

Chapter 14

Saskatchewan Cancer Agency—Delivering the Screening Program for Breast Cancer

1.0 MAIN POINTS

Under *The Cancer Agency Act*, the Saskatchewan Cancer Agency (SCA) is responsible for the planning, organization, delivery, and evaluation of cancer care services throughout Saskatchewan in collaboration with Saskatchewan's 12 regional health authorities.

As part of meeting its responsibilities, since 1990, SCA provides a systematic population-based screening program for breast cancer.

For the 12-month period ended February 29, 2016, SCA had, other than the following, effective processes to deliver its systematic population-based screening program for breast cancer. SCA needs to:

- › Evaluate the success of its screening program promotional activities. This would allow SCA to assess whether these activities effectively educate the public.
- › Develop a strategy to engage physicians to increase awareness of the screening program. Engaging physicians would create opportunities to increase participation in the screening program and thus, detect breast cancer earlier.
- › Analyze information on difficult-to-screen populations to assess the sufficiency of strategies to reach these individuals.
- › Broaden the use of key quality indicators relevant to Saskatchewan's screening program. Regular analysis of this information would allow SCA to take timely action to address areas that fall short of established benchmarks.
- › Periodically report to senior management, the Board, and the public on key screening program performance information. This reporting would enable SCA to better assess the effectiveness of its screening program.

2.0 INTRODUCTION

This chapter reports the results of our audit of SCA's processes, for the period of March 1, 2015 to February 29, 2016, to deliver its systematic population-based screening program for breast cancer.



2.1 Incidence of Breast Cancer in Canada and Saskatchewan Increasing

Cancer is the leading cause of death in Canada.¹ Breast cancer-related deaths account for nearly 14% of the total number of female cancer deaths at a rate of approximately 18 deaths per 100,000 population.² Breast cancer is the most common form of cancer and the second leading cause of death in Canadian women.³ In 2013, just over one-quarter of all cancers diagnosed in females were breast cancer.⁴

The number of new cancers diagnosed each year is rising in Saskatchewan and throughout Canada, a trend that SCA expects to continue.⁵ The Canadian Cancer Society estimated the diagnosis of 710 new cases of breast cancer in Saskatchewan in 2015.⁶ This represents an over 12% increase in new breast cancer cases since 2010.⁷ The 710 new cases in 2015 accounts for about one-eighth of new cases of cancers diagnosed within Saskatchewan. In 2014-15, the cost for drugs used in the treatment of breast cancer in Saskatchewan was approximately \$10.6 million.⁸

Prevention of breast cancer is currently limited since most known risk factors are not easily modifiable (i.e., not easily changed). Of the known risk factors of breast cancer, age has the strongest influence on incidence; approximately one-half of all new cases of breast cancer are among women between 50 and 69 years of age.⁹

Like Canada and other countries worldwide, Saskatchewan has an aging population. Statistics Canada reports that, by 2031, seniors will make up nearly one-quarter of Canada's entire population.¹⁰ Given that breast cancer is more common in people over the age of 50, Saskatchewan will likely continue to see an increase in the number of new cases.¹¹

Studies have shown that delivering breast cancer screening programs to this age group can reduce breast cancer deaths by as much as one third.¹²

2.2 Breast Cancer Screening Programs

Early detection programs (i.e., organized population-based screening) are one response to the increase in diagnosis of new cancers. A screening program begins with the identification of a target population (e.g., individuals within a certain age range), and has a defined end point, usually at definitive diagnosis (i.e., results of tests are known) and referral.¹³

¹ www.cancer.ca/en/cancer-information/cancer-101/cancer-statistics-at-a-glance (2 March 2016).

² Canadian Cancer Society's Advisory Committee on Cancer Statistics, *Canadian Cancer Statistics 2015*, (2015).

³ Canadian Partnership Against Cancer, *Organized Breast Cancer Screening Programs in Canada: Report on Program Performance in 2007 and 2008*, (2013), p. 3.

⁴ www.statcan.gc.ca/daily-quotidien/160315/dq160315a-eng.pdf (18 March 2016).

⁵ Saskatchewan Cancer Agency, *A Call to Action for a Cancer Prevention Plan for Saskatchewan*, (2010).

⁶ Canadian Cancer Society's Advisory Committee on Cancer Statistics, *Canadian Cancer Statistics 2015*, (2015).

⁷ Canadian Cancer Society's Advisory Committee on Cancer Statistics, *Canadian Cancer Statistics 2010* (2010).

⁸ Information provided by SCA management. Equals approximately 19% of SCA's 2014-15 total drug cost.

⁹ Canadian Partnership Against Cancer, *Organized Breast Cancer Screening Programs in Canada: Report on Program Performance in 2007 and 2008*, (2013), p. 4.

¹⁰ Canadian Cancer Society's Advisory Committee on Cancer Statistics, *Canadian Cancer Statistics 2015*, (2015).

¹¹ Saskatchewan Cancer Agency, *Saskatchewan Cancer Control Report: Profiling trends in Cancer*, (2003).

