



MANITOBA  
BREAST SCREENING  
PROGRAM

BIENNIAL  
REPORT  
2006-2008







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# Executive Summary

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The goal of the Manitoba Breast Screening Program (MBSP) is to reduce mortality from breast cancer by screening 70% of women 50 to 69 years of age every two years.

This report provides a description of activities and program outcomes from April 2006 to March 2008.

Highlights include the following:

- The MBSP provided 71,394 screens to women 50 to 69 years of age (14,323 first screens and 57,071 re-screens).
- Program access was improved by adding appointments to most existing mobile sites through to October 2007. In addition, mobile sites were added in Sioux Valley First Nation and Birch River, and Rossburn was made a yearly mobile screening site improving yearly access to the northern part of the Assiniboine RHA.
- A 2-year multi-cultural outreach project was completed in March 2007. The goal of this project was to improve breast and cervical cancer screening rates among women from five immigrant communities in Manitoba by addressing barriers related to culture, access, transportation, and language.
- We obtained funding to continue our outreach work and integrate multi-cultural outreach with a new Reduce Your Cancer Risk DVD project. The DVD provides information on the risk factors for cancer, how to lower personal risk, and screening guidelines (age and frequency).
- The overall program participation for the province was 52%.
- The abnormal call rate was 9.3% for first screens and 4.5% for re-screens.
- The average time from screening to final diagnosis was 4.3 weeks (median time of 3 weeks) for women who did not have a tissue biopsy and 10 weeks (median time of 9 weeks) for women who did have a tissue biopsy.
- During 2006 and 2007, the MBSP detected 271 cases of invasive breast cancer in women 50 to 69 years of age. The cancer detection rate was 3.8 per 1000 women screened (4.6 per 1000 women screened for first screens and 3.6 per 1000 women screened for re-screens).
- The positive predictive value for women who were screened in 2006 and 2007 was 5.2% for first screens and 7.9% for re-screens.
- The benign to malignant open biopsy ratio during this time period was 3:1.
- Thirty-four percent of invasive breast cancers were less than or equal to 10 mm in size; 58% were less than or equal to 15 mm in size. Seventy-eight percent of cases were lymph node negative. Sixty-eight percent of cases staged were stage I, 25% were stage II and 7% were stage III or IV.
- Screening Manitoba women for breast cancer reduced the mortality rate by 23%.
- The MBSP exceeds most national screening targets with the exception of participation, the time from screening to final diagnosis, open biopsy ratio, and the invasive cancer detection rate for first screens.

# Introduction

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The Manitoba Breast Screening Program (MBSP) began in 1995. The goal of the program is to reduce mortality from breast cancer by finding it as early as possible. Screening services are provided at 4 fixed sites; Misericordia Health Centre in Winnipeg, Brandon Regional Health Centre, Thompson General Hospital, and Boundary Trails Health Centre in Morden/Winkler. Two mobile screening vans visit 79 rural and northern communities year round and 8 Winnipeg city sites.

The screening process includes the following steps:

1. Recruitment and recall of the target population.
2. Provision of a 2-view mammogram.
3. Investigation of abnormal screening results.

The MBSP's target population includes all eligible women 50 to 69 years of age. Women are eligible to attend the program if they are asymptomatic, have never been diagnosed with breast cancer, and do not have breast implants. Screening is provided to women outside the target age group at the mobile sites with a doctor's referral. Women receive a personal invitation to screening when they turn 50 years of age. Invitation letters and reminder letters are also sent to non-participants and overdue women who live in rural areas based on the mobile screening vans' schedule. All women who are 50 to 69 years of age and 40 to 49 year old women who have been referred by their family physician to a mobile screening site are automatically recalled by the MBSP either annually or biennially based on the radiologist's recommendations.

Following screening, each woman and her family physician is sent her mammography results. If the results are abnormal and a woman requires further tests, the program will facilitate this process by directly referring her to one of five diagnostic facilities or the Breast Health Centre after receiving permission from her family physician. After scheduling the appointment, the client is telephoned with the appointment date and time. The doctor and the client are sent a letter that states the appointment date and time and the screening films are sent to the diagnostic facility. All diagnostic test information and the final diagnosis is obtained by the program.

