Alberta Organized Screening Program Framework





As part of its core functions, AHS Screening Programs continuously strives to ensure Albertans have access to cancer screening information and services through a variety of mechanisms. The program website, *screeningforlife.ca*, serves as a unified, online platform for screening information for both clients and healthcare providers. This website provides an interactive environment through which facts about breast, cervical and colorectal cancers are provided, the importance of screening demonstrated, and informed decision making about screening facilitated. By entering their age and sex, Albertans can also determine their general screening recommendations. Additionally, service locations for Pap tests and mammography are presented on the website via an interactive map. For healthcare professionals, the website facilitates access to a number of resources including clinical guidelines and health promotion research. The resources are intended to aid healthcare professionals in engaging their patients in cancer screening.

Program clients, healthcare providers, and the general public can also contact a dedicated toll free phone line (1-866-727-3926) for information about cancer screening in Alberta. Additionally, AHS Screening Programs further engages Albertans through direct marketing campaigns that raise awareness of cancer screening and promote discussion between individuals and their healthcare providers.

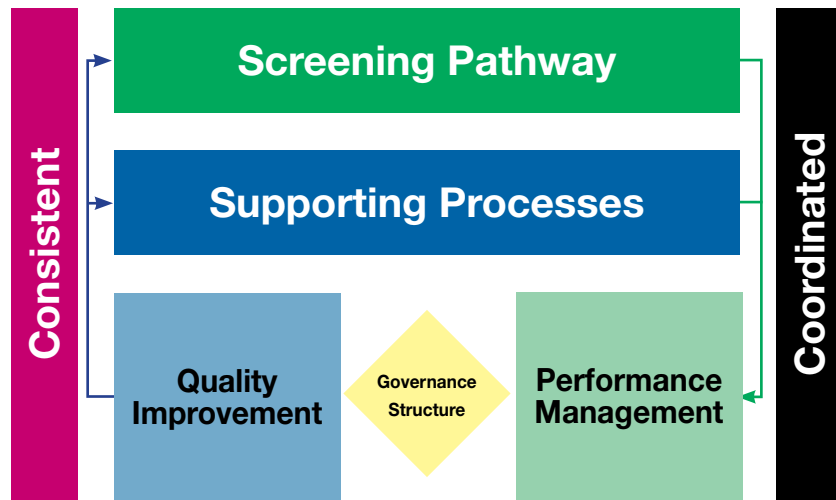
A core function of organized cancer screening programs that is integral for program success is client participation and retention. AHS Screening Programs continually strives to enroll and engage its target populations across the entire screening pathway from recruitment to diagnosis. As part of this effort, AHS Screening Programs is exploring the integration of screening service delivery as a way to increase access for rural and remote communities. The Enhanced Access to Cancer Screening (EACS) initiative is developing a framework that will provide direction in these communities to integrate breast, cervical, and colorectal cancer screening services in a sustainable manner. This initiative brings together federal, provincial, zone, and community partners and is funded by the Public Health Agency of Canada (PHAC).

Quality management

Quality assurance mechanisms are embedded throughout the organized screening program pathway to maximize screening benefits and minimize potential risks. Further, the screening pathway, its processes, and program activities are part of a quality management framework (QMF) used to understand the overall system and coordination of the work that is undertaken.

Figure 2 presents the QMF and details the function of each component. The framework provides a coordinated and consistent approach to screening business functions within each program to optimize screening program delivery.

Figure 2 | Alberta Health Services Screening Programs Quality Management Framework



Screening Pathway	<ul style="list-style-type: none"> ■ The process of screening from recruitment to diagnosis that ensures the right services and processes are provided at the right time from the right healthcare professionals and partners.
Supporting Processes	<ul style="list-style-type: none"> ■ Effective infrastructure and resources required to support the entire screening pathway, screening services, and the people who provide them.
Performance Management	<ul style="list-style-type: none"> ■ Strategic use of performance measures, progress reports, evaluations, and ongoing quality improvement efforts along the screening pathway to ensure intended results are achieved.
Quality Improvement	<ul style="list-style-type: none"> ■ Continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, and outcomes of screening programs.
Governance Structure	<ul style="list-style-type: none"> ■ Governing processes that ensure alignment and enable effective and efficient flow of quality improvement and performance management information to and from key stakeholders.



Screening programs performance

Within the QMF, performance management, quality improvement and evaluation contribute to the continuous development of each program. Performance measurement in AHS Screening Programs focuses on key elements of the screening pathway. Generally, selection of program performance indicators for each of the three cancer screening programs is guided by quality determinants of organized screening programs. These are identified at the national level and also reflect program specific characteristics. Program indicators that measure the performance of the key elements of the Alberta screening pathway (Figure 1) may include:

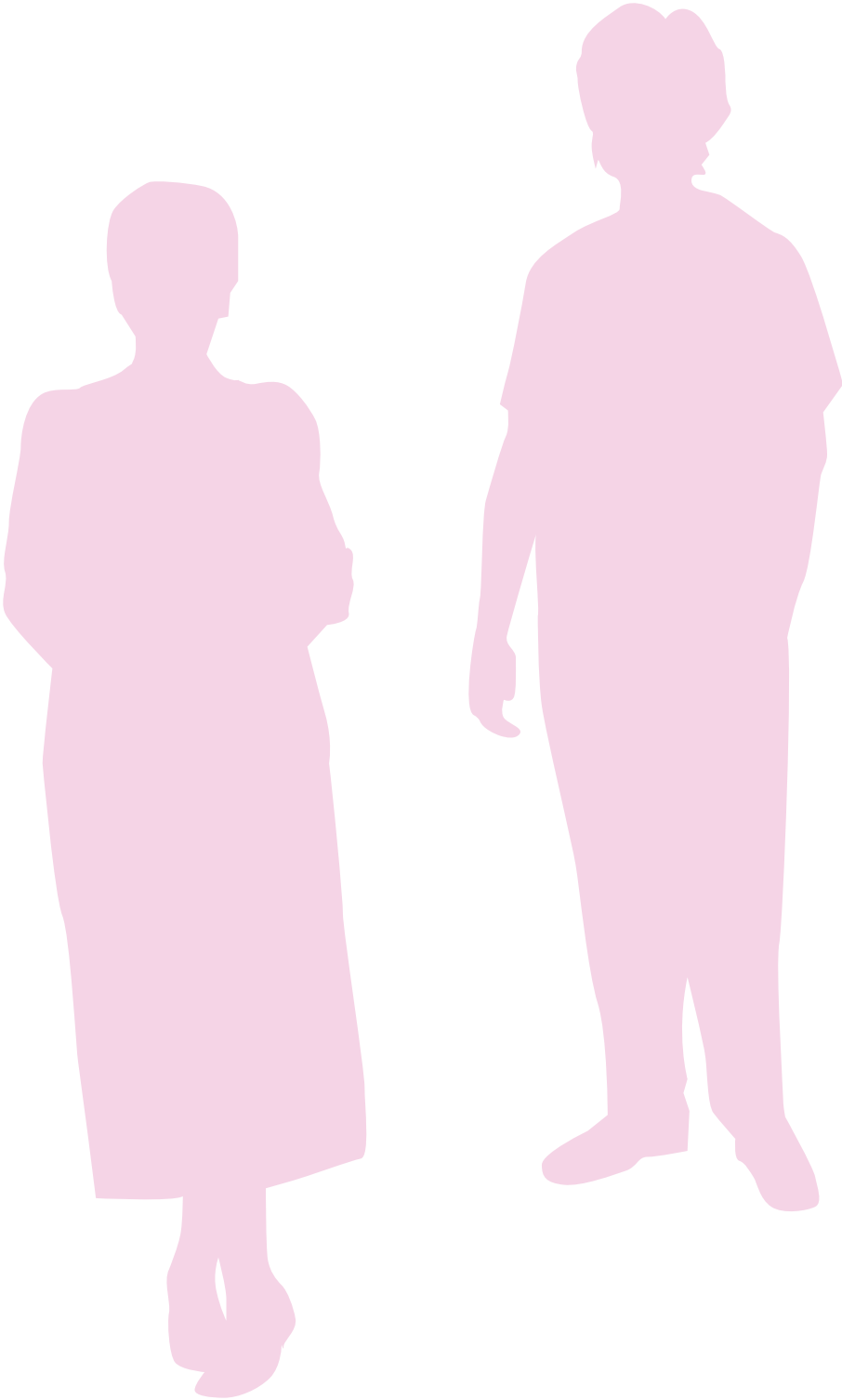
- **Recruitment**
 - Participation
 - Retention
- **Screening test**
 - Specimen adequacy
 - Positivity rate
- **Follow-up test**
 - Time to follow-up test
- **Diagnosis**
 - Wait-time to definitive diagnosis

The development of performance measures and the ability to report on them varies by the stage of maturity of each program. Program specific indicators for Alberta's breast, cervical, and colorectal cancer screening programs are discussed in the individual program sections.

Incidence and mortality are indicators that are monitored nationally and provincially for breast, cervical and colorectal cancers. AHS Screening Programs is not solely responsible for these indicators as they are impacted by a variety of factors including prevention, screening, diagnosis, and treatment. In this report, incidence, mortality, and survival are discussed in the individual program sections to create a profile of breast, cervical and colorectal cancer burden in Alberta.



BREAST CANCER SCREENING IN ALBERTA





BREAST CANCER SCREENING IN ALBERTA

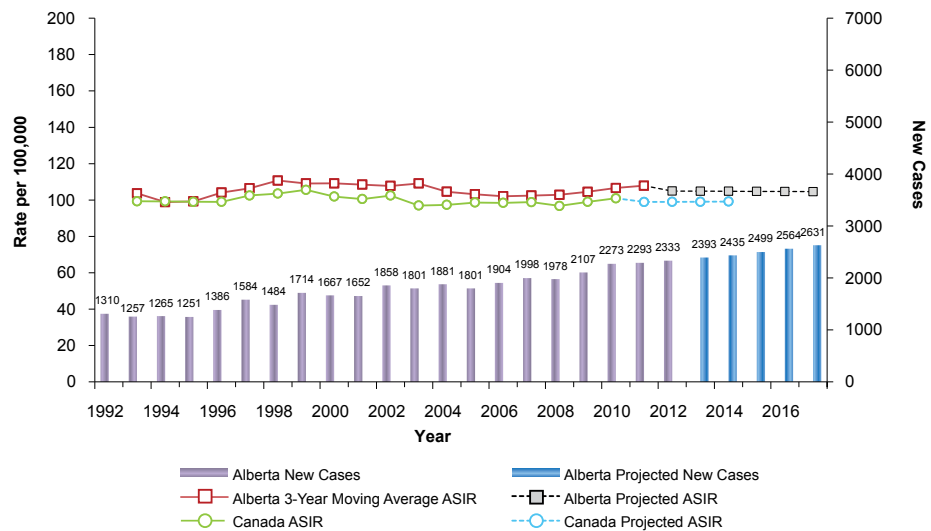
Burden of breast cancer

Incidence

Breast cancer is the most common cancer among women in Canada⁽¹⁰⁾. In Alberta, approximately 1 in 8 women will develop invasive breast cancer within their lifetime⁽¹¹⁾.

In 2012, there were 2333 new cases of breast cancer diagnosed among women in Alberta (Figure 3). On average, six Albertan women a day were diagnosed with breast cancer. Since 1992, the age-standardized incidence rates (ASIRs)^(†) in Alberta have been stable and the provincial rates have generally been higher than ASIRs in Canada. It is estimated that in 2017 approximately 2631 cases of breast cancer will be diagnosed.