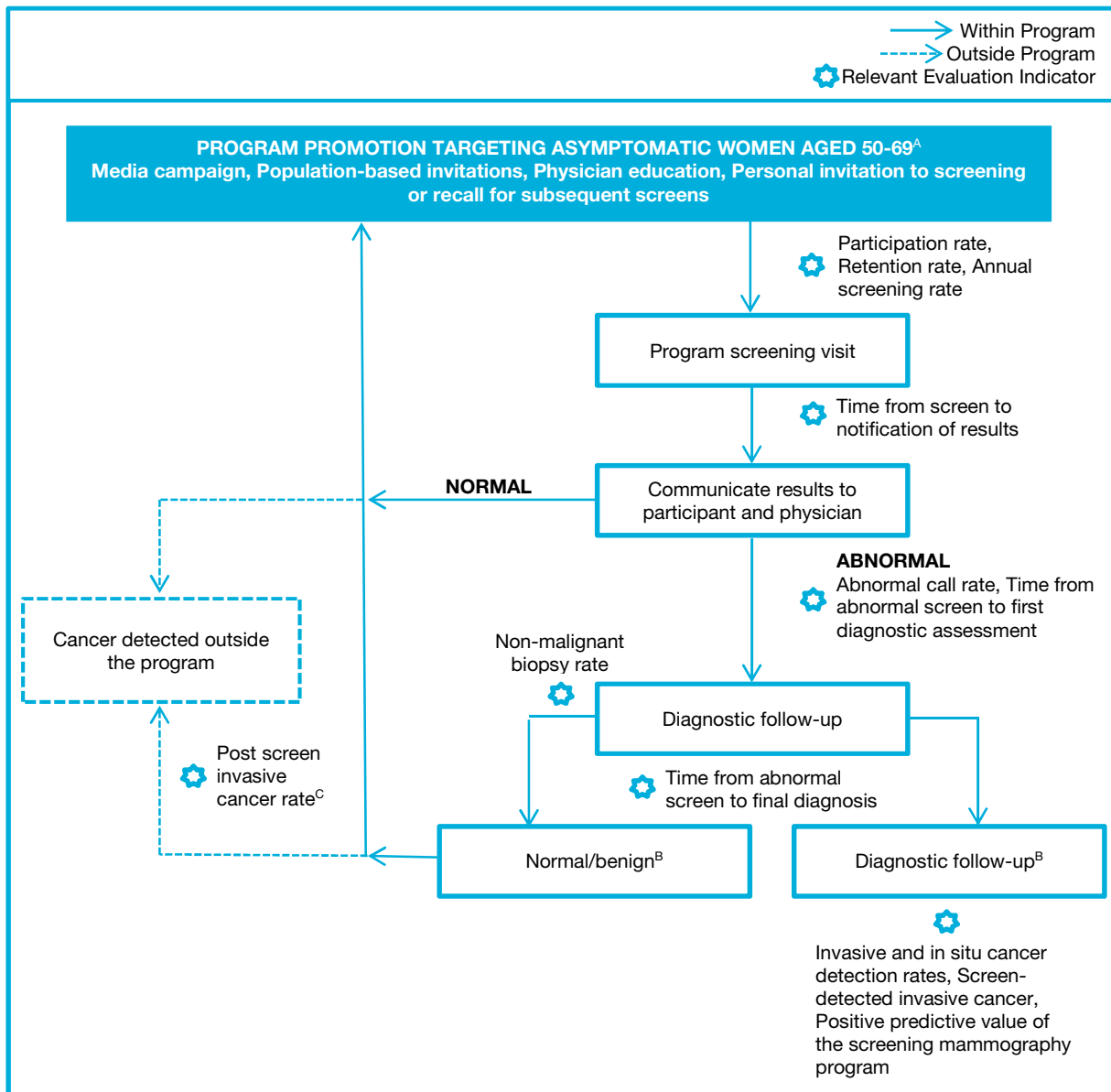
¹² Canadian Partnership Against Cancer, *Organized Breast Cancer Screening Programs in Canada: Report on Program Performance in 2007 and 2008*, (2013), p. 4.

¹³ Canadian Partnership Against Cancer, *Report from the Evaluation Indicators Working Group: Guidelines for Monitoring Breast Cancer Screening Program*, (2013).

Population-based screening enables detection of cancer at an early stage, when it has a high potential for cure.¹⁴ Early detection is based on the concept that the sooner in its natural history the cancer is detected, the more likely the treatment will be effective.¹⁵

Figure 1 outlines the pathway of a breast cancer screening program. The pathway includes program promotion, the screening visit, communicating results to the participant and physician, and diagnostic follow-up, where required. Underlying the pathway are quality indicators to assess the effectiveness of the program at each point.

Figure 1 – Pathway of a Breast Cancer Screening Program



Source: Canadian Partnership Against Cancer, *Report from the Evaluation Indicators Working Group: Guidelines for monitoring breast cancer screening program performance*, (2013).

^A Some women also undergo screening (opportunistic screening or diagnostic mammograms) outside the screening program.

^B Breast cancer screening programs obtain final diagnoses from sources such as physicians, pathology reports, and cancer registries.

^C Cancer detected six months after a screening event are considered to be post screen cancer at the national level.

¹⁴ World Health Organization, *Cancer Control Knowledge into Action – WHO Guide for Effective Programs. Early Detection*, (2007).

¹⁵ Ibid.



Substantial evidence demonstrates that screening and early detection is critical in helping to reduce deaths from breast cancer.¹⁶ The Canadian Cancer Society reports that since the breast cancer incidence rates peaked in 1986, breast cancer screening in women, and advances in breast cancer treatment have helped avoid over 26,000 deaths in Canada.¹⁷

2.3 Breast Cancer Screening in Saskatchewan

SCA provides a population-based screening program for breast cancer. In 2014-15, SCA spent about \$3.8 million on this program. As shown in **Figure 2**, it uses this program to encourage and inform women about the value of regular mammograms (a screening test for breast cancer) and to facilitate accessibility. The SCA Screening Program for Breast Cancer (Screening Program) recognizes that regular mammography is only one tool to detect breast cancer in women.