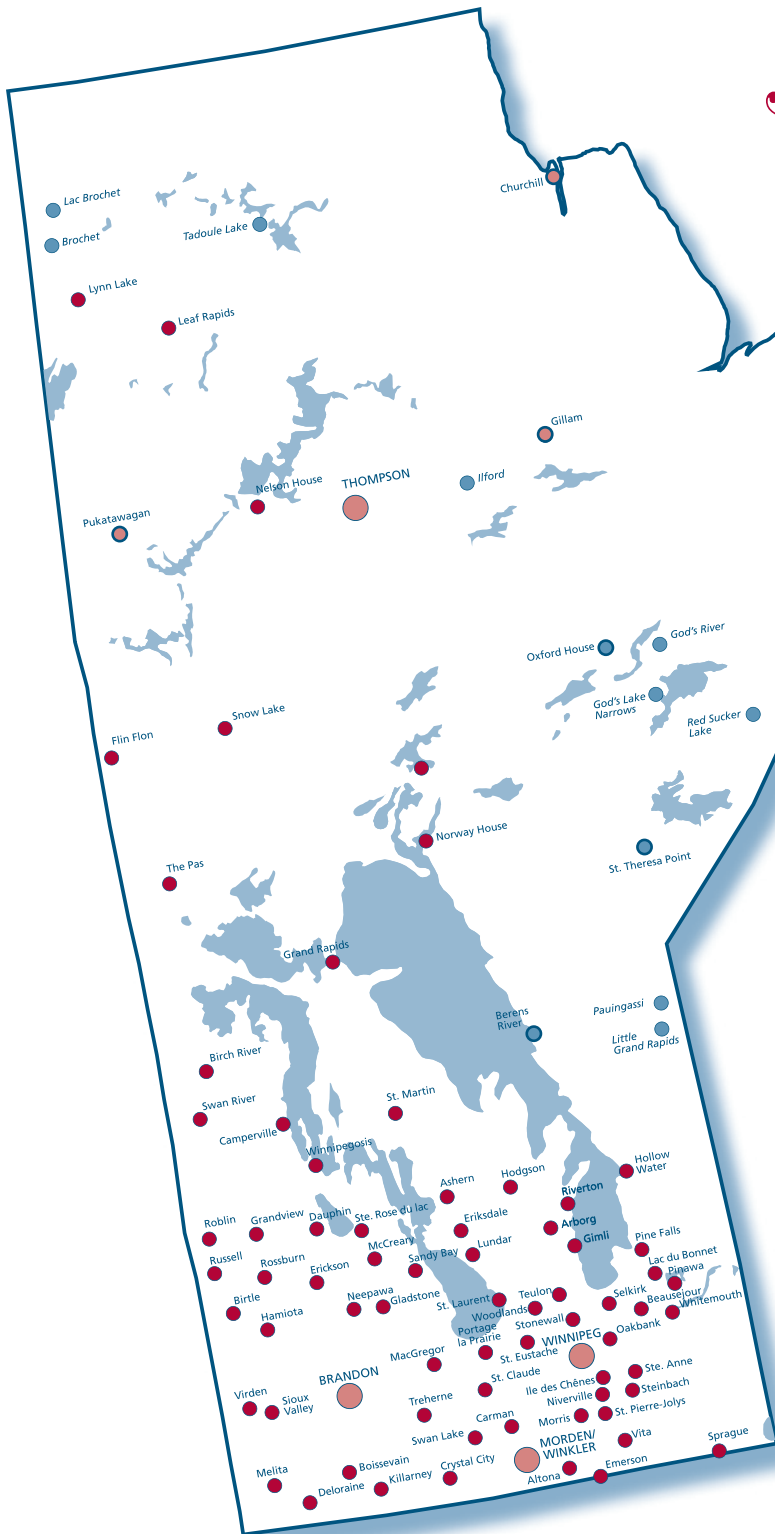
This report presents the key activities and program outcomes for women 50 to 69 years of age who were screened from April 1 2006 to March 31, 2008 unless otherwise indicated.

# Recruitment and Promotion

The MBSP strives to maximize the numbers of appointments available and provide access for as many Manitoba women as possible. Most women indicate that the letter of invitation is their primary reason for booking an appointment. A physician referral is the next most common reason. When letters are combined with a community information campaign, the response improves further. Information and poster packages are sent to our Regional Health Authority (RHA) partners, doctors, pharmacists, and community groups. We also advertise in local newspapers and arrange radio advertising for stations that reach immigrant and aboriginal audiences. A special effort is made to contact First Nation communities to offer group trips to the closest mobile site if we do not travel to their community.

The program continued to benefit from the increase in appointments associated with stopping the clinical breast examination in October 2005. This included the following initiatives:

- Appointments were added to most existing mobile sites through to October 2007. RHA staff helped us fill the additional appointments.
- We added a mobile site at Sioux Valley First Nation in June 2006 resulting in increased rates.
- We added a site at Birch River also improving rates in the area.
- Rossburn was made a yearly mobile screening site in June 2007 improving yearly access to the northern part of the Assiniboine RHA.



## LEGEND

- Fixed Sites
- Mobile Sites by Road
- Mobile Sites by Train
- Mobile Sites by Winter Road
- Flight Project Communities



## ***Multi-cultural project***

The 2-year multi-cultural outreach project was completed in March 2007. Six hundred and fifty-seven immigrant women attended 57 presentations. Fifty-six women participated in group trips to breast screening and 124 women went for Pap tests. Results showed that immigrant women appreciate receiving information in their own language and that many were not previously aware of the information or services available.

The goal of this project was to improve breast and cervical cancer screening rates among women from five immigrant communities in Manitoba by addressing barriers related to culture, access, transportation, and language.

The project objectives were:

1. To increase the number of women attending breast screening and having Pap tests from the Chinese, Vietnamese, Spanish, Filipino and Portuguese communities.
2. To increase awareness about breast and cervical cancer.
3. To determine whether or not under-served women were reached.

The project involved eleven community agencies/partners and included the following project activities:

- The development of evaluation tools for each phase of the project.
- The establishment of an advisory committee in each of the 5 cultural communities.
- Five facilitators were hired and trained, one in each community.
- 25 support persons were trained, 5 from each community.

- A video and evaluation forms were translated into 5 languages.

Outcomes:

- 657 women attended 57 presentations
- 124 women attended group trips for Pap tests and 56 women attended group trips for a screening mammogram
- One breast cancer and one high grade cervical abnormality were detected in the group trip participants.
- Two focus groups were held with the facilitators and community support people involved in the project. Valuable insight was gained from their experience in the project.