Figure 3 | Actual and projected number of new cases and age-standardized incidence rates (ASIRs)^{*†} for breast cancer, females, Alberta, 1992-2017



* Three-year moving average

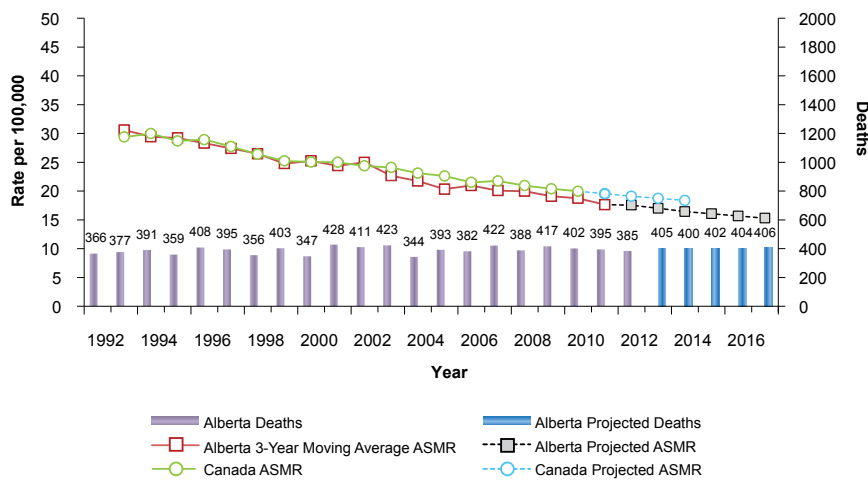
† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: 2012 Report on Cancer Statistics in Alberta. Edmonton: CancerControl Alberta, Alberta Health Services, 2015.

Mortality

In 2012, there were 385 deaths directly attributable to breast cancer in Alberta (Figure 4); on average, one woman a day died from breast cancer. The age-standardized mortality rate (ASMR)ⁱⁱ has declined in Alberta from 1992 to 2012 and a comparable trend occurred nationally over the same period. Since 2002, Alberta has had a lower ASMR compared to Canada. In 2017, it is estimated that there will be approximately 406 deaths from breast cancer in Alberta.

Figure 4 | Actual and projected number of deaths and age-standardized mortality rates (ASMRs)^{*†} for breast cancer, females, Alberta, 1992-2017



* Three-year moving average

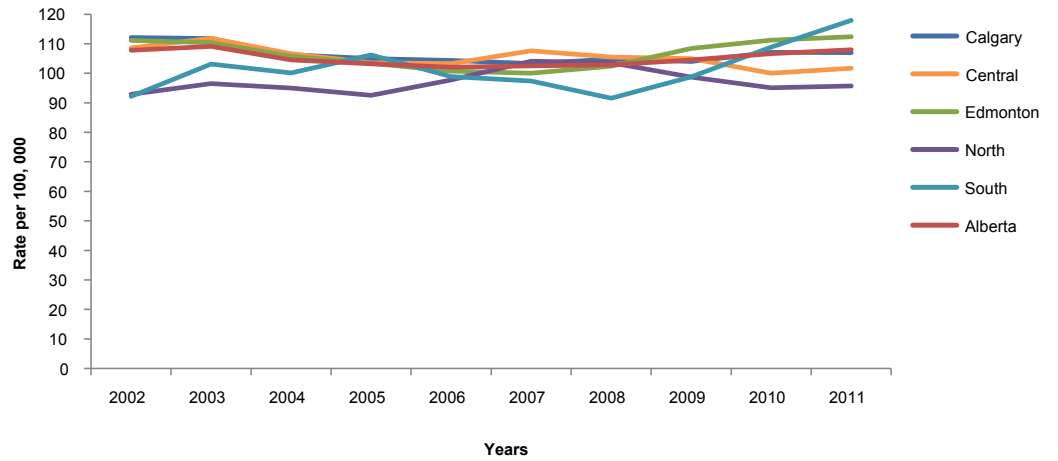
† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: 2012 Report on Cancer Statistics in Alberta. Edmonton: CancerControl Alberta, Alberta Health Services, 2015.

Geographic variation

During 2002-2011, ASIRs (Figure 5) and ASMRs (Figure 6) for breast cancer varied across the province. In 2011, the ASIRs ranged from approximately 96 to 118 per 100,000 across the five AHS zones. The provincial rate in 2011 was approximately 108 per 100,000. The ASMRs in 2011 ranged from approximately 15 to 22 per 100,000 across the AHS zones while the provincial rate was approximately 18 per 100,000. Observed variation may be due to many factors including exposure to risk factors, participation in cancer screening, and access to treatment⁽¹¹⁾. According to the 2012 Report on Cancer Statistics in Alberta⁽¹¹⁾ the variation of breast cancer ASIRs and ASMRs across the AHS zones are not statistically significant.

Figure 5 | Age-standardized incidence rates (ASIRs)**† for breast cancer, females, by AHS zone, Alberta, 2002-2012

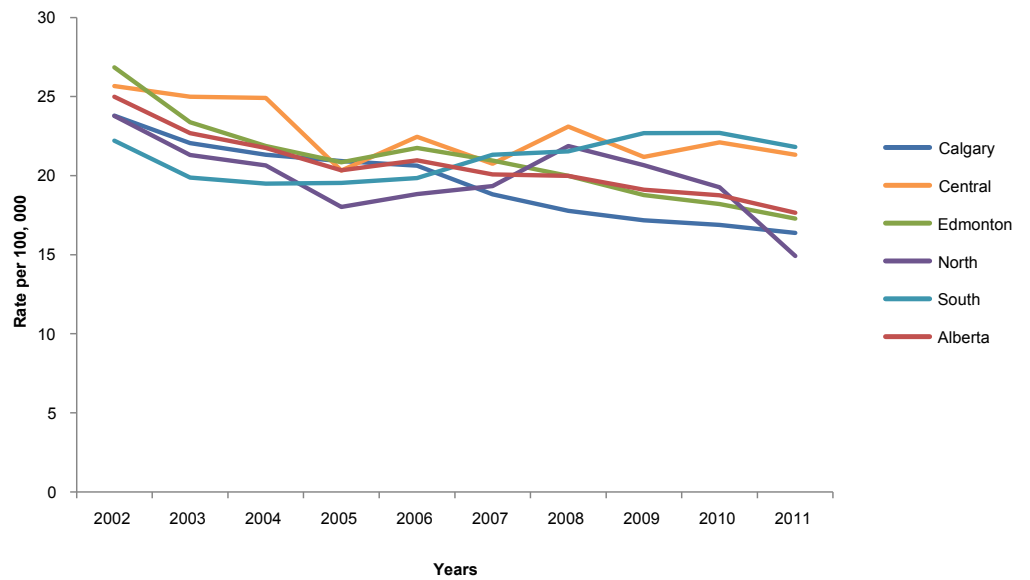


* Three-year moving average

† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: Information Request #2014-172. Edmonton: CancerControl Alberta, Alberta Health Services, 2014

Figure 6 | Age-standardized mortality rates (ASMRs)**† for breast cancer, females, by AHS zone, Alberta, 2002-2012



* Three-year moving average

† Standardized to 1991 Canadian population

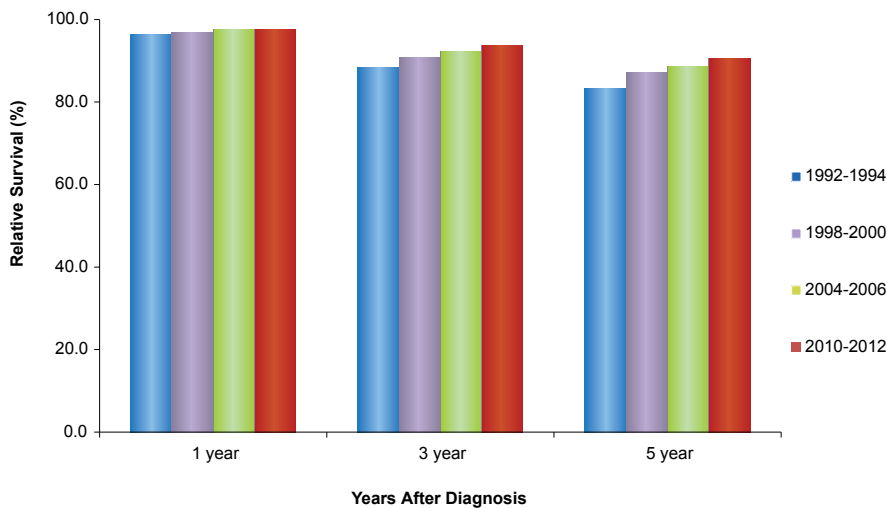
Source: Surveillance & Reporting: Information Request #2014-172. Edmonton: CancerControl Alberta, Alberta Health Services, 2014

Breast cancer survival

Cancer survival ratios indicate the proportion of people who will be alive at a given time after they have been diagnosed⁽¹¹⁾. Relative survival ratiosⁱⁱⁱ provide a general expectation of survival across the province⁽¹¹⁾. However, individual survival depends on a number of factors including gender, stage of cancer at diagnosis, aggressiveness of the tumor, availability and quality of screening, as well as diagnostic and treatment services⁽¹¹⁾.

Figure 7 shows the one, three and five year relative survival ratios for women with breast cancer in Alberta at four time intervals spanning 1992-2012. The one-year relative survival ratio for women in Alberta has been consistent since 1992 while the three and five year ratios have steadily increased. The five-year relative survival ratio for women in Alberta diagnosed with breast cancer during 2010-2012 was 90%.

Figure 7 | Age-standardized one, three and five-year relative survival ratios for breast cancer, females, Alberta 1992-1994[^], 1998-2000[^], 2004-2006[^] and 2010-2012^{*}



[^] Ratios calculated by cohort method, where complete follow-up data are available.

^{*} Ratios calculated by period method, where complete follow-up data are not available.

Source: Surveillance & Reporting: 2012 Report on Cancer Statistics in Alberta. Edmonton: CancerControl Alberta, Alberta Health Services, 2015.



Factors associated with breast cancer

Age and gender are two of the most important risk factors for breast cancer and are used to establish target populations in organized screening. In Canada, 82% of breast cancers occur in women 50 years and older⁽²⁾. However, there are many other factors associated with breast cancer including family history of the disease, genetics, past medical history, dense breast tissue, as well as lifestyle behaviours (e.g., smoking and physical inactivity)⁽¹²⁾. The prevalence of risk factors in a population largely contributes to cancer burden; early detection through organized screening combined with effective treatment can reduce mortality among individuals who may be at risk for developing the disease^(13,14).

Evidence for organized breast cancer screening programs

Organized breast cancer screening programs encourage asymptomatic women to screen for breast tumours and ensure women with abnormal screening results navigate through the screening pathway in a timely manner. Substantial evidence has shown that breast cancer screening programs can reduce deaths^(13,15).

Mammography continues to be the recommended method for breast cancer screening⁽¹⁶⁾. According to an international systematic review conducted by the Canadian Task Force on Preventative Healthcare⁽¹⁶⁾ regular screening reduces the relative risk of dying from breast cancer by

- 15% in women aged 40-49
- 21% in women aged 50-69
- 32% in women aged 70-74

Organized breast screening is effective because early detection of breast cancer through regular screening contributes to better chances of successful treatment, more treatment options and ultimately better survival rates.

Benefits and risks of breast cancer screening

Screening for breast cancer through mammography has contributed to a decline in breast cancer mortality rates⁽⁶⁾. However, as with many medical tests there are risks associated with this screening modality.

False-positive and false-negative test results are two risks of breast cancer screening. False-positives may result in women undergoing unnecessary follow-up tests, which may cause increased anxiety and stress, and may lead to over-diagnosis. Conversely, false-negatives may delay diagnosis and treatment initiation which could potentially reduce treatment options and survival. However, current evidence suggests the benefits outweigh the risks associated with breast cancer screening.