Figure 2—SCA's Population-Based Screening Program for Breast Cancer

- ▶ Encourages women to make an appointment for a mammogram^A
- ▶ Informs women when they are due for their next mammogram
 - Suggests women over 50 years of age have a mammogram every two years
 - Suggests women who have a family history of breast cancer have a mammogram every year
- ▶ Provides women and their doctor with the mammogram result
- ▶ Facilitates appropriate and timely follow up when additional tests or procedures are required
- ▶ Provides a mobile bus that screens women in rural and northern communities
- ▶ Includes facilities in Regina, Saskatoon, Lloydminster, Moose Jaw, North Battleford, Prince Albert, Swift Current, and Yorkton

Source: Adapted from the SCA Screening Program for Breast Cancer brochure (www.saskcancer.ca).

^A A mammogram is a low dose x-ray of the breast. The x-ray can find changes in the breast, even when they are too small for an individual or their doctor to see.

As shown in **Exhibit 5.0**, the Canadian Partnership Against Cancer¹⁸ has developed 13 indicators to facilitate evaluating the quality of breast cancer screening programs—one key indicator is participation rates in the programs. It has a national target participation rate of 70%. In 2014, participation rates in Canadian breast cancer screening programs ranged from 30.7% to 60.5%.¹⁹

As shown in **Figure 3**, from 2012-13 to 2014-15, the participation rate in SCA's Screening Program has dropped by 6.9%; over the same three-year period, the number of mammograms completed has remained relatively stable. Screening mammograms are also performed outside of the Screening Program (i.e., opportunistic screening). For example, in 2014-15, 16,658 bilateral mammograms²⁰ were performed in Saskatchewan outside of SCA's Screening Program. The cost per test performed outside of SCA's Screening Program is \$201 compared to \$99 per screening test performed through SCA's Screening Program.²¹

¹⁶ Canadian Partnership Against Cancer, *Organized Breast Cancer Screening Programs in Canada: Report on Program Performance in 2007 and 2008*, (2013), p. 4.

¹⁷ Canadian Cancer Society's Advisory Committee on Cancer Statistics, *Canadian Cancer Statistics 2015*, (2015).

¹⁸ The Canadian Partnership Against Cancer is an independent organization funded by the federal government to accelerate action on cancer control for all Canadians. The Partnership works with cancer experts, charitable organizations, governments, cancer agencies, national health organizations, patients, survivors and others to implement Canada's cancer control strategy. www.partnershipagainstcancer.ca (15 March 2016).

¹⁹ These participation rates are based on information provided by the Canadian Partnership Against Cancer to SCA management.

²⁰ This includes mammograms carried out for various purposes (e.g., screening, diagnostic).

²¹ This information was provided by SCA management.

Figure 3—Participation Rates in SCA’s Screening Program for Breast Cancer and Number of Mammograms from 2012-13 to 2014-15

	2012-13	2013-14	2014-15	Trend
Participation rate	46.4%	47.7%	39.5%	↓
Total number of mammograms ^A	36,676	39,067	38,144	→

Source: Saskatchewan Cancer Agency, 2014-15 Annual Report.

^A Only includes mammograms performed within the SCA Screening Program.

If breast cancer is detected early, a significant number of cancer patients can be cured or have their lives prolonged. Early detection could help reduce human suffering, treatment costs, and the need for palliative care services.²²

3.0 AUDIT OBJECTIVE, SCOPE, CRITERIA, AND CONCLUSION

The objective of this audit was to assess the effectiveness of Saskatchewan Cancer Agency’s processes, for the period of March 1, 2015 to February 29, 2016, to deliver its systematic population-based screening program for breast cancer.

For the purposes of the audit, population-based screening is where a test is offered systematically to all individuals in a defined target group (e.g., of the same age range, sex, shared risk factors) within a framework of agreed policy, protocols, quality management, monitoring, and evaluation. Furthermore, screening is defined as the systematic application of a screening test in a presumably asymptomatic (i.e., showing no symptoms of disease) population.²³ The screening aims to identify individuals with an abnormality suggestive of a specific cancer. The identified individuals require further investigation.²⁴

Our audit did not include opportunistic screening for breast cancer. Opportunistic screening is the unsystematic application of screening tests in routine health services (e.g., an individual’s physician makes a recommendation for screening). We also did not audit the interpretation of breast cancer screening test results.

We examined SCA’s policies and procedures related to the Screening Program, national guidelines, statistical reports, promotional items, and other relevant documents. We also interviewed staff responsible for the Breast Cancer Screening Program. In addition, we sampled files for individuals receiving screening through the program. We worked with SCA to ensure confidentiality of patient information was respected throughout our procedures, for example, through anonymizing patient data.

To conduct this audit, we followed the standards for assurance engagements published in the *CPA Canada Handbook – Assurance*. To evaluate the SCA’s processes, we used criteria based on our related work, reviews of literature reports of other auditors, and consultations with management. SCA’s management agreed with the criteria (see **Figure 4**).

²² Saskatchewan Cancer Agency, *Saskatchewan Cancer Control Report: Profiling trends in Cancer*, (2003).

²³ World Health Organization, *Cancer Control Knowledge into Action – WHO Guide for Effective Programs. Early Detection*, (2007).