## ***Reduce Your Cancer Risk DVD project***

We obtained funding to continue our outreach work and integrate multi-cultural outreach with our new

Reduce Your Cancer Risk DVD project. The

DVD project was a partnership between the CancerCare Manitoba Foundation and the CancerCare Manitoba Breast, Cervical and Colorectal Cancer Screening Programs.

The DVD provides information on the risk factors for cancer, how to lower personal risk, and screening guidelines (age and frequency). The DVD has 4 Reduce

Your Risk chapters 5 to 8 minutes

in length, available in English, French, Chinese, Cree, Hindi, Ojibwe, Panjabi, Portuguese, Tagalog, Spanish and Vietnamese.

A **Facilitator Tool Kit** for lay and health care workers enhances the work of the DVD. This resource is designed to accompany the video and assist community health facilitators to deliver a video-based group presentation to members of their community.



A "Pass It On" DVD can be ordered to share with family, friends, and co-workers.

The DVD is available to view and order on the [www.cancercare.mb.ca](http://www.cancercare.mb.ca) site in the resource page of each screening program or by contacting any of the screening programs.

### ***Flight project: fall 2006 to winter 2008***

The flight project used partial funding from the CancerCare Manitoba Foundation to determine the feasibility of chartering flights for women, without mobile access or reasonable winter road access, to the closest screening site. Transportation costs for the 10 remote communities were not covered by Federal or provincial programs. The 10 communities to benefit from this project were Brochet, Tadoule Lake, Lac Brochet, Little Grand Rapids, Paunigassi, Shamattawa, Ilford, God's River, God's Lake Narrows, and Red Sucker Lake.

### **Outcomes**

One hundred and twenty-eight women were flown from 10 communities and were screened at the closest mobile site or at the Winnipeg screening site. Eighty-two of these women had never participated in the Manitoba Breast Screening Program. Ten of the 128 women screened required further assessment and 2 of these women were diagnosed with breast cancer. The participation rate for the 10 communities combined improved from 17% prior to group flights to 53% after the group flight.

These flights will continue to be provided by the program.

## Quality Assurance

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Quality standards at the MBSP are based on guidelines and recommendations provided by the Canadian Association of Radiologists (CAR), the Canadian Association of Medical Radiation Technologists (CAMRT), the Department of Medical Physics at CancerCare Manitoba, and the Public Health Agency of Canada. All MBSP mammography machines are accredited by the CAR and receive preventative maintenance every six months as well as an annual assessment by CCMB physicists.

The Manitoba Breast Screening Program continuously monitors data quality. Process improvements that have been implemented during the previous two years to improve the quality of data include scanning all questionnaires and mammography result reports which eliminates the need for data entry, automated telephone calls that remind women they have an upcoming appointment, and a monthly client satisfaction survey. The MBSP database regularly links with the Manitoba Cancer Registry to monitor follow-up data for women with abnormal results. Finally, MBSP data is submitted biennially to the National Breast Cancer Screening Database.

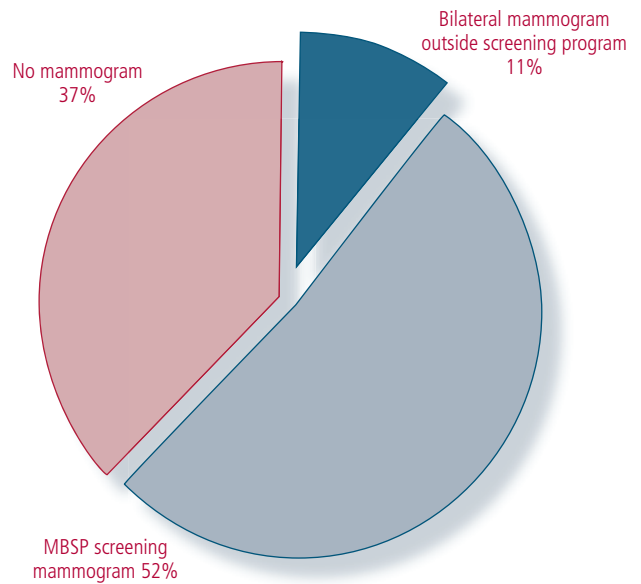
# Program Results

## Participation

From April 1, 2006 to March 31, 2008, the MBSP provided 71,394 screens to women 50 to 69 years of age (14,323 first screens and 57,071 re-screens). The overall program participation for the province was 52%. A small percentage of the population had a bilateral mammogram outside of the program (11%) and 36% of women had no bilateral or screening mammogram during this time period (Figure 1). Table 1 shows participation by screening site. Most women were screened in Winnipeg followed by the Mobile screening sites.