Screening recommendations

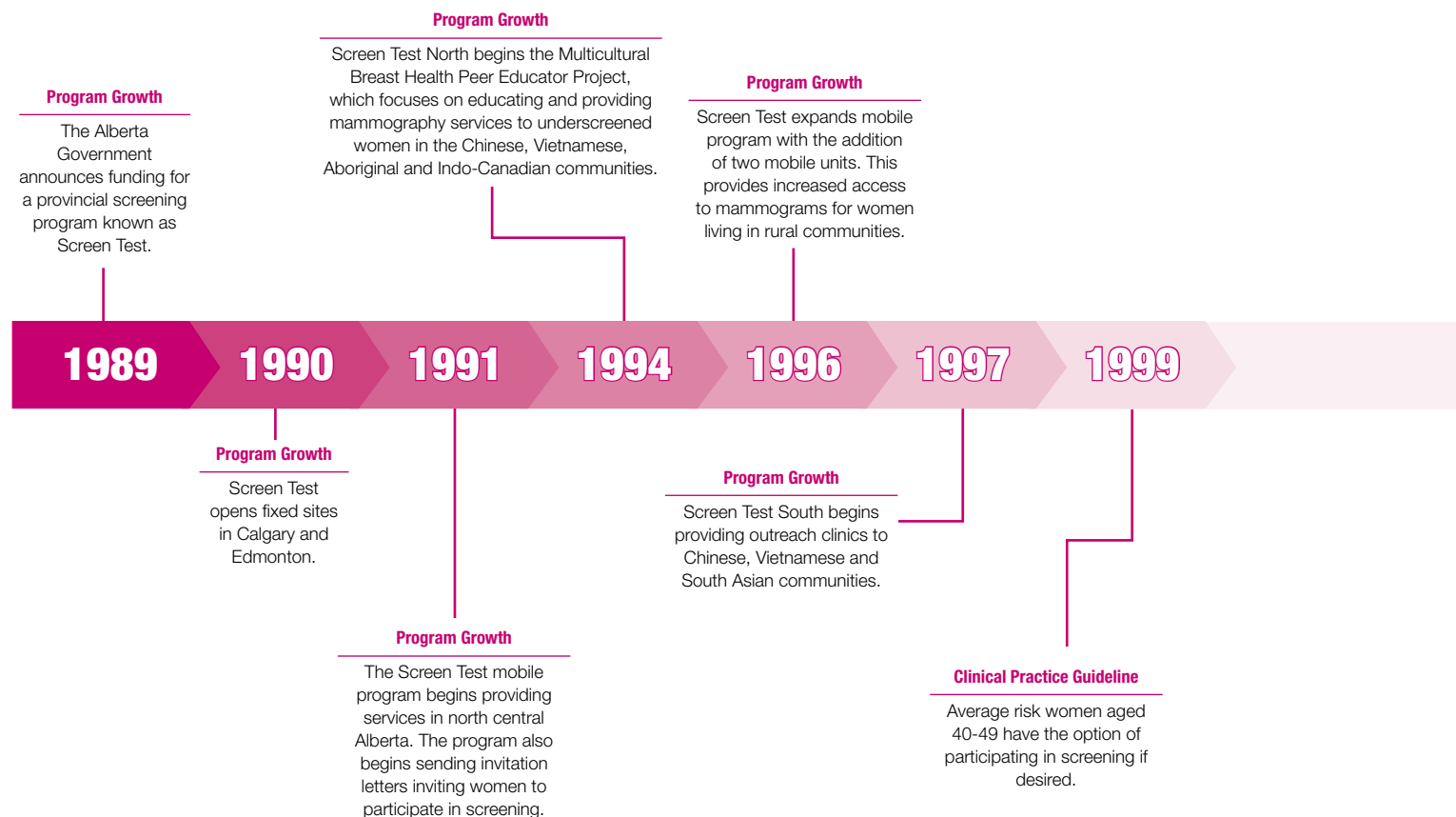
The current ABCSP screening recommendations are based on the most recent Toward Optimized Practice (TOP) breast cancer screening clinical practice guideline⁽¹⁷⁾. Breast cancer screening recommendations in Alberta for average-risk women are⁽¹⁷⁾

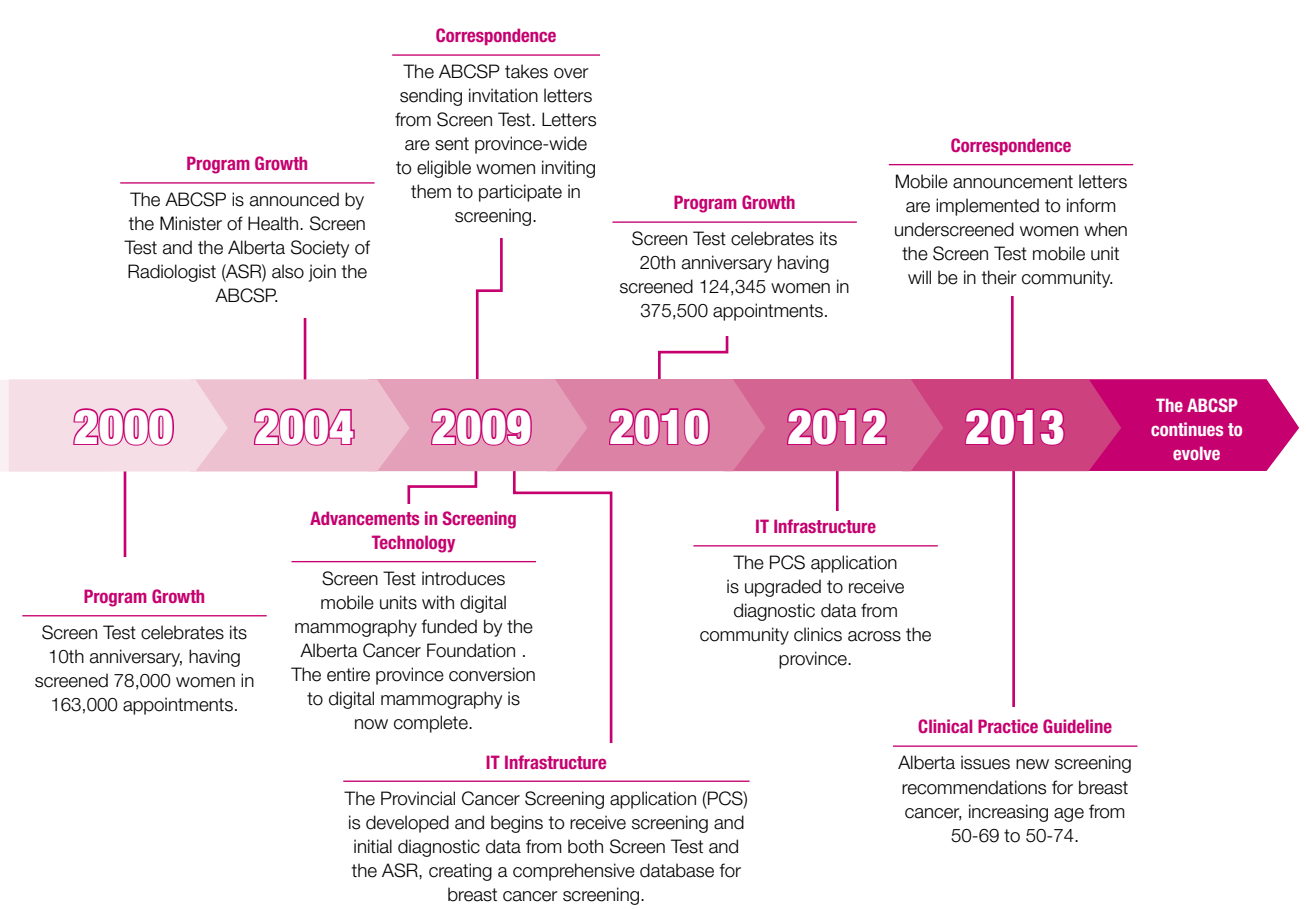
- 40-49 years: Routine screening is not recommended, but a woman's preference is considered. If choosing to be screened, the optimal interval is considered to be one year. A physician referral is required for the first screening for a woman in this age category.
- 50-74 years: Screening is recommended at two year intervals. No referral is required.
- 75 years or older: Consider individual health factors and woman's preference to continue screening. If choosing to be screened, the recommended interval is every two years.

The Alberta Breast Cancer Screening Program

Population-based breast cancer screening in Alberta originated with Screen Test in 1990 by offering mobile mammography services, and later invitation letters, to women across the province. Screen Test joined the ABCSP in 2004 along with the Alberta Society of Radiologists (ASR), representing community mammography clinics throughout the province to create a comprehensive breast screening program for Albertans. One of the goals of the ABCSP is to have 70% of the target population screened every two years. Since its establishment 11 years ago, the ABCSP has achieved many milestones as illustrated in Figure 8.

Figure 8 | The Alberta Breast Cancer Screening Program Milestones





Program performance

Program performance is focused on measuring key elements of the screening pathway (Figure 1). The performance indicators reported for the ABCSP in this report are screening participation and wait-time.

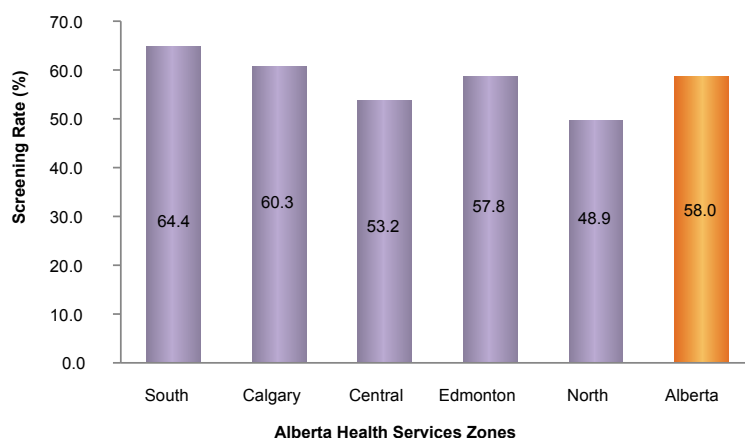
A high level of participation in breast cancer screening is necessary to reduce mortality⁽⁶⁾. Screening participation reflects the utilization of mammography by the intended target population. The Alberta target for breast cancer screening participation is 70%.

Wait-time is also an important indicator of performance. Timely follow-up after screening services demonstrates the efficiency and capacity of the screening pathway. As such, both participation and wait-time are reported as key determinants of program performance. The Appendix provides a detailed methodology of these indicators.

Screening participation

The breast cancer screening participation rate is the percentage of eligible women who have not had breast cancer and who received at least one screening mammogram within a twenty-four month calendar period. In 2014, the ABCSP extended the target age range to include women aged 70-74 to reflect changes to the TOP clinical practice guideline. To allow for pan-Canadian comparison, Figure 9 shows the participation rate for women aged 50-69 during 2012-2013. The participation rate across AHS zones for women aged 50-69 ranged from 48.9% to 64.4% while the provincial screening participation rate was 58.0%. During 2009-2011, the national programmatic participation rate for breast cancer screening was 49.3%¹. The ABCSP is committed to achieving the provincial participation target and will continue to collaborate with AHS zone leaders, healthcare providers, and stakeholders to increase participation rate.

Figure 9 | The percentage of Albertan women, aged 50-69, who received a screening mammogram within a 24 month calendar period, by AHS zone, 2012-2013



¹ Most recent data available. Programmatic participation rate in Canada (excludes Nunavut and Yukon), 30 months, 2009-2011, women aged 50-69, reported by Canadian Partnership Against Cancer, 2015 in *Cancer screening in Canada: An overview of screening participation for breast, cervical and colorectal cancer*

Wait-time

The wait-time indicator refers to the number of weeks it takes for a woman with an abnormal breast cancer screening result to obtain a definitive diagnosis within a six month period. The point of definitive diagnosis is the date of tissue biopsy or, in the case of no tissue biopsy, the date of resolution. In 2012, Alberta was within the national target for patients receiving a definitive diagnosis after an abnormal breast cancer screening result not requiring a tissue biopsy. However, Alberta was below the national target for patients who required a tissue biopsy (Table 1).

Table 1 | National wait-time targets and the 2012 Alberta wait-time results for breast cancer screening follow up for women aged 50-69

National targets ⁽¹³⁾	National average ⁽¹³⁾	Alberta wait-time results <i>Proportion within target</i>
≥90% of abnormal screens will be resolved within 5 weeks if no tissue biopsy is required	76.3%	93.3%
≥90% within 7 weeks if a tissue biopsy is required during diagnostic follow up	47.7%	80.3%

Future program directions

Coordinated approach to breast cancer screening

Currently, the ABCSP is tailored to the screening needs of the average-risk population while specialized clinics address the screening needs of the high-risk population. Qualities that might determine high or elevated risk include biological or genetic markers or family history. The ABCSP has identified opportunities to unify screening across risk levels to provide an integrated, coordinated and seamless approach to breast cancer screening in Alberta.