²⁴ Ibid.

**Figure 4—Audit Criteria**

- 1. Offer access to the Screening Program for Breast Cancer**
 - 1.1 Understand provincial breast cancer risk profile
 - 1.2 Identify individuals for screening
 - 1.3 Make individuals aware of screening services available
 - 1.4 Establish strategies to reach individuals for screening
- 2. Deliver the Screening Program for Breast Cancer**
 - 2.1 Establish policies and procedures for providing the Screening Program that align with best practice
 - 2.2 Maintain adequately trained staff
 - 2.3 Invite individuals for screening
 - 2.4 Administer the screening test
 - 2.5 Timely follow up on abnormal test results
- 3. Monitor performance related to the Breast Cancer Screening Program**
 - 3.1 Continuously align program with best practice and national benchmarks
 - 3.2 Maintain quality assurance processes (e.g., inspection of machines, chart audits)
 - 3.3 Collect key breast cancer screening performance information
 - 3.4 Assess results against breast cancer screening performance benchmarks
 - 3.5 Report key breast cancer screening performance information (senior management, Board, public)

We concluded that, for the period of March 1, 2015 to February 29, 2016, Saskatchewan Cancer Agency had, other than for the following, effective processes to deliver its systematic population-based screening program for breast cancer. Saskatchewan Cancer Agency needs to:

- › Evaluate the success of its Screening Program promotional activities
- › Develop a strategy to engage physicians to increase awareness of the Screening Program
- › Analyze information on difficult-to-screen populations to assess whether sufficient strategies are in place to reach these individuals for screening
- › Broaden the use of key quality indicators relevant to Saskatchewan to regularly analyze the performance of its Screening Program
- › Periodically report to senior management, the Board, and the public on key Screening Program performance information

4.0 KEY FINDINGS AND RECOMMENDATIONS

In this section, we set out the criteria (expectations in italics) and our key findings along with related recommendations.

4.1 Access Offered to Screening Program but Better Awareness Activities Needed

4.1.1 Target Group Identified for Screening

We expected SCA to gather information to provide an accurate picture of the provincial breast cancer risk profile (e.g., higher risk groups). We expected SCA to use an evidence-based approach for establishing a target group for screening (e.g., age range),

and identify eligible women through use of an information system. We also expected SCA to identify difficult-to-screen populations.

SCA participates in a national committee called the Canadian Breast Cancer Screening Network, hosted by the Canadian Partnership Against Cancer (CPAC). SCA, along with all other provinces, submit screening program data (e.g., participation information, overall screening results) to CPAC. CPAC uses this data to monitor and report publicly on the impact of breast cancer screening programs nationally. SCA leverages CPAC's work to understand the Saskatchewan breast cancer risk profile (e.g., those at higher risk of being diagnosed with breast cancer).

SCA's participation in the national committee also helps SCA identify difficult-to-screen populations. Difficult-to-screen populations include those in rural and remote communities, those with low income, and new immigrants.

SCA's Screening Program, in common with other Canadian breast cancer screening programs, follows guidelines set by the Canadian Task Force on Preventative Health Care.²⁵ The Breast Cancer Screening Guidelines regard women between the ages of 50 and 74 as the primary target group for breast cancer screening. In Saskatchewan, approximately 155,000 women are between the ages of 50 and 74.²⁶ The Task Force Guidelines recommend routinely (i.e., every two to three years) screening women within this target group using mammography. Women within this target group are eligible to participate in SCA's Breast Cancer Screening Program.

SCA uses an electronic screening information system to identify eligible women, and track their participation in its Screening Program. Each week, information from Saskatchewan's personal health registration system²⁷ automatically updates SCA's screening information system. The updated information includes individuals recently eligible for the Screening Program (e.g., women who entered SCA's target group), and any changes to information for individuals already participating in the program (e.g., change in address).

4.1.2 Better Engagement of Physicians in Promotional Activities Needed

We expected SCA's strategies to reach eligible individuals (i.e., those within the target population) would include activities to promote the Screening Program (e.g., public education). We expected SCA to liaise with health care organizations, professional associations, and medical colleges to promote participation in the Screening Program. We expected it to evaluate its promotional activities periodically for effectiveness.

SCA educates the public about its Screening Program through various promotional activities. Each year, it spends about \$43,000 on promotional activities. Two staff (early detection coordinators) are responsible for organizing these activities.

For example, SCA staff routinely participate in tradeshow and educational events for the general population, and educational events targeted at difficult-to-screen

²⁵ The Public Health Agency of Canada established the Canadian Task Force on Preventative Health Care to develop clinical practice guidelines that support primary care providers in delivering preventative health care.

²⁶ <http://population.health.gov.sk.ca/skpop.htm> (22 March 2016).

²⁷ eHealth Saskatchewan, a provincial government agency, administers Saskatchewan's personal health registration system.



populations. Additionally, SCA generates awareness through radio and newspaper ads. SCA uses targeted ads to promote the availability of the mobile mammography bus in selected areas, and the national breast cancer awareness campaign, which takes place annually in October. SCA also held educational events for new international physicians and new medical residents. It participated in two annual conferences targeted to nurses.

We found SCA had not established how to determine the success of its promotional activities. For example, it did not determine the expected percentage increase in participation rates for a particular promotional activity for a targeted region or group. Rather, management indicated that it informally evaluates its promotional activities on an annual basis. It discusses what worked well, and what it needs to improve. No documentation of these discussions was available for review.