**Participation rate**  
**Target:  $\geq 70\%$**   
**of the eligible**  
**population**

**Figure 1.**  
**Percentage of women by location who had a**  
**bilateral mammogram<sup>1</sup>**



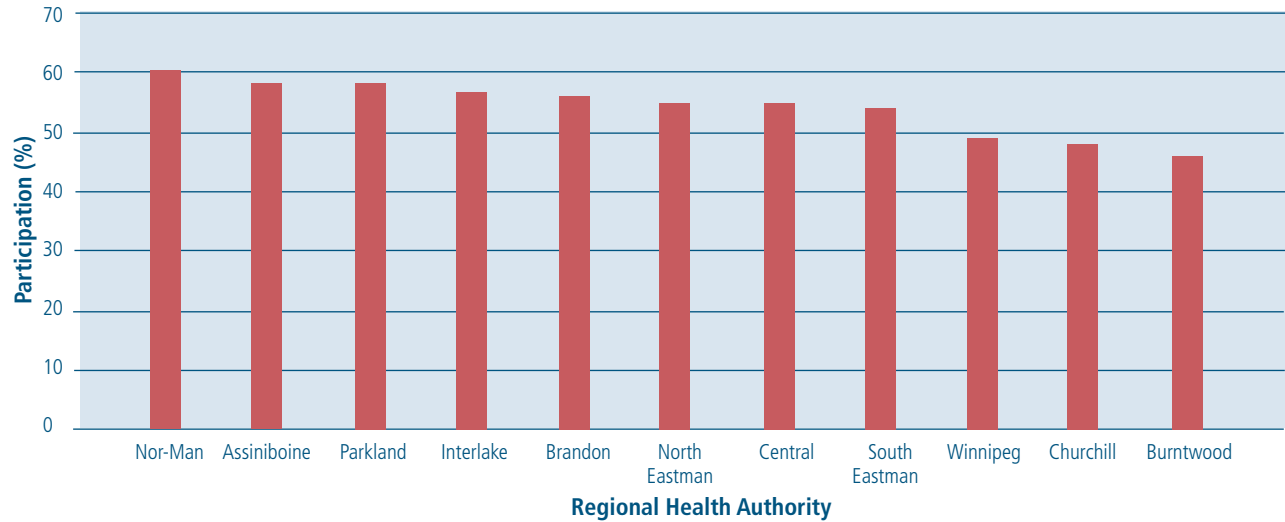
<sup>1</sup> Data from Manitoba Health, 2008

**Table 1. Number of screens by age group and screening site from April 2006 to March 2008**

	Brandon	Winnipeg	Thompson	Mobile	Boundary Trails	Total
<50	3	143	14	401	4	565
50-59	3376	26,105	572	11,642	1114	42,809
60-69	2694	16,445	245	8380	821	28,585
70+	19	115	3	944	7	1088
All ages	6092	42,808	834	21,367	1946	73,047

Figure 2 shows participation by Regional Health Authority (RHA). Participation ranged from 60% in the RHA of Nor-Man to 46% in the RHA of Burntwood. Winnipeg RHA has one of the lowest screening rates in the province due to low capacity at the Winnipeg screening site. Capacity exists in the Burntwood region to see a larger number of women. However, barriers to screening, such as the distance women must travel, still remain.

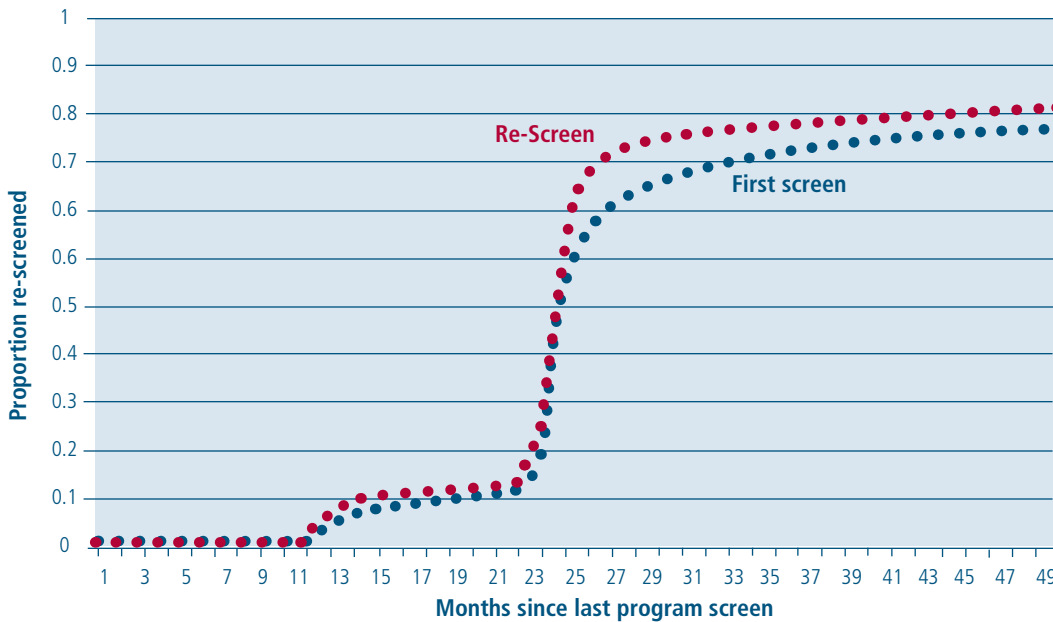
**Figure 2. Participation rate by Regional Health Authority from April 2006 to March 2008**



# Retention

Retention, or the percentage of women who were re-screened within 30 months of their previous visit, was 76% for women screened between April 1, 2005 to March 31, 2006. The retention rate was 68% for first screens and 78% for re-screens. Figure 3 shows the proportion of women screened in 2005/06 who returned to screening within 30 months. Retention is also influenced by capacity; by adding additional screening appointments we were able to accommodate more women who are returning to screening.

Figure 3. Retention rate for women screened from April 2005 to March 2006 by screen type.