Support for informed decision making for breast cancer screening

The ABCSP is investigating strategies to support informed decision making about breast cancer screening. As partners in the healthcare paradigm, the ABCSP uses a client-centered approach to enable clients to make informed decisions. Client education through evidence-based communication with physicians and development of decision aide tools are examples of these strategies.

New technologies on the horizon: Digital Breast Tomosynthesis

Digital breast tomosynthesis (DBT), also known as 3D mammography, is an emerging new technology showing promise in identification of tumours in clients with dense breast tissues. According to a recent study⁽¹⁶⁾, DBT has the potential benefit of improving screening sensitivity, improving lesion size detection, and decreasing abnormal call rates. The ABCSP is attuned to this emerging evidence and will continue to watch for new opportunities to improve breast cancer screening for Albertans.





CERVICAL CANCER SCREENING IN ALBERTA





CERVICAL CANCER SCREENING IN ALBERTA

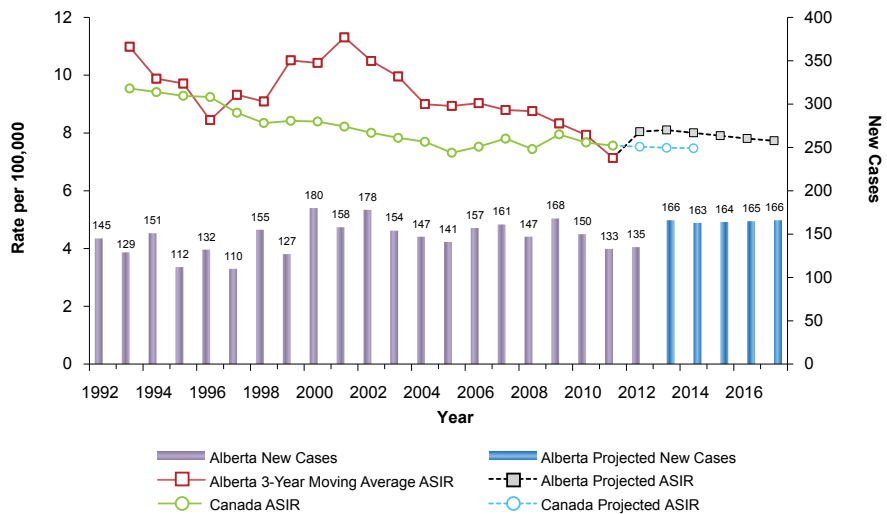
Burden of cervical cancer

Incidence

In Alberta, cervical cancer incidence peaks at age 40 then slowly declines⁽¹⁹⁾. It is estimated that 1 in 123 women in Alberta will develop cervical cancer in their lifetime⁽¹⁹⁾.

In general, the age-standardized incidence rate (ASIR) in Alberta is higher than the ASIR in Canada (Figure 10). However, there has been a decreasing trend in ASIRs in the province since 2002. In 2012, there were 135 new cases of cervical cancer diagnosed among Albertan women. By 2017, it is estimated there will be 166 new cervical cancer cases diagnosed in Alberta. Given the recent initiatives to implement a provincial Human Papillomavirus (HPV) vaccination program, future cohorts of women may be at lower risk of developing cervical cancer, which may reduce cervical cancer incidence in the projection years.

Figure 10 | Actual and projected number of new cases and age-standardized incidence rates (ASIRs) for cervical cancer, females, Alberta, 1992-2017**



* Three-year moving average

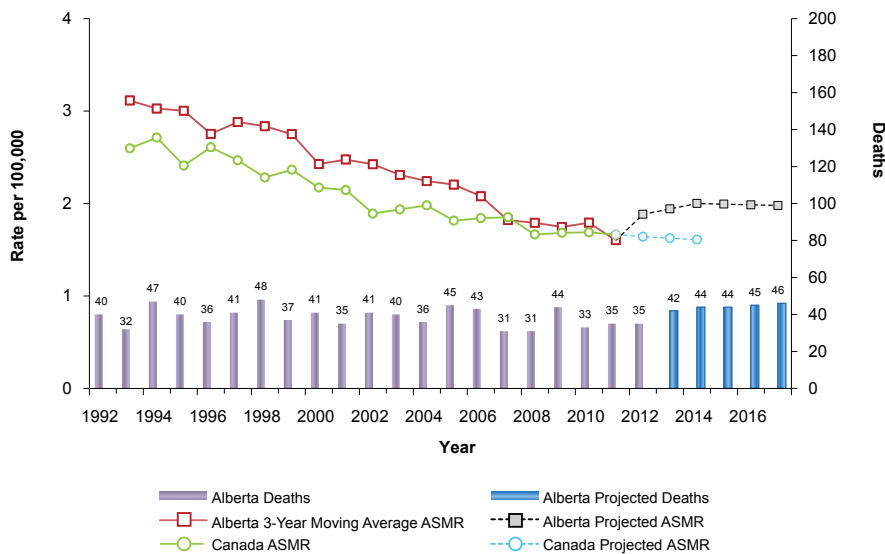
† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: Information Request #2014-172. Edmonton: CancerControl Alberta, Alberta Health Services, 2014

Mortality

In general, the age-standardized mortality rate (ASMR)[†] in Alberta is higher than the ASMR in Canada; however, the rates have declined over time (Figure 11). In 2012, there were 35 deaths from cervical cancer in Alberta. It is estimated there will be 46 deaths from cervical cancer in 2017.

Figure 11 | Actual and projected number of deaths and age-standardized mortality rates (ASMRs)*[†] for cervical cancer, females, Alberta, 1992-2017



* Three-year moving average

† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: Information Request #2014-172. Edmonton: CancerControl Alberta, Alberta Health Services, 2014

Geographic variation

During 2002-2011, ASIRs and ASMRs for cervical cancer across the five AHS zones varied from the provincial average. In 2011, ASIRs ranged from approximately 6 to 10 per 100,000 women⁽²⁰⁾, while the provincial ASIR was approximately 7 per 100,000⁽²⁰⁾. In the same year, the ASMRs ranged from approximately 1.5 to 2.0 per 100,000 women⁽²⁰⁾, across AHS zones, while the provincial rate was 1.6 per 100,000 women⁽²⁰⁾.



Factors associated with cervical cancer

The most important risk factor for developing cervical cancer is genital HPV infection. Two strains of HPV have been linked to 70% of cervical cancer cases⁽²¹⁾. HPV is prevalent among both males and females who are sexually active, which makes it difficult to avoid infection over the course of a lifetime. The vast majority of women who have ever been sexually active are susceptible to contracting HPV. Factors associated with a woman's risk of contracting HPV includes the number of sexual partners, age at which sexual intercourse is initiated, and the likelihood that their partner has HPV⁽²²⁾. Women with suppressed immune systems are also at increased risk of HPV. Many HPV infections are cleared by the immune system. However, for women who experience persistent infections it can take up to 24 months to develop precancerous conditions and 8-12 years to develop invasive cervical cancer⁽²¹⁾. For those at risk of developing cervical cancer, screening combined with treatment is an effective approach to identify precancerous conditions early and to reduce the incidence of the disease⁽²¹⁾.

Evidence for organized cervical cancer screening programs

Organized cervical cancer screening programs have been established in many countries and have shown to reduce cervical cancer incidence and mortality^(8,23-29). To optimize the detection of precancerous lesions, and further reduce cancer burden, organized cervical cancer screening has been recommended across Canada⁽³⁰⁾. The preferred modality for cervical cancer screening is the Papanicolaou (Pap) test. Widespread Pap test screening in Alberta over the past 40 years has resulted in a substantial reduction in cervical cancer mortality⁽²²⁾. Screening with Pap tests is an effective approach to identify and treat precancerous cells which can yield increased likelihood of survival and improved outcomes⁽²¹⁾.

Benefits and risks of cervical cancer screening

The reduction in cervical cancer incidence and mortality due to organized cervical cancer screening is well documented. However, as with many medical tests, there are potential risks associated with Pap testing.

The Pap test can yield false-positive results that can lead to unnecessary diagnostic procedures such as colposcopy, which has separate risks. Further, false-positive results can cause needless anxiety and stress for clients. Conversely, false-negative test results can lead to missed or delayed detection of precancerous conditions, or, delay the diagnosis of cancer. Despite these risks, evidence supports the notion that screening benefits outweigh the risks.



Screening recommendations

The ACCSP screening recommendations are based on the provincial guideline, released by Toward Optimized Practice (TOP) in November 2011⁽²²⁾. Cervical cancer screening recommendations for average-risk population are

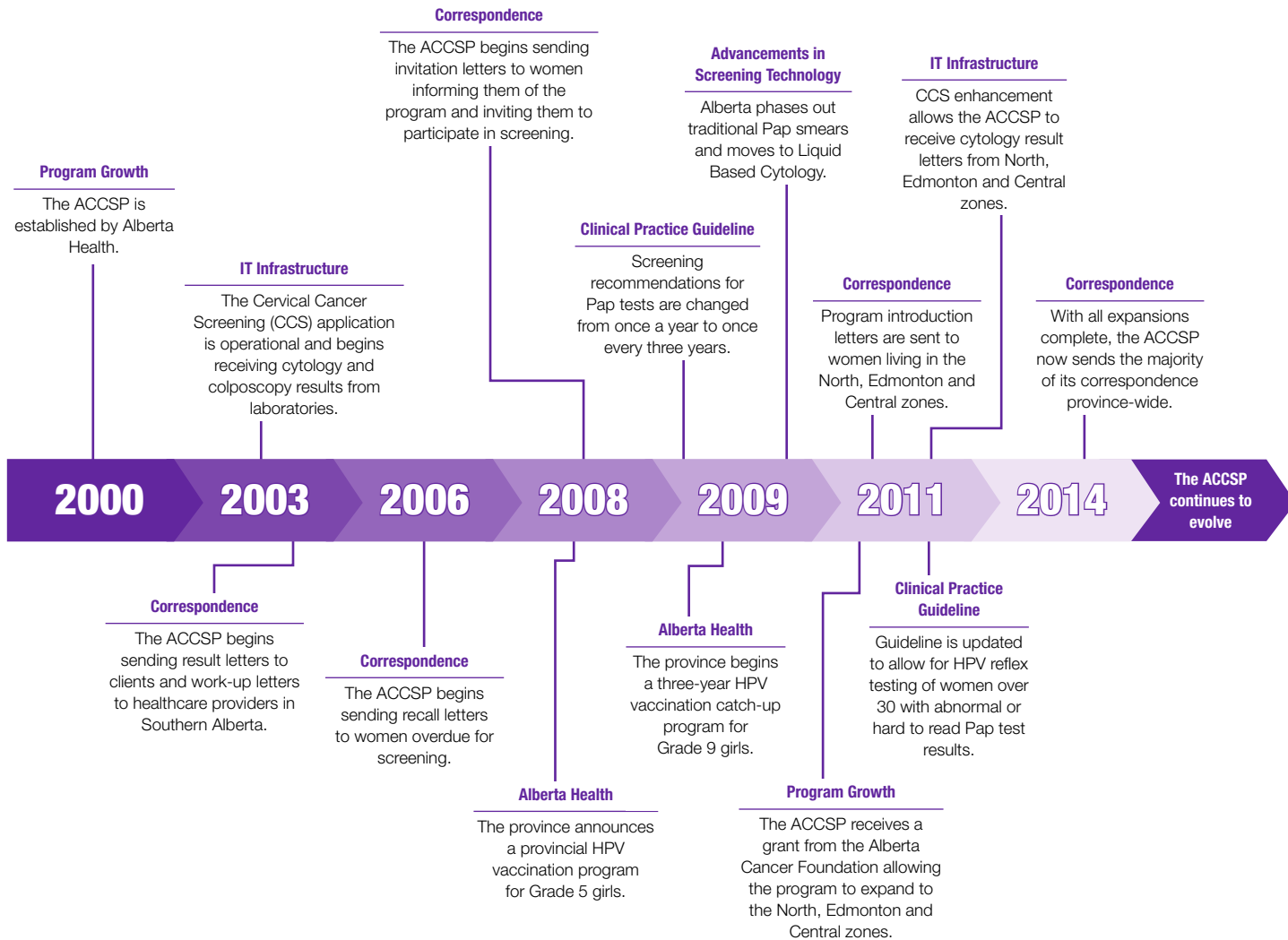
- begin annual Pap tests at age 21 or three years after becoming sexually active, whichever is later
- screen with three negative Pap tests at least 12 months apart within five years before extending the screening interval to every three years
- discontinue screening at 69 years of age if there are either three consecutive negative or normal cytology tests in the previous ten years
- continue screening for women who have received the HPV vaccine

Screening recommendations include special considerations for sub-populations such as women who have undergone subtotal hysterectomy and retained their cervix, pregnant women, and women with immunosuppression who have ever been sexually active.