Without measuring success, SCA cannot know whether its promotional activities are effective and whether the activities are providing the greatest value in terms of educating the public. It also limits SCA's ability to assess whether it has the optimal mix of promotional activities in place.

- 1. We recommend that the Saskatchewan Cancer Agency evaluate the success of its Screening Program for Breast Cancer promotional activities against expectations.**

While SCA participates in several events for healthcare providers (e.g., physicians) each year, it does not have ongoing liaison with physicians outside of these events. We found that it did not have a strategy to engage physicians in promotional initiatives to increase the rate of participation of eligible women in its Screening Program.

We noted that another jurisdiction (e.g., British Columbia) has found that physicians can be a key prompt to encourage women to participate in a screening program. For example, they have physicians send out personalized invitation letters to their patients about the screening program; they have found physician-to-patient communications have positively impacted participation rates in the screening program.

Not having a strategy to engage physicians in promoting breast cancer screening increases the risk of SCA missing opportunities to increase participation rates in its Screening Program, and reduces an opportunity for early detection of breast cancer.

- 2. We recommend that the Saskatchewan Cancer Agency develop a strategy to engage physicians in initiatives to increase awareness of its Screening Program for Breast Cancer.**

4.1.3 Evaluation of Strategies to Reach Difficult-to-Screen Populations Needed

We expected SCA to establish strategies, beyond its general promotional activities, to reach difficult-to-screen populations (e.g., those in rural or remote communities, new immigrants, those with low income).

Of the approximately 155,000 women within the Screening Program's target group, populations considered difficult-to-screen populations by SCA form a significant portion of the target group. For example, nearly 33% of Saskatchewan's population lives in rural areas.²⁸ As such, it is important for SCA to establish separate strategies to reach each of these groups.

We found SCA has developed several targeted strategies to reach difficult-to-screen populations. SCA's primary strategy to reach women in rural and remote areas is to make screening more accessible through the use of a mobile mammography bus, and as previously noted, use of ads to make individuals aware of the timing of visits to their community.

As shown in **Figure 5**, SCA performed 8,137 scans on the mobile bus in 2014-15 (21.3% of the total number of mammograms). During 2014-15, this mobile bus travelled to 18 communities located throughout Saskatchewan ranging from stays of four to thirty-five days. In 2015-16, SCA visited 17 additional communities.²⁹

Figure 5—Number of Screening Mammograms on the Mobile Unit

	2012-13	2013-14	2014-15
Number of scans performed on the mobile unit	6,136	8,390	8,137
Number of communities visited	6 ^A	22	18 ^B
% of total mammograms	16.7%	21.5%	21.3%

Source: Saskatchewan Cancer Agency, *2014-15 Annual Report* and SCA records.

^A In 2012-13 the mammography equipment on the mobile bus was replaced which resulted in the mobile bus not being available for use for approximately eight months.

^B Carlyle, Moosomin, Broadview, Grenfell, Wynyard, Lanigan, Watrous, Spiritwood, St. Walburg, Onion Lake, Meadow Lake, Kerrobert, Kindersley, Outlook, Davidson, Weyburn, Assiniboia, Gravelbourg.

SCA also developed a People Connect strategy to reach vulnerable populations (e.g., those with lower income) living in Saskatoon's core neighbourhood. Programming targeted at immigrant groups has also been developed through engagement with the Regina Open Door Society.³⁰ We also note that SCA management attended a national workshop in 2015 to explore opportunities to engage difficult-to-screen populations in its Screening Program.

However, we found that SCA does not use information that it already collects (e.g., geographic information) to track participation rates of difficult-to-screen populations (e.g., those in rural or remote areas).

Without sufficient information on difficult-to-screen populations, it is difficult to evaluate whether strategies targeted at these populations are increasing participation rates in its Screening Program.

²⁸ www.statcan.gc.ca/tables-tableaux/sum-som/I01/cst01/demo62i-eng.htm (18 March 2016).

²⁹ Shaunavon, Maple Creek, Leader, Rosetown, Humboldt, Wadena, Kelvington, Porcupine Plain, Hudson Bay, Creighton, Pelican Narrows, Nipawin, Tisdale, Melfort, Estevan, Carnduff, Carlyle.

³⁰ The Regina Open Door Society is a non-profit organization that provides settlement and integration services to refugees and immigrants in Regina. www.rods.sk.ca (7 March 2016).



3. We recommend that the Saskatchewan Cancer Agency analyze information on difficult-to-screen populations for its Screening Program for Breast Cancer to assess whether sufficient strategies are in place to reach these individuals for screening.

4.2 Screening Program Delivered

4.2.1 Screening Policies and Procedures Established; Staff Adequately Trained

We expected SCA to have documented guidance in place for Screening Program staff that aligns with best practice for breast cancer screening programs. We expected that SCA would ensure that healthcare workers involved in the Screening Program have adequate training.

As noted in **Section 4.1.1**, SCA follows the Canadian Task Force on Preventative Health Care – Breast Cancer Screening Guidelines regarding screening age range and how often screening should take place. This Task Force monitors the scientific developments in breast cancer screening, and updates the Guidelines.

SCA employs or contracts with about 54 healthcare professionals, such as nurses and mammography technologists, to operate the Screening Program. Additionally, SCA contracts with radiologists to read and interpret mammogram scans. It has nine mammography facilities.³¹

SCA provides staff involved in the Screening Program delivery (e.g., mammography technologists, client navigators,³² early detection coordinators, and reception staff) with guidance such as job descriptions and procedure manuals. In addition, SCA provides client navigators with guidelines to follow when abnormal screening results are identified.