*Retention rate  
Target: ≥ 75%  
re-screened  
within  
30 months*

## Characteristics of Participants

### Birth Place

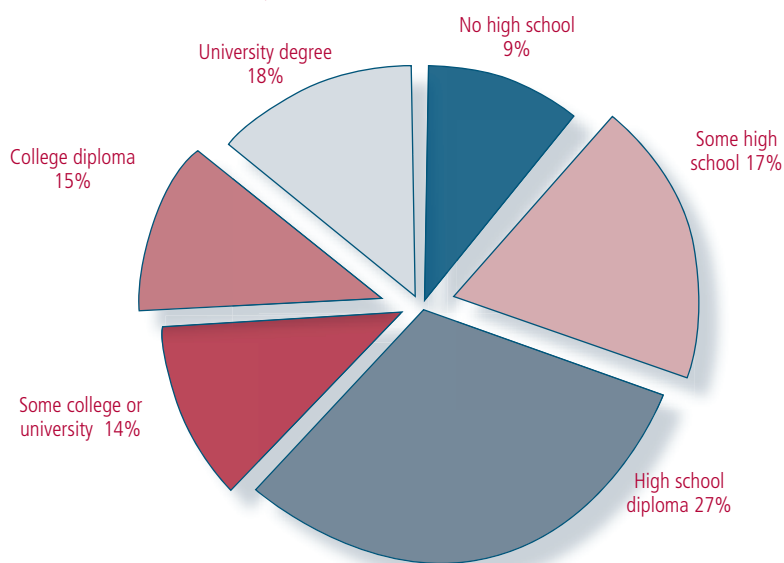
Information on birth place is used to assess whether we are reaching immigrant women. From April 2006 to March 2008, most of the women screened listed Canada as their birth place (84.6%) while 15.4% were born elsewhere. Almost 4% of women were born in Western Europe, 2.5% of women were born in the Philippines, and 2.3% in the United Kingdom. A small percentage of women were born in Eastern Europe (1.6%), Asia (1.9%) or Central/Latin/South America (1.1%).

In addition to birth place, women were also asked about their ethnic heritage. Five percent of women stated that their heritage was Métis, Inuit, or First-Nations.

## Education

Twenty-six percent of women screened between April 2006 and March 2008 had not completed high school, 27% had a high school diploma, and 47% had some college or university education (Figure 4).

**Figure 4. Education of women screened from April 2006 to March 2008**



## Risk Factor Information

### Family History of Breast Cancer

Family history of breast cancer and subsequent risk is based on the model developed by Claus et al.<sup>1</sup> and is determined using the number of first and second-degree blood relatives diagnosed with breast and ovarian cancer and the age at which they were diagnosed.

Sixty-two percent of women participating in the program were classified as no risk, 33% as low risk, and 5% as high risk. High risk women are invited to be screened yearly.

### Hormone Replacement Therapy

Sixty-two percent of women report never having taken any form of hormone replacement therapy (HRT) while 38% stated that they had taken HRT.

### Body Mass Index

Table 2 illustrates the body mass index for women 50 to 69 years of age who were screened between April 1 2006 and March 31 2008 (information was missing for 6506 women). Thirty-one percent of women were a normal weight, 34% were over-weight, and 32% were obese.

**Table 2. Body Mass Index for women screened from April 2006 to March 2008**

Classification	BMI Category (kg/m <sup>2</sup> )	Percent
Underweight	< 18.5	2.6
Normal weight	18.5 – 24.9	31.2
Over weight	25.0 – 29.9	34.5
Obese class I	30.0 – 34.9	19.6
Obese class II	35.0 – 39.9	7.7
Obese class III	≥ 40.0	4.5

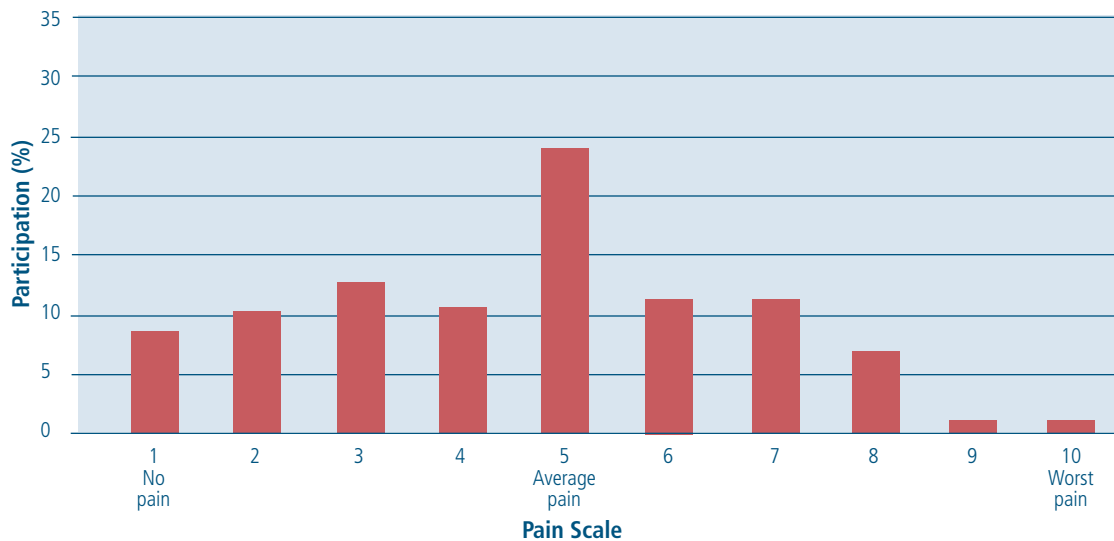
<sup>1</sup> Claus EB, Risch N, Thompson WD. Autosomal dominant inheritance of early-onset breast cancer. *Cancer* 1994; 73:643-51.