The Alberta Cervical Cancer Screening Program

The Alberta Cervical Cancer Screening Program (ACCSP) was established in 2000. One of the goals of the ACCSP is to have 80% of Alberta's eligible population screened every three years. During its 15 years, the program has increased its capacity to provide a comprehensive screening program for Albertans. Figure 12 depicts the program's milestones and Alberta Health led initiatives (e.g., HPV vaccination programs), which will impact cervical cancer screening in Alberta.

Figure 12 | The Alberta Cervical Cancer Screening Program Milestones



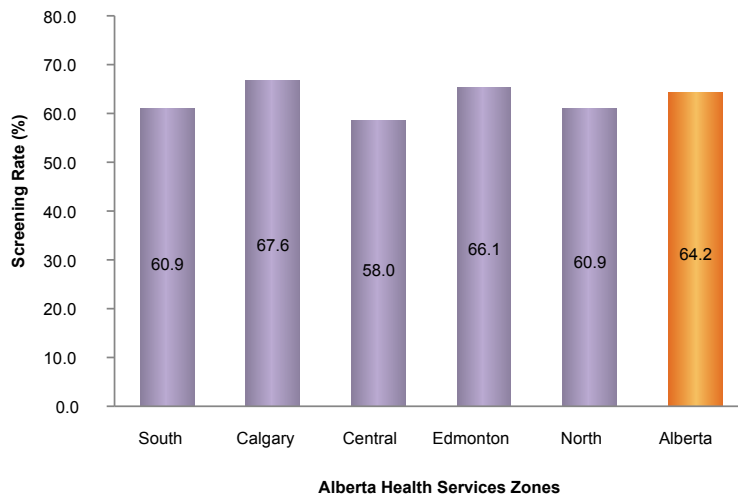
Program performance

Performance management, quality improvement and evaluation are essential to support the ACCSP. Participation rate is an important program performance indicator and is essential in maximizing the benefits of organized screening. The Appendix offers detailed information regarding the methodology of this indicator.

Screening participation

Participation rate is the primary programmatic indicator; it represents the percentage of women 21 to 69 years who have had at least one Pap test in a three-year period. The Alberta target for cervical cancer screening participation rate is 80%. Figure 13 shows that in Alberta the participation rate across AHS zones ranged from 58.0% to 67.6% during 2011-2013, while the provincial participation rate was reported as 64.2%. The programmatic participation rate for cervical cancer screening in other provinces across Canada ranged from 64% to 67% during 2009-2011². Through collaboration with AHS zone leaders, healthcare providers, and stakeholders the ACCSP continuously seeks to further engage its target population as it strives toward Alberta's target for cervical cancer screening participation.

Figure 13 | Percentage*of eligible Alberta women, aged 21-69, who completed at least one screening Pap test within a three-year period, by AHS zone, 2011-2013



*Rates were underestimated due to incomplete hysterectomy data

² Most recent data available. Programmatic participation rate, 2009-2011 for reporting provinces in Canada for women aged 20-69, non-hysterectomy corrected, reported by Canadian Partnership Against Cancer, 2015 in *Cancer screening in Canada: An overview of screening participation for breast, cervical and colorectal cancer*



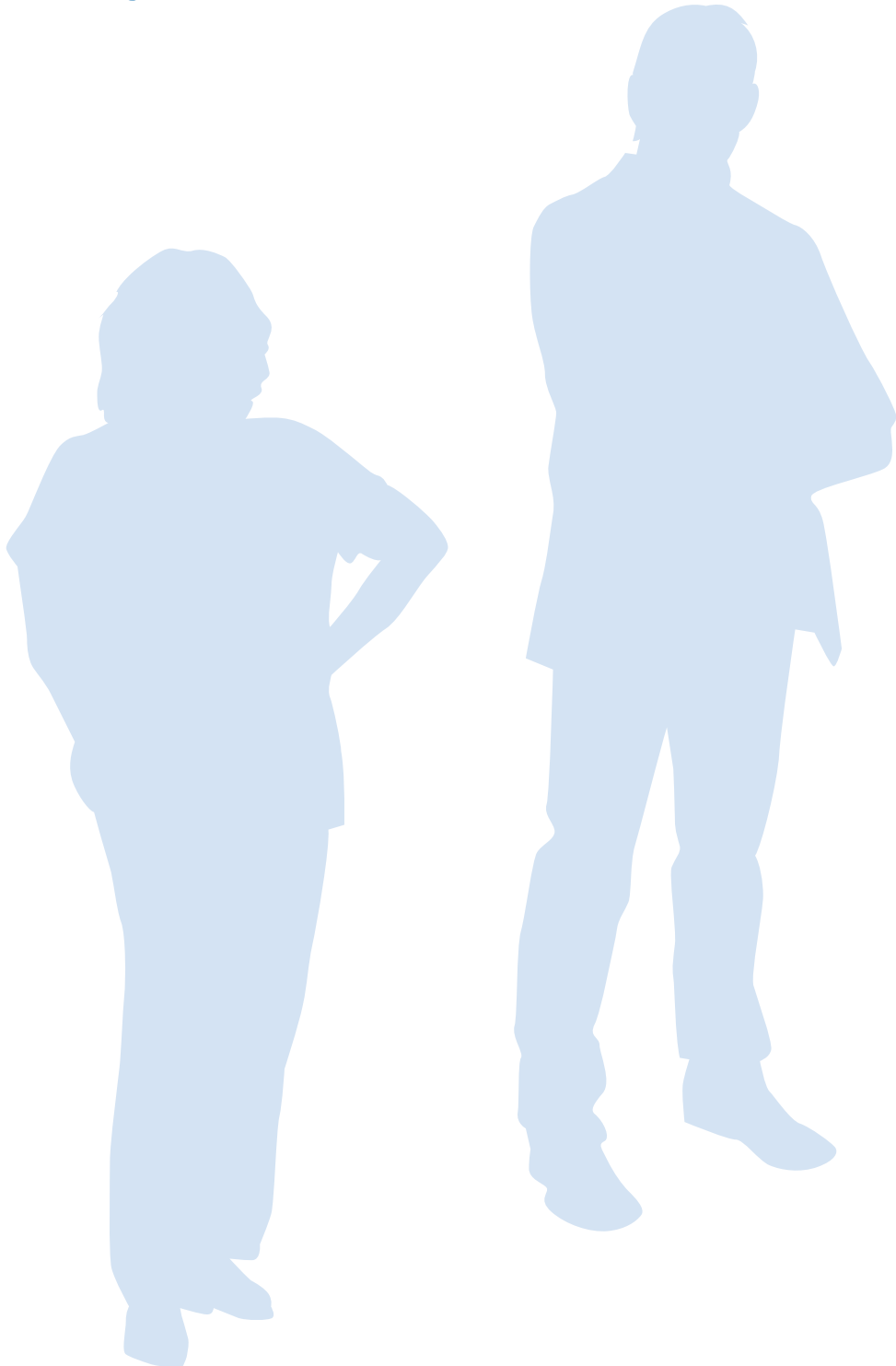
Future program directions

The ACCSP continues to monitor new evidence on cervical cancer screening technology and its impact on cervical cancer prevention. The program is reviewing and assessing evidence of the effectiveness and appropriateness of HPV testing as the primary screening modality for cervical cancer. Additionally, the program will continue to follow up on the impact of HPV vaccination on cervical cancer screening outcomes, which may lead to changes in screening policy. In conjunction with the other cancer screening programs, the ACCSP is also working to standardize and integrate screening services to continue improving access to cancer screening.





COLORECTAL CANCER SCREENING IN ALBERTA







COLORECTAL CANCER SCREENING IN ALBERTA

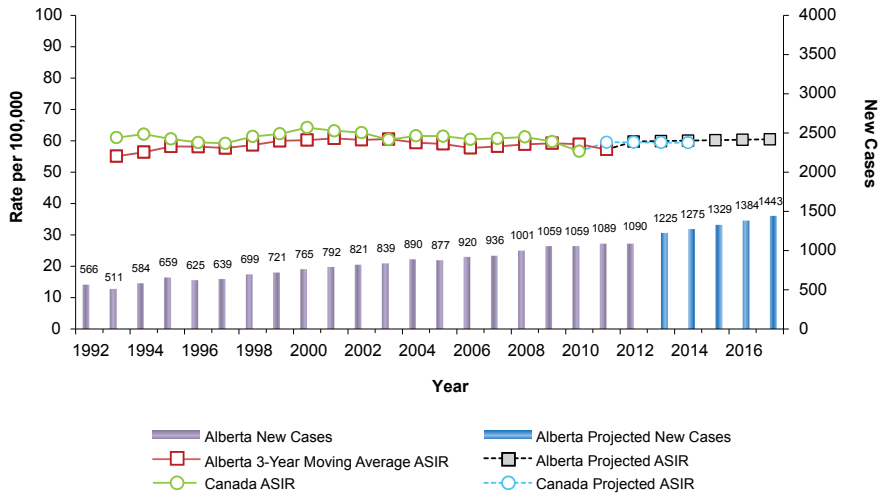
Burden of colorectal cancer

Colorectal cancer is one of the most commonly diagnosed cancers in Alberta, affecting approximately 1 in 13 men and 1 in 16 women in their lifetime^(11,31).

Incidence

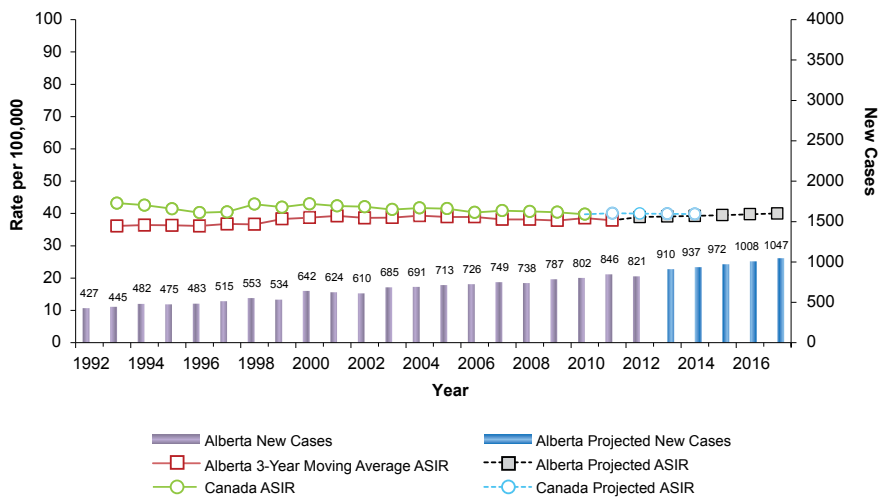
The colorectal cancer age-standardized incidence rate (ASIR)⁽¹⁾ has remained relatively stable in both males and females with males being higher than females. In 2012, there were 1911 new cases of colorectal cancer diagnosed in Alberta; 1090 cases among men (Figure 14) and 821 cases among women (Figure 15). In 2017, it is estimated that there will be 1443 new colorectal cancer cases among men and 1047 new cases among women in Alberta.

Figure 14 | Actual and projected number of new cases and age-standardized incidence rates (ASIRs)*† for colorectal cancer, males, Alberta, 1992-2017



* Three-year moving average
 † Standardized to 1991 Canadian population
 Source: Surveillance & Reporting: 2012 Report on Cancer Statistics in Alberta. Edmonton: CancerControl Alberta, Alberta Health Services, 2015.