SCA participates in the Canadian Radiologists Association Mammography Accreditation Program. To meet the minimum Accreditation Program requirements to receive accreditation for each of its mammography facilities, SCA must submit information related to its mammography personnel at the facility (e.g., radiologists, technologists, medical physicists). SCA must also confirm the radiologists that it contracts with, and its employed technologists that specialize in screening mammography, have met the minimum continuing professional development requirements (i.e., 15 hours of breast imaging over a three-year period).

Every three years, SCA seeks accreditation for each of its mammography facilities through the Canadian Radiologists Association Mammography Accreditation Program. Each of its facilities held accreditation during the audit period (from March 1, 2015 to February 29, 2016). For example, its Saskatoon facility received accreditation in 2013,

³¹ Mammography facilities include two permanent locations, six satellite facilities, and the mobile bus unit.

³² Client navigators are registered nurses employed by SCA. Navigators coordinate diagnostic mammograms and/or ultrasounds as recommended by the radiologists for women with an abnormal screen result.
www.saskcancer.ca/SPBC%20Guidelines (18 March 2016).

and is due for another accreditation review in 2016. Its Regina facility received accreditation in 2015 and is due for another review in 2018.

4.2.2 Eligible Women Invited for Screening and Timely Scheduling of Screening Tests

We expected that SCA would invite individuals eligible for screening to voluntarily participate in the program. We expected SCA to track information on each eligible individual related to screening (e.g., client demographic information, dates of screening, results of assessment) and use this information to invite them for screening at appropriate intervals. We expected that SCA would schedule a screening test in a reasonable amount of time after the invitation is accepted.

As described in **Section 4.1.1**, SCA uses a screening information system to identify individuals eligible for screening, to track participation in the Screening Program, and to track key information on participants. The system captures information on screening, assessment of abnormal results, cancer diagnosis information, and some demographic information (e.g., date of birth, family history of breast cancer).

SCA programmed the screening information system to follow its guidelines in determining the frequency of screening for eligible individuals (e.g., every two years if an individual is designated at normal risk of breast cancer). SCA provides an opt-out process for eligible individuals who choose not to enrol in the program. It updates its screening information system to indicate which individuals choose to opt-out (i.e., decide not to enrol). It does not send further communications to these individuals. Approximately 1% of eligible individuals choose to opt-out of the program.

The screening information system automatically determines the next screening date for each eligible individual based on the following: the date of the last screening (if any), enrolment status, the results of the previous screening, and other criteria (e.g., breast implants, cancer diagnosis, abnormal results).

The system automatically generates invitation letters to eligible individuals enrolled in the program based on the system-generated screening dates. SCA staff mail these letters to eligible individuals. If SCA does not receive a response from the individual, it automatically sends a reminder letter after four weeks.

We tested whether the SCA screening information system followed its guidelines in determining the frequency of screening dates. For the individuals we sampled, we found SCA sent invitation letters to newly eligible individuals seeking their first-time participation in the program, and sent other invitation letters consistent with the guidelines.

The invitations ask eligible individuals to schedule a screening appointment. After the appointment is scheduled, these individuals are referred to as clients.

SCA has established an internal measure that it schedules the mammogram-screening test within six weeks of client request for an appointment. For the clients we sampled, all received screening appointments within six weeks of contacting SCA with one exception. In one case, the client asked for an appointment outside of the six-week period.



4.2.3 Communication of Test Results and Follow Up Timely

We expected that SCA would communicate screening test results to clients and to their physicians promptly. We also expected that SCA would ensure clients with abnormal screening test results receive a diagnostic assessment, and a definitive diagnosis within a reasonable time period.

SCA uses the benchmarks set by CPAC for communicating screening test results to clients. Consistent with CPAC benchmarks, SCA requires:

- › 90% of normal and abnormal screening test results be communicated to the client and the client's physician within two weeks of the screening test date
- › 90% of clients with abnormal screening test results receive a diagnostic assessment³³ within three weeks of the screening test date
- › 90% of clients with abnormal screening test results receive a definitive diagnosis within five weeks if no tissue biopsy³⁴ performed, or within seven weeks if a tissue biopsy is performed

SCA completes mammograms at its various screening facilities and provides radiologists with screens for interpretation. Radiologists read the scans and provide SCA with the results upon completion of the read. We found that SCA sets out expectations for providing timely results of screening tests in its contracts with radiologists. It expects radiologists to report the results of mammograms as soon as possible, and no longer than one week from the date of the screening test.

For the screening tests (normal and abnormal) we sampled, we found that SCA provided results letters to all clients within two weeks of the screening test date. SCA also communicated to the client's physician the test results (i.e., a screening report) within two weeks of the screening test date.

For clients with abnormal screening test results, SCA works with the client's physician to arrange diagnostic imaging and other necessary follow-ups. Management indicated that in approximately 90% of cases, physicians sign a medical directive allowing SCA client navigators to set up follow-ups on behalf of the physician.

Each client that we sampled with abnormal screening test results had a diagnostic assessment completed within three weeks of the screening test date. Also, each of those clients received a definitive diagnosis within the benchmarks set by CPAC.

³³ A diagnostic assessment may include additional imaging (i.e., an ultrasound) or a tissue biopsy.