# Satisfaction

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In order to evaluate the satisfaction of women who are screened by the MBSP, 20 women are randomly chosen each month to receive a satisfaction survey. Satisfaction scores were above 80 indicating high levels of satisfaction. Five percent of women who attended a mobile site still found it hard to get to the screening program. Figure 5 illustrates how painful women found the mammogram using a 10-point scale from 1 (no pain at all), 5 (average pain - similar to a mild headache or shoes that are a little too tight) to 10 (the worst pain a woman has ever felt). Twenty-four percent of women rated the pain they felt as average (5). Sixty percent of women rated the pain as 5 or less.

**Figure 5. Reported mammography pain from 1 (no pain) to 10 (worst pain)**

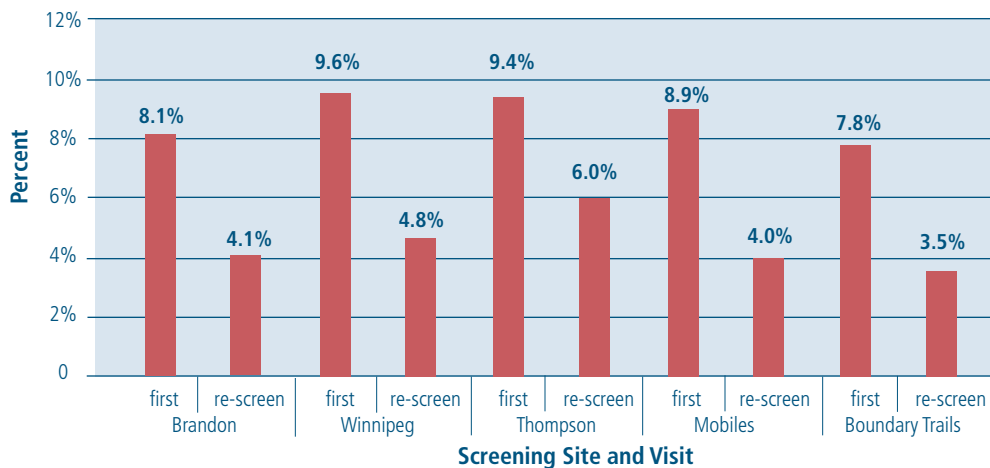


# Abnormal Call Rate and Diagnostic Investigations

From April 2006 to March 2008, 9.3% of women who had a first screen (n=1326) and 4.5% of women who had a return screen (n=2550) were referred for further diagnostic tests. The abnormal call rate ranged from 6.8% in Thompson to 4.4% in Boundary Trails. (Figure 6).

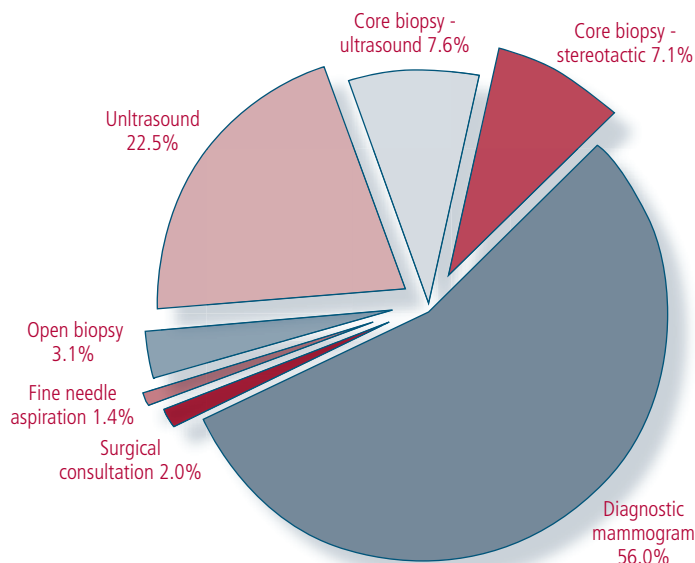
**Figure 6. Abnormal call rate for mammography by screen site and screen type for women screened from April 2006 to March 2008 (n=3876)**

**Abnormal call rate**  
 Target: <10% for first screens, <5% for re-screens



Most of the tests performed as part of further diagnostic investigations were diagnostic mammograms (56%) followed by ultrasound (22%), core biopsy (15%), open biopsy (3%), surgical consultation (2%), fine needle aspiration (1%), and MRI (0.3%) (Figure 7). Figure 11 illustrates the actual number of each test (not including MRI).

**Figure 7. Proportion of diagnostic tests following an abnormal screening result for women screened from April 2006 to March 2008**