Figure 15 | Actual and projected number of new cases and age-standardized incidence rates (ASIRs)*† for colorectal cancer, females, Alberta, 1992-2017



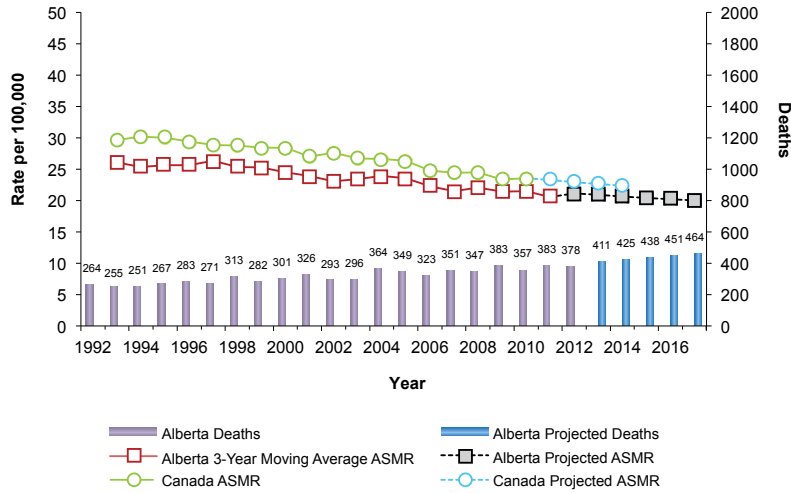
* Three-year moving average
 † Standardized to 1991 Canadian population
 Source: Surveillance & Reporting: 2012 Report on Cancer Statistics in Alberta. Edmonton: CancerControl Alberta, Alberta Health Services, 2015.



Mortality

In 2012, there were 683 deaths from colorectal cancer, 378 deaths occurring among men (Figure 16) and 305 among women in Alberta (Figure 17). The colorectal cancer age-standardized mortality rate (ASMR)ⁱⁱ has been gradually declining since 1992. Consistent with colorectal cancer ASIRs, mortality rates for males tended to be higher than females. Colorectal mortality rates in Alberta have tended to be lower when compared to national average rates. By 2017, it is estimated that there will be 807 deaths from colorectal cancer in Alberta, 464 among men (Figure 16) and 343 among women (Figure 17).

Figure 16 | Actual and projected number of deaths and age-standardized mortality rates (ASMRs)*† for colorectal cancer, males, Alberta, 1992-2017

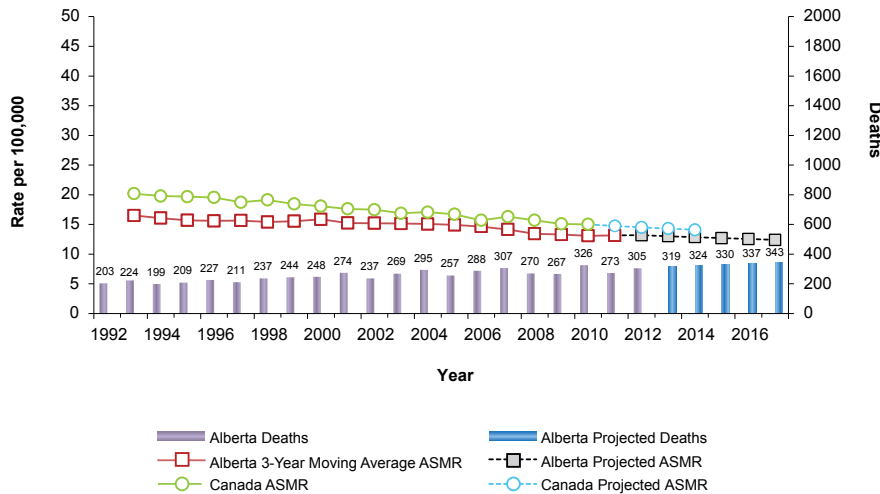


* Three-year moving average

† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: 2012 Report on Cancer Statistics in Alberta. Edmonton: CancerControl Alberta, Alberta Health Services, 2015.

Figure 17 | Actual and projected number of deaths and age-standardized mortality rates (ASMRs)*† for colorectal cancer, females, Alberta, 1992-2017



* Three-year moving average

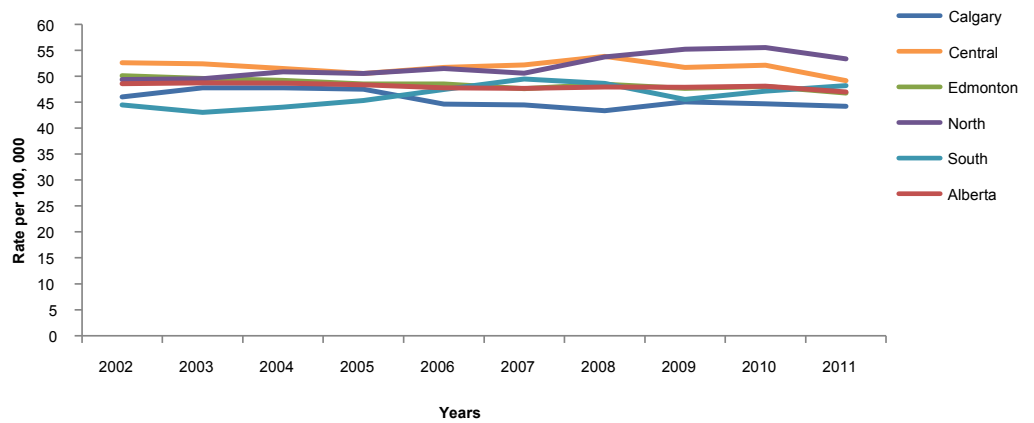
† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: 2012 Report on Cancer Statistics in Alberta. Edmonton: CancerControl Alberta, Alberta Health Services, 2015.

Geographical variation

Since 2002, ASIRs and ASMRs for colorectal cancer have varied across the province (Figures 18 and 19). In 2011, ASIRs ranged from approximately 44 to 53 per 100,000 across AHS zones while ASMRs ranged from approximately 15 to 20 per 100,000. The provincial ASIR for colorectal cancer in 2011 was approximately 47 per 100,000 while the ASMR was approximately 17 per 100,000. According to the 2012 Report on Cancer Statistics in Alberta⁽¹¹⁾ the variation of colorectal cancer ASIRs and ASMRs across the AHS zones are not statistically significant. Observed differences across AHS zones may be attributable to variation in exposure to risk factors, the use of cancer screening and access to treatment among other factors⁽¹¹⁾.

Figure 18 | Age-Standardized incidence rates (ASIRs)[†] for colorectal cancer, males and females, by AHS zone, Alberta, 2002- 2012

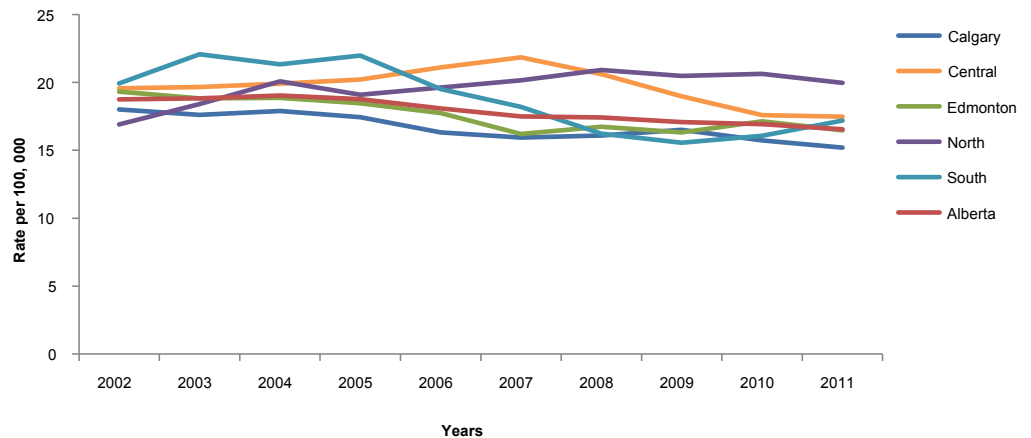


* Three-year moving average

† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: Information Request #2014-172. Edmonton: CancerControl Alberta, Alberta Health Services, 2014

Figure 19 | Age-standardized mortality rates (ASMRs)[†] for colorectal cancer, males and females, by AHS zone, Alberta, 2002-2012



* Three-year moving average

† Standardized to 1991 Canadian population

Source: Surveillance & Reporting: Information Request #2014-172. Edmonton: CancerControl Alberta, Alberta Health Services, 2014



Colorectal cancer survival

People diagnosed with colorectal cancer have a better five-year relative survival than they did over a decade ago. Between 1992-1994 and 2010-2012, the five-year relative survival ratioⁱⁱⁱ for colorectal cancer increased from 55% to 64%⁽¹¹⁾.

Factors associated with colorectal cancer

Age is an important risk factor for colorectal cancer. The incidence of the disease increases with age and most people who develop colorectal cancer are over age 50⁽³²⁾. Other factors associated with colorectal cancer are lifestyle behaviours (e.g., smoking and diet)⁽³³⁾ family history, ethnicity, heredity as well as personal history of cancers or polyps and history of inflammatory bowel disease⁽³²⁾. Although these factors may increase the risk of developing colorectal cancer, the disease is preventable and treatable with early detection. As such organized screening at a population level plays an important role in reducing disease burden for those at risk of developing the disease.

Evidence for organized colorectal cancer screening programs

Colorectal cancer screening, particularly among those aged 50-74 is known to substantially reduce colorectal cancer incidence, morbidity and mortality in a cost effective manner^(7,34-38). The benefits of colorectal screening on a population level can only be realized when there is adequate uptake; organized screening programs are an effective way to increase uptake of screening in the target population. Consider that in 2013, approximately 30% of Albertans aged 50-74 had been screened with the Fecal Immunochemical Test (FIT). If 70% of people aged 50-74 across Alberta had up-to-date colorectal cancer screening by 2017, then by 2030³

- approximately 1700 deaths from colorectal cancer could be avoided
- an estimated 2000 cases of colorectal cancer could be avoided
- there would be a cumulative increase of \$164 million in earnings would be gained⁴
- there would be a cumulative increase of \$421 million in total income⁵

Until recently, the recommended colorectal cancer screening test was the guaiac fecal occult blood test (gFOBT). However, current evidence suggests that the FIT may be more effective at reducing colorectal cancer incidence and reducing overall healthcare costs compared with any other screening strategy and compared with no screening⁽³⁹⁾.

³ This analysis is based on the Canadian Partnership Against Cancer's Cancer Risk Management Model (CRMM). The development of the Cancer Risk Management Model has been made possible by funding provided to the Canadian Partnership Against Cancer by Health Canada. The assumptions and calculations underlying the simulation results were prepared by AHS Screening Programs.

⁴ Includes earning from both paid employment (wage and salaries) and self-employment

⁵ Total income is defined by Statistics Canada as the total of income from all sources including government transfers before deduction of federal and provincial incomes taxes and earned by persons over 15 years of age (Statistics Canada, 2006-<http://www12.statcan.gc.ca/census-recensement/2006/ref/dict/pop123-eng.cfm>)



Benefits and risks of colorectal cancer screening

The FIT is the current recommended screening modality for colorectal cancer due to its superior ability to detect colorectal cancer and high risk polyps when compared to other fecal tests. The FIT is very low risk, non-invasive, easy to self-administer and does not require changes in medication or diet. The FIT with follow-up colonoscopy and removal of pre-malignant polyps has the potential to reduce cancer incidence. A limitation of fecal tests, including the FIT, is the potential for false-negative results which may occur if the polyp(s) or cancer is not bleeding at the time of test administration.

Colonoscopy is a recommended screening modality for high risk populations. It is also used as a follow-up test for those with a positive FIT result. The primary benefit of colonoscopy is the potential to detect colorectal cancer early and, in some cases, treat precancerous polyps to prevent cancer. While colonoscopy is a relatively safe procedure, there are risks including colon perforation, bleeding, post-polypectomy syndrome, reaction to anesthetic, discomfort and infection.