³⁴ A biopsy is removal of breast tissue samples for microscopic evaluation to determine if cancer is present.

4.3 Better Performance Monitoring and Reporting Needed

4.3.1 Screening Program Aligned with Best Practice and National Benchmarks

We expected that SCA would have processes to continually align the Screening Program with best practice and national benchmarks.

SCA uses participation in national committees to keep aware of breast cancer screening program best practice, and to align its program with national indicators (e.g., participation rates, cancer detection rates). Changes to best practice and benchmarks do not happen frequently since breast cancer screening programs in Canada are well established. However, by participating in these committees, SCA is made aware of any changes when they occur.

As described in **Section 4.1.1**, SCA management is actively involved in the Canadian Breast Cancer Screening Network, a national committee, which meets twice a year. The objectives of the Network are to:

- › Foster the development of sustainable, high quality breast cancer screening in Canada
- › Share and facilitate the use of best practices to enhance breast cancer screening in Canada
- › Develop and promote quality initiatives including the monitoring and evaluation of outcomes for breast cancer screening in Canada
- › Share and evaluate the latest research, policy and practice changes; and
- › Facilitate the integration of breast cancer screening across the spectrum of cancer control³⁵

SCA management is also a member of the Canadian Breast Screening Network Monitoring and Evaluation Group. This Group is comprised of representatives from each province/territory, CPAC, and a radiologist with expertise in screening mammography. The Group meets in-person twice a year to review and evaluate existing and potential new quality indicators and targets for breast screening programs. It also monitors and evaluates emerging issues. Members also receive updates through emails, teleconferences, webinars, and the use of a collaborative website.

4.3.2 Quality Assurance Processes for its Screening Equipment Maintained

We expected SCA to have regular quality assurance processes in place to assess the performance of Screening Program equipment (e.g., inspection of mammogram machines).

³⁵ Canadian Partnership Against Cancer, *Canadian Breast Cancer Screening Network Terms of Reference*, (2015).



As described in **Section 4.2.1**, SCA receives accreditation for each of its mammography facilities through the Canadian Association of Radiologists Mammography Accreditation Program every three years. SCA must meet certain requirements to receive this accreditation. These requirements include:

- › An annual physicist inspection³⁶ of all mammography equipment
- › Documentation of quality control tests for mammography equipment (e.g., daily monitor inspection and cleaning)
- › Documentation that mammography technologists and radiologists are appropriately qualified (e.g., all staff have met minimum continuing professional development requirements, radiologists have interpreted the minimum number of mammograms)
- › Submission of mammograms from all mammography equipment for testing and evaluation by the accreditation program

We found that SCA submitted the appropriate documentation related to each of its screening equipment and staff for all of its facilities, and that each facility had accreditation status.

We also found that the SCA's mammography technologist procedure manual requires that following a radiologist's review of a mammography screen, a mammography technologist performs a blind second read where the technologist is not aware of the results of the radiologist's assessment of the screen. If the technologist's and radiologist's assessments do not agree, an additional review is performed by a second radiologist.

In addition, SCA uses software that identifies suspicious features on a scanned image, and brings them to the attention of a radiologist. Management also indicated that radiologists hold quarterly quality assurance meetings to review mammogram screening results.

4.3.3 Better Information on Success of Screening Program Needed

We expected SCA to collect key performance information related to the Screening Program on a timely basis, compare this information against established benchmarks, and take timely action to address areas that fall short of established benchmarks. We also expected SCA to have processes in place to assess the performance of Screening Program staff (e.g., performance of radiologists).

We found that SCA uses some information in its screening information system (e.g., the number of mammograms performed, the number of normal screens, the number of abnormal screens, participation rate). While this information provides some information needed to monitor performance of the program, it does not fully enable SCA to monitor whether its Screening Program is effective (e.g., whether breast cancer is correctly identified during the screening test).

³⁶ The Radiation Safety Unit of the Ministry of Labour Relations and Workplace Safety does the inspections.

We also found that each year, SCA submits data to CPAC to enable CPAC to report information publicly on national results against established targets on its 13 quality indicators (see **Exhibit 5.0**). However, reporting intervals for CPAC vary significantly due to the length of time it takes CPAC to publish these reports.

In 2015, CPAC published its *Monitoring and Evaluation of Quality Indicators – Results Report* for the period of January 2009 – December 2010.³⁷ SCA received an update from CPAC on 6 out of 13 of the indicators, for the 30 months ended December 31, 2014 in February 2016. Therefore, while CPAC reports are useful to compare SCA's Screening Program to other screening programs across Canada, SCA cannot rely solely upon them to monitor its Screening Program. This is because it does not receive the CPAC reports on a timely basis.

SCA also uses some of the CPAC indicators to annually monitor the performance of individual radiologists. It tracks the number of mammography screens performed by each radiologist and certain statistics such as the abnormal call rate,³⁸ invasive cancer detection rate,³⁹ and in situ cancer detection rate⁴⁰ for each radiologist. However, we found the statistics used to monitor performance was several years old. The 2015 review used data from 2012.

SCA needs to determine how it could best analyze the overall performance of its Screening Program. This would include determining what information it needs to assess the effectiveness of the program, including key quality indicators that are relevant to Saskatchewan (e.g., CPAC quality indicators, wait times), and how often to analyze them (e.g., annually, every two years).

Without regular, timely tracking of key quality indicators and the performance of radiologists, SCA's ability to analyze performance information and take timely action to address areas that fall short of established benchmarks is limited.