# Time to Diagnosis

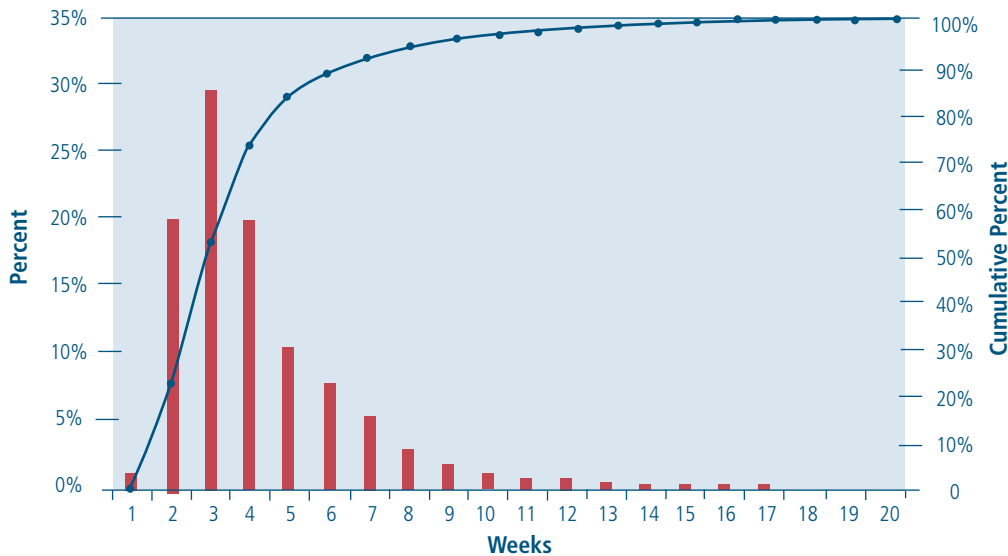
An abnormal screening result can cause anxiety and morbidity even if the final outcome is negative. Therefore, it is essential to minimize the amount of time from screening to the first diagnostic procedure and from screening to final diagnosis.

From April 2006 to March 2008:

- 50% of all women screened who required further tests had their first test within 3 weeks of their screening date (Figure 8).
- 76% of women who did not have a tissue biopsy (open or core biopsy) had a final diagnosis within 5 weeks of their screening date (Figure 9).
- 41% of women who did have a tissue biopsy had a final diagnosis within 7 weeks of their screening date (Figure 10).

The average time from screening to final diagnosis was 30 days or 4.3 weeks (median time of 22 days or 3 weeks) for women who did not have a tissue biopsy and 72 days or 10 weeks (median time of 61 days or 9 weeks) for women who did have a tissue biopsy. The average time from screening to final diagnosis was 37 days or 5.3 weeks (median time of 25 days or 3.6 weeks) for women with a benign final outcome and 56 days or 8 weeks (median time of 41 days or 5.8 weeks) for women with a malignant final outcome.

**Figure 8. Time from abnormal screen date to first procedure from April 2006 to March 2008**



## Diagnostic Interval Target:

*≥ 90% should have a final diagnosis within 5 weeks if they did not have a tissue biopsy;*

*≥ 90% should have a first test within 3 weeks of screening;*

*≥ 90% should have a final diagnosis within 7 weeks if they had a tissue biopsy.*

Figure 9. Time from abnormal screen date to final diagnosis, no tissue biopsy from April 2006 to March 2008

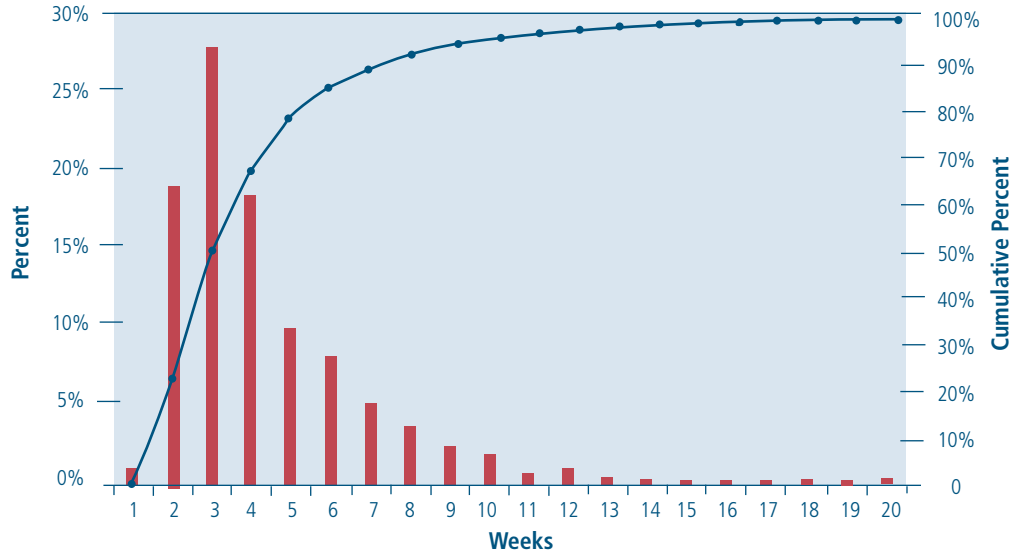
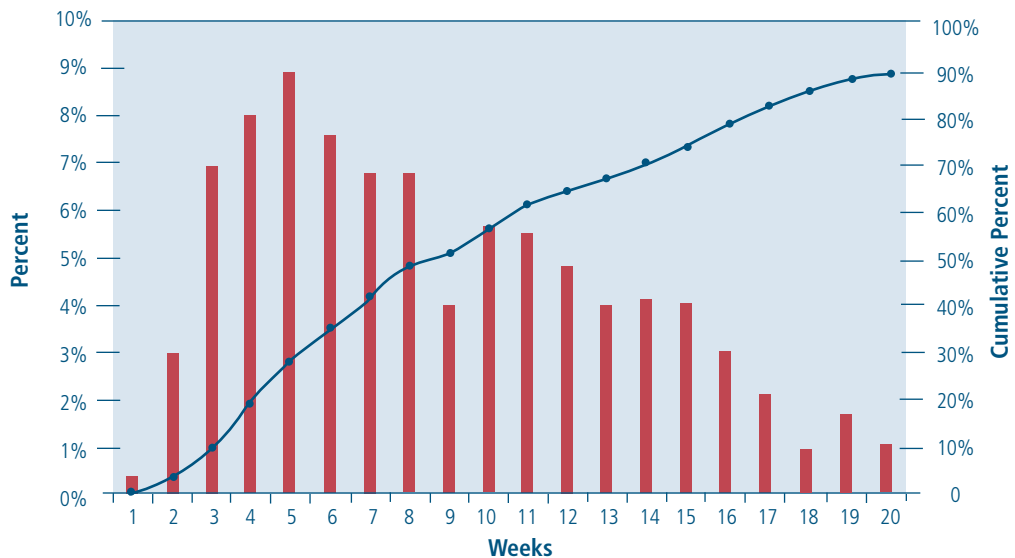