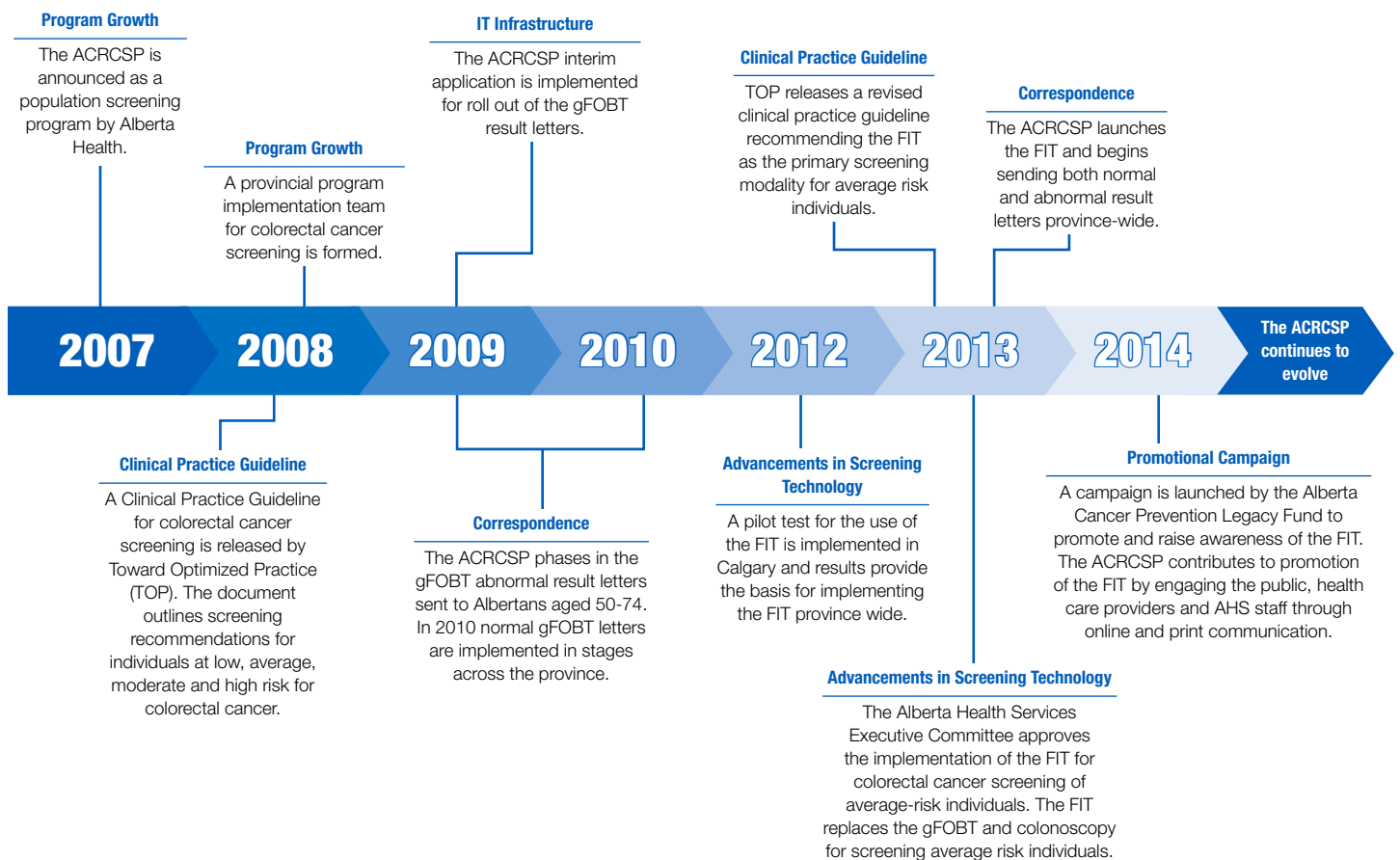
Screening recommendations

The ACRCSP screening recommendations are based on the provincial guideline produced by TOP and were revised in November 2013⁽⁴⁰⁾. The TOP Colorectal Cancer Screening Clinical Practice Guideline recommends that asymptomatic men and women aged 50-74 who are at average-risk (i.e., have no personal or family history of colorectal cancer or high risk adenomas) complete a FIT every 1-2 years. If the FIT result is positive, the follow-up test is a colonoscopy⁽⁴⁰⁾.

The Alberta Colorectal Cancer Screening Program

Launched in 2007, the ACR CSP is the youngest of the three cancer screening programs in AHS. The goal of the ACR CSP is to increase the number of men and women aged 50-74 who have regular colorectal cancer screening. The launch of the FIT in Alberta is one of many accomplishments the program has experienced over the course of its first seven years (Figure 20).

Figure 20 | The Alberta Colorectal Cancer Screening Program Milestones



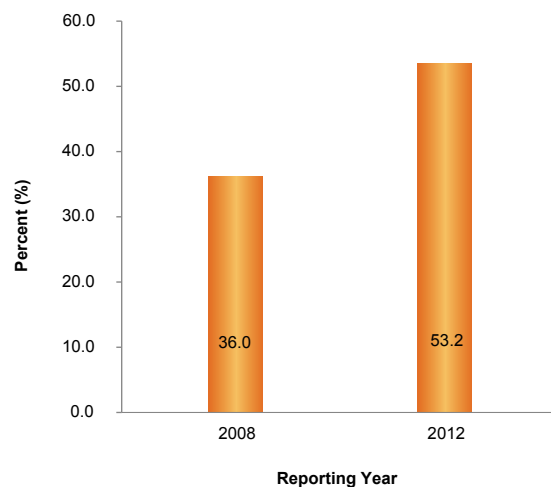
Program performance

Performance management is a key element of the AHS Screening Programs QMF. The ACRCSP has developed a performance management strategy (PMS) intended to identify and plan how information will be collected, reported and utilized to support program performance, quality improvement and evaluation. At this time, two indicators for the ACRCSP performance are available. These indicators are program utilization rate and uptake of FIT among the target population, which provide information on exposure to colorectal cancer screening in Alberta. The performance indicators are based on the most recent data available and include Albertans aged 50-74. Methodological details of each indicator are presented in the Appendix.

Utilization Rate

Utilization describes the target population who has participated in programmatic or opportunistic screening. The utilization rate is the percentage of the target population who are up-to-date with their colorectal cancer screening with any colorectal cancer screening test. The ACRCSP aims to have 70% of the target population screened for colorectal cancer. As indicated in Figure 21, the self-reported utilization rate has increased from 2008 to 2012.

Figure 21 | Colorectal cancer screening utilization rate, men and women aged 50-74, Alberta, 2008 & 2012*†



* Up-to-date is defined as having had a fecal test (either gFOBT or FIT) within the last two years and/or sigmoidoscopy/colonoscopy within the last five years

† Data source: Statistics Canada, Canadian Community Health Survey

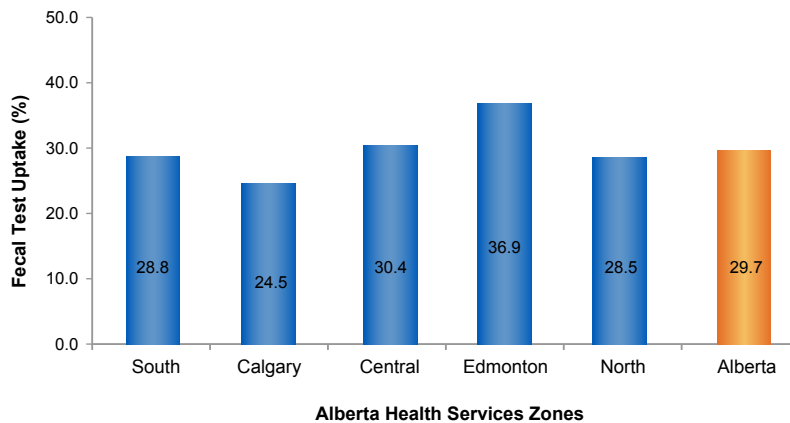
FIT Uptake

While the utilization rate considers all acceptable screening modalities, the FIT uptake focuses on average risk screening using the FIT and can be used as a proxy for participation in average risk colorectal cancer screening.

The FIT uptake is the percentage of the target population who had at least one FIT in the last two years. Because the FIT was implemented province-wide in 2013 and replaced the gFOBT as the primary test for colorectal cancer for Albertans at average risk, the initial indicator is the percentage of Albertans aged 50-74 who had a fecal test (gFOBT or FIT) during April 1, 2012 - March 31, 2014.

The overall provincial uptake of fecal testing is approximately 30% although there is some variation across AHS zones (Figure 22). As average-risk screening with the FIT becomes more established and additional recruitment strategies intended for the public and healthcare professionals are introduced, it is expected that the uptake will increase.

Figure 22 | Colorectal cancer screening fecal test uptake, men and women aged 50-74, by AHS zone, Alberta, fiscal years 2012/13- 2013/14*†



*Includes Albertans who had at least one FIT in the last two years. As FIT was only implemented province wide in November 2013, the initial data reported here includes men and women aged 50-74 who had fecal test (either a gFOBT or FIT) between April, 2012 and March 31, 2014.
†Data source: Provincial Cancer Screening Database.



Future program directions

Challenges and opportunities are anticipated as the program continues to evolve. The ACRCSP continues to work with stakeholders including healthcare providers and AHS zone representatives to improve program performance and effectiveness. Areas for continued growth and development of the ACRCSP are grouped in three broad areas: information technology (IT) infrastructure, participation and the quality of screening.

IT infrastructure

The continued development of IT infrastructure is critical to the growth of the ACRCSP. The ACRCSP is committed to investing in IT infrastructure to provide additional capacity to

- support program operations (e.g., correspondence function) that will allow transition to a population-based screening program with invitation letters sent to all eligible Albertans
- systematically track screening recruitment, primary screening and follow-up services
- provide consistent, accurate and accessible data to monitor the quality and outcomes of the program, including the ability to provide quality reports to endoscopists and individual endoscopy units

Screening participation

The success of the ACRCSP in reducing mortality depends on increasing screening participation. The ACRCSP will continue to collaborate with key stakeholders to design and implement educational campaigns with a focus on the appropriate use of the FIT, engagement strategies and patient education. As the necessary IT infrastructure is developed, the ACRCSP will begin sending invitation letters to age-eligible Albertans. Expanding the correspondence functions of the program will move the ACRCSP from opportunistic screening towards a population-based approach.

The quality of screening

As the implementation and roll out of the ACRCSP continues, providing quality screening across the pathway remains a priority. Program standards and guidelines will support access, quality and sustainability for screening using the FIT. To support a systematic approach to quality assurance and improvement across the entire program, the ACRCSP PMS will be refined through indicator validation and monitoring. As part of this strategy, the capacity to provide quality reports to endoscopists and individual endoscopy units will be enhanced. Finally, in collaboration with stakeholders across the province, the program will focus on ensuring colonoscopy capacity is able to support the anticipated demand from increased colorectal cancer screening.



SUMMARY AND CONCLUSION

Cancer in Alberta is a prevalent issue that continues to impact the lives of Albertans and the healthcare system. The burden of cancer is impacted by Alberta's aging population and population growth – with trends projecting an increased number of cancer cases.

Cancer screening programs play a vital role within a comprehensive cancer control system. Population-based screening can significantly reduce the burden of cancer through preventing cancer, reducing cancer deaths and morbidity, improving quality of life, and increasing survival.

Screening Programs, a department of AHS, has achieved many accomplishments towards reducing the impact of breast, cervical, and colorectal cancers in Alberta. Despite these successes, there are opportunities for improvement. AHS Screening Programs continues to strive toward program specific participation targets by increasing screening awareness, increasing access to screening, and continuing to improve program delivery through a quality management framework. Through collaboration with healthcare providers and external partners, AHS Screening Programs will continue to develop initiatives to optimize cancer screening in Alberta.

AHS Screening Programs continually strives toward a clear goal: to reduce the burden of breast, cervical and colorectal cancer in Alberta through screening.




END NOTES

^{i,ii,iii} For information on the rationale for reporting standardized rates, definitions, and methodology for ASIRs, ASMRs, survival ratios and three-year moving averages refer to the 2012 Report on Cancer Statistics in Alberta⁽¹⁾.