4. We recommend that the Saskatchewan Cancer Agency broaden the use of key quality indicators relevant to Saskatchewan to regularly analyze the performance of its Screening Program for Breast Cancer.

4.3.4 Periodic Reporting Needed

We expected SCA to provide regular reports on key Screening Program performance information (e.g., quality indicators) to SCA senior management, the SCA Board, and to the public.

SCA reports participation rates and wait times (i.e., time between client contact with SCA and when mammogram received) quarterly to senior management and the Board. SCA recognizes that the participation rate in the Screening Program is low. In July 2015, management prepared, for senior management, information on the volume of screening

³⁷ www.cancerview.ca/idc/groups/public/documents/webcontent/breast_cancer_screening_me.pdf (2 March 2016).

³⁸ The abnormal call rate is the percentage of mammograms that are identified as abnormal at program screen.

³⁹ The invasive cancer detection rate is the number of invasive cancers detected per 1,000 screens.

⁴⁰ The in situ cancer detection rate is the number of ductal carcinoma in situ (i.e., non-invasive breast tumour) cancers detected per 1,000 screens.



tests performed within the Screening Program as compared to opportunistic screening. It noted SCA is looking for strategies to increase participation.

SCA reports participation rates and volume information to the public in its annual report (e.g., total number of screening tests as well as the number of screening tests completed in Regina, Saskatoon, on the mobile bus unit, and at satellite centres).⁴¹

However, as described in **Section 4.3.3**, performance information on quality indicators is not compiled and analyzed timely which limits the effectiveness of SCA's reporting. Without reporting on key performance information, SCA senior management, the Board, and the public will not be able to assess the effectiveness of the Screening Program.

5. We recommend that the Saskatchewan Cancer Agency periodically report to senior management, the Board, and the public on key performance information for the Screening Program for Breast Cancer.

5.0 EXHIBIT—QUALITY INDICATORS FOR ORGANIZED BREAST CANCER SCREENING PROGRAMS IN CANADA, WOMEN AGED 50-69

Indicator	Definition	Target
Participation rate	Percentage of women who have a screening mammogram (within a 30-month period) as a proportion of the target population.	≥ 70% of the target population within a 30-month period.
Retention rate	The estimated percentage of women age 60-67 who returned for screening within 30 months.	≥ 75% screened within 30 months of an initial screen; ≥ 90% screened within 30 months of a subsequent screen.
Annual screening rate	The estimated percentage of women aged 50-68 who are screened within 18 months of their previous screen.	% of women screened within 18 months of an initial screen; % women screened within 18 months of a subsequent screen. (Surveillance and monitoring purposes only)
Abnormal call rate	Percentage of mammograms that are identified as abnormal at program screen.	< 10% (initial screen); < 5% (subsequent screen).
Invasive cancer detection rate	Number of invasive cancers detected per 1,000 screens.	> 5 per 1,000 (initial screen); > 3 per 1,000 (subsequent screens).
In situ cancer detection	(a) Number of ductal carcinoma in situ (DCIS) cancers detected per 1,000 screens. (b) Percentage of all cancers that are DCIS.	(a) Per 1,000 screens (initial); per 1,000 screens (subsequent screen). (Surveillance and monitoring purposes only). (b) % DCIS (initial); % DCIS (subsequent screen). (Surveillance and monitoring purposes only)

⁴¹ Saskatchewan Cancer Agency, *2014-15 Annual Report*, (2015).

Indicator	Definition	Target
Diagnostic interval	(a) Time from screen to notification of screen result. (b) Time from abnormal screen to first diagnostic assessment. (c) Time from abnormal screen to definitive diagnosis.	(a) $\geq 90\%$ within 2 weeks; (b) $\geq 90\%$ within 3 weeks; (c) $\geq 90\%$ within 5 weeks if no tissue biopsy performed; $\geq 90\%$ within seven weeks if tissue biopsy performed.
Positive predictive value of the screening mammography program	Portion of abnormal cases with completed follow-up found to have breast cancer (invasive or in situ) after diagnostic work-up.	$\geq 5\%$ (initial screen); $\geq 6\%$ (subsequent screens).
Non-malignant biopsy rate	(a) Number of non-malignant open and core biopsies per 1,000 screens. (b) Percentage of non-malignant biopsies which were open.	Per 1,000 screens (initial); Per 1,000 screens (subsequent screen). (Surveillance and monitoring purposes only).
Screen-detected invasive tumour size	Percentage of invasive cancers with tumour size of $\leq 15\text{mm}$ in greatest diameter as determined by the best available evidence: 1) Pathological, 2) Radiological, and 3) Clinical.	$\geq 50\%$ screen-detected invasive tumours.
Proportion of node negative screen-detected invasive cancer	Proportion of invasive screen-detected cancers in which the cancer has not invaded the lymph nodes.	$> 70\%$ screen-detected invasive cancers.
Post-screen invasive cancer rate	Number of invasive breast cancers found after a normal or benign mammography screening episode within 0 to < 12 and 12-24 months of the screen date.	< 6 per 10,000 person-years (0 to < 12 months); < 12 per 10,000 person-years (12-24 months).
Sensitivity of the screening mammography program	Proportion of breast cancer cases that were correctly identified as having cancer during the screening episode.	% (Subsequent screens). (Surveillance and monitoring purposes only).

Source: Canadian Partnership Against Cancer, *Quality Determinants of Breast Cancer Screening with Mammography in Canada*, (2013).

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