Figure 10. Time from abnormal screen date to final diagnosis, tissue biopsy from April 2006 to March 2008



In order to decrease the time from screening to diagnosis, the MBSP can directly refer women for diagnostic tests with their family physician’s permission.

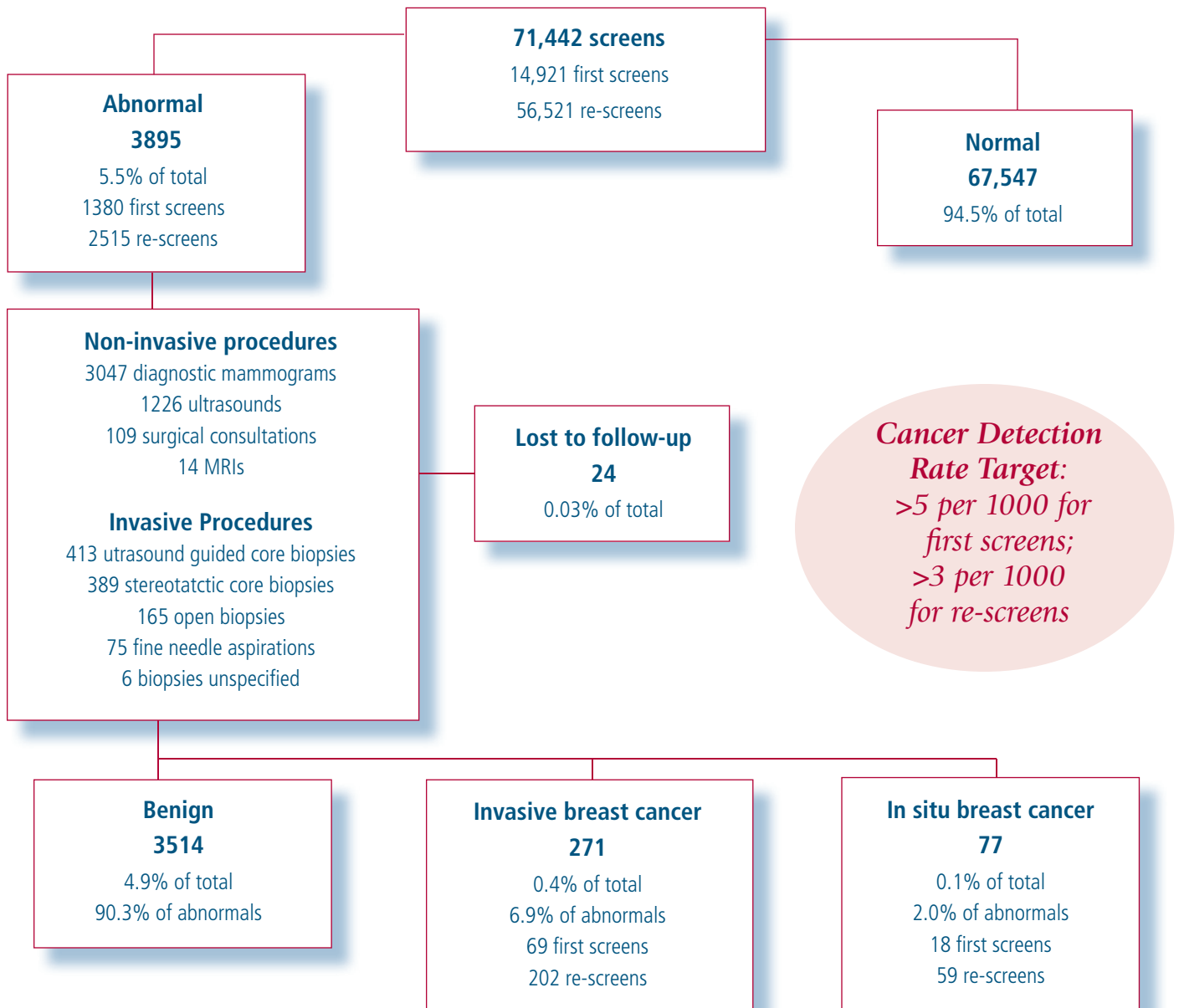
From April 2006 to March 2008, the MBSP directly referred 78% of all women who required further tests and did not have a tissue biopsy and 81% of all women who required further tests and did have a tissue biopsy.

- 33% of women who were not directly referred had a first procedure within 3 weeks of their screening date compared to 54% of women who were directly referred.
- 66% of women who did not have a tissue biopsy and were not directly referred by the program had a final diagnosis within 5 weeks compared to 78% of women who were directly referred.
- 31% of women who did have a tissue biopsy and were not directly referred by the program had a final diagnosis within 7 weeks compared to 43% of women who were directly referred.

# Cancer Detection