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APPENDIX: METHODOLOGY FOR PROGRAM PERFORMANCE INDICATORS

The Alberta Breast Cancer Screening Program

Participation Rate

Description	Percentage of eligible Alberta women, 50-69 years old*, who completed at least one screening mammogram within a two-year period
Calculations	$\frac{\text{Total number of Alberta screen-eligible women, 50-69 years old who have completed at least one mammogram in a given two-year period}}{\text{Total number of Alberta screen-eligible women, 50-69 years old, in each two-year period}}$
Details	<p>Numerator Inclusions:</p> <ul style="list-style-type: none"> Identifying mammograms: <ul style="list-style-type: none"> ABCSP mammograms for screening purposes are identified in ABCSP Claim mammograms are identified using fee codes in Alberta Health's claims data: <ul style="list-style-type: none"> Screening mammograms: X 27 (mammography – both breasts) and X 27 D (screening mammography – age 50-69 years inclusive) Each screen-eligible woman is counted once regardless of the number of mammograms performed in a two-year period <p>Numerator Exclusions:</p> <ul style="list-style-type: none"> Women with an invasive breast cancer before Jan 1st of the two-year period who have had mammograms identified as screening services. In situ cancers are not excluded <p>Denominator Inclusions:</p> <ul style="list-style-type: none"> Alberta women aged 50-69 at the index date Index date is defined as the midpoint in a two-year period, e.g. calendar year: Jan 1st 2011 for 2010-2011 <p>Denominator Exclusions of screen-eligible women:</p> <ul style="list-style-type: none"> Women with missing or incomplete PHN or date of birth Women with an invasive breast cancer before Jan 1st of the two-year period. In situ cancers are not excluded Women with only breast cancer diagnostic services during the two-year period (these women are not targeted for screening as they are in a diagnostic cycle either because of a previous abnormal screen or because of symptomology). Breast cancer diagnostic services are identified: <ul style="list-style-type: none"> In ABCSP, except for screening mammograms, the rest of the mammogram services are identified as diagnostic services. Using fee codes in Alberta Health's claims data: X 27A, X 27B, X 27F, X 26, X 26A, X 26B, X 26C, X308, X309, 97.11A, 97.11B, 97.81, 97.82A, 97.83A, 97.89A, 97.89B
Data Sources	<p>Numerator:</p> <ul style="list-style-type: none"> Provincial Cancer Screening (PCS) –ABCSP Alberta Health Claims data <p>Denominator:</p> <ul style="list-style-type: none"> Alberta Health Care Insurance Plan (AHCIP) Registry File – Demographic Provincial Cancer Screening (PCS) –ABCSP Alberta Health Claims data
Data availability & limitations	<p>The Alberta Government eliminated healthcare premiums in 2008, thereby removing the need for people to update personal information to receive insured health services. Since then, some people have moved out of Alberta but it appears that their invalid PHNs remain in the provincial population database. This contributes to a slight underestimation of the mammogram screening participation rate</p> <p>*The ABCSP officially expanded the program target age range from 50-69 to 50-74 in July 2014 in alignment with TOP clinical practice guidelines.</p>

Wait-time

Description	<p>Proportion of women receiving an abnormal breast screen result who waited within target time for resolution (date of definitive diagnosis):</p> <p>(a) seven weeks for women requiring a tissue biopsy,</p> <p>(b) five weeks for women not requiring a tissue biopsy</p> <p><i>Note - Resolution of an abnormal screen is set at a maximum of 6 months post-screen</i></p>
Calculation	<p>a) Number of women who had an abnormal screen requiring a tissue biopsy, who received resolution within seven weeks</p> <p>b) Number of women who had an abnormal screen not requiring a tissue biopsy, who received resolution within five weeks</p> <hr/> <p>Total number of Alberta screen-eligible women, 50-69 years old, in each two-year period</p>
Details	<p>Reference Period: 2012</p> <p>Global Exclusions: Records with age <50 or age >69</p> <p>Standards/Guidelines: The Canadian target is $\geq 90\%$ of abnormal screens will be resolved within 5 weeks if no tissue biopsy is required and $\geq 90\%$ within 7 weeks if tissue biopsy is required.</p> <p>Notes:</p> <ul style="list-style-type: none"> ■ Tissue biopsy does not include fine needle aspiration (FNA) ■ Tissue tests include core (needle) biopsy with or without image guidance and open (excisional) biopsy with or without image guidance
Data Source	<ul style="list-style-type: none"> ■ Provincial Cancer Screening (PCS) – The ABCSP ■ Alberta Health Claims data
Data availability & limitations	<p>The Alberta Health Claim data after March 31, 2013 was not available at the time of this calculation.</p>

The Alberta Cervical Cancer Screening Program

Participation Rate

Description	Percentage of eligible Alberta women, 21-69 years old, who completed at least one screening Pap test within a three-year period
Calculation	$\frac{\text{Total number of Alberta screen-eligible women, 21-69 years old who have completed at least one Pap test in a given three-year period}}{\text{Total number of Alberta screen-eligible women, 21-69 years old, in each three-year period}}$
Details	<p>Numerator Inclusions:</p> <ul style="list-style-type: none"> Identifying Pap tests: <ul style="list-style-type: none"> <u>Pap tests</u> (SPAP and CPAP) were identified in the ACCSP <u>Colposcopy exams</u> were also identified in the colposcopy database Each woman was counted once regardless of the number of Pap tests performed in a three-year period <p>Numerator Exclusions:</p> <ul style="list-style-type: none"> Women with a cervical cancer (invasive cancer/in-situ cancer) before Jan 1st of the three-year period who have had Pap tests identified as screening services Women who had a complete hysterectomy before Jan 1st of the three-year period with proof of no previous high grade lesion Women noted as inactive in the CCS application before Jan 1st of the three year period <p>Denominator Inclusions:</p> <ul style="list-style-type: none"> Alberta women aged 21-69 at the index date Index date was defined as the midpoint in a three-year period, e.g. Jul 1st 2011 for 2010-2012 Used the second year population of three-year period, e.g. 2011 for 2010-2012 <p>Denominator Exclusions:</p> <ul style="list-style-type: none"> Women with a missing or invalid PHN or date of birth Women with a cervical cancer (invasive cancer/in-situ cancer) before Jan 1st of the three-year period Women who had a complete hysterectomy before Jan 1st of the three-year period with proof of no previous high grade lesion Women noted as inactive in the CCS application before Jan 1st of the three year period Women in colposcopy follow-up
Data sources	<p>Numerator:</p> <ul style="list-style-type: none"> CCS (Cervical Cancer Screening Database) – Screening Pap tests ACR (Alberta Cancer Registry Database) - Resolved cervical cancers Colposcopy database - colposcopy exams Provincial Inpatient and Ambulatory Databases (DAD, NACRS) (April 1, 2002 to August 31, 2013) – Hysterectomy data <p>Denominator:</p> <ul style="list-style-type: none"> CCS (Cervical Cancer Screening database) Alberta Health Care Insurance Plan (AHCIP) Registry File – Demographics ACR (Alberta Cancer Registry Database) - Resolved cervical cancers Provincial Inpatient and Ambulatory Databases (DAD, NACRS) (April 1, 2002 to August 31, 2013) – Hysterectomy data
Data availability & limitations	<ul style="list-style-type: none"> The Alberta Government eliminated healthcare premiums in 2008, thereby removing the need for people to update personal information to receive insured health services. Since then, some people have moved out of Alberta but it appears that their invalid PHNs remain in the provincial population database. This contributes to a slight underestimation of the Pap test screening participation rate. Some women who are not currently considered eligible for Pap tests are not currently removed from the denominator i.e. women with complete hysterectomy for which Inpatient Discharge Abstract Database and National Ambulatory Care Reporting System is unavailable. This leads to an underestimate in the screening Pap test participation rate.

The Alberta Colorectal Cancer Screening Program

Utilization Rate

Description	The utilization rate is the percentage of the individuals 50-74 who are up-to-date with their colorectal cancer screening where up to date is defined as having had an FOBT in the past two years and/or sigmoidoscopy/colonoscopy in the past five years regardless of why the test was done (i.e., for screening, symptoms, follow up of disease or for other reasons). FOBT includes both FTg and FTi. Colonoscopy and sigmoidoscopy are also acceptable as screening tests and thus are captured in the indicator's definition of being up to date.
Calculations	$\frac{\text{Number individuals aged 50-74 reporting having had an FOBT within the past two years and/or colonoscopy/sigmoidoscopy within the past five years}}{\text{Total number of individuals aged 50-74 years in the population}}$
Details	Utilization describes the target population who has participated in programmatic or opportunistic screening.
Data Sources	Numerator: Canadian Community Health Survey (CCHS) (optional CCHS content) Denominator: Alberta Health Care Insurance Plan (AHCIP) Registration File
Data availability & limitations	Measurement time frame: 2008, 2012 <ul style="list-style-type: none"> ■ CCHS data is based on representative sample which is then extrapolated to the overall population. ■ As with other population surveys, CCHS provides cross-sectional data with self-reported and recalled information. Some results may be affected by social desirability and recall bias. Other inherent data quality issues from survey methodology may exist as well. ■ Since the survey does not distinguish between the time interval for sigmoidoscopy and colonoscopy, the five-year timeframe was used for both modalities. This indicator may therefore underestimate the true population that is up to date.

The FIT Uptake

Description	The percentage of Albertans between the ages of 50-74 years who have had at least one FIT in a two years period. <ul style="list-style-type: none"> ■ As FIT was implemented province wide on Nov 18, 2013 and replaced the gFOBT (guaiac Fecal Occult Blood Test) as the screening test for the average-risk population, the measure used in the report is the percentage of Albertans 50-74 years old that had a fecal test (gFOBT or FIT) during April 1, 2012 - March 31, 2014.
Calculations	$\frac{\text{The number of Albertans aged 50-74 who have had at least one FIT in the last two years}}{\text{Total number of individuals aged 50-74 years in the population}}$
Details	The indicator can be reported at both provincial and zone levels.
Data Sources	Numerator: Provincial Cancer Screening (PCS) –ACRCSP Denominator: Alberta Health Care Insurance Plan (AHCIP) Registration File
Data availability & limitations	<ul style="list-style-type: none"> ■ Once a year ■ The measure does not reflect the overall program participation rate as many people in the age range have had or will have a colonoscopy (for screening, diagnostic or surveillance purposes) and would be considered up-to-date for colorectal cancer screening.



GLOSSARY

AHS zone	Alberta Health services is organized into five geographic zones so that communities are more directly connected to their local health systems and decisions can be made closer to where care is provided. The five zones are: North Zone, Edmonton Zone, Central Zone, Calgary Zone, and South Zone.
AHS Screening Programs	Screening Programs is the department of Alberta Health Services that provides leadership in the coordination and delivery of three organized cancer screening programs in Alberta: the Alberta Breast Cancer Screening Program (ABCSP), the Alberta Cervical Cancer Screening Program (ACCSP), and the Alberta Colorectal Cancer Screening Program (ACRCSP).
Asymptomatic	A person who does not report symptoms and appears without signs of disease.
Average risk	Persons in a population who have only the primary risk factors (e.g., age and sex) for a disease.
Colonoscopy	An examination of the inner lining of the rectum and colon with an endoscope (small, thin tube-like instrument with light and lens on the end). This exam is conducted by an endoscopist.
Coploscopy	An examination of the cervix, vagina, and vulva with a colposcope (magnifying instrument). This exam is conducted by a colposcopist.
Eligible population	Persons within a target population who are asymptomatic of a disease and are at risk for developing the disease.
False-negative	When a screening test incorrectly gives a negative result when the disease or condition in question is actually present in the individual being screened.
False-positive	When a screening test incorrectly gives a positive result when the disease or condition in question is not actually present in the individual being screened.
Incidence	The number of new cases of a disease occurring during a specific time period in a defined population.
Mortality	Deaths in a population.
Risk factor	A condition, behavior or substances that increase the probability of developing a disease.
Screen Test	The clinical arm of the Alberta Breast Cancer Screening program. Screen Test offers mammography screening services on board two mobile screening units as well at two fixed locations.
Target population	A group of persons for whom an intervention is planned. In population-based cancer screening, this includes those of a certain age, sex, and living in a geographically defined area.





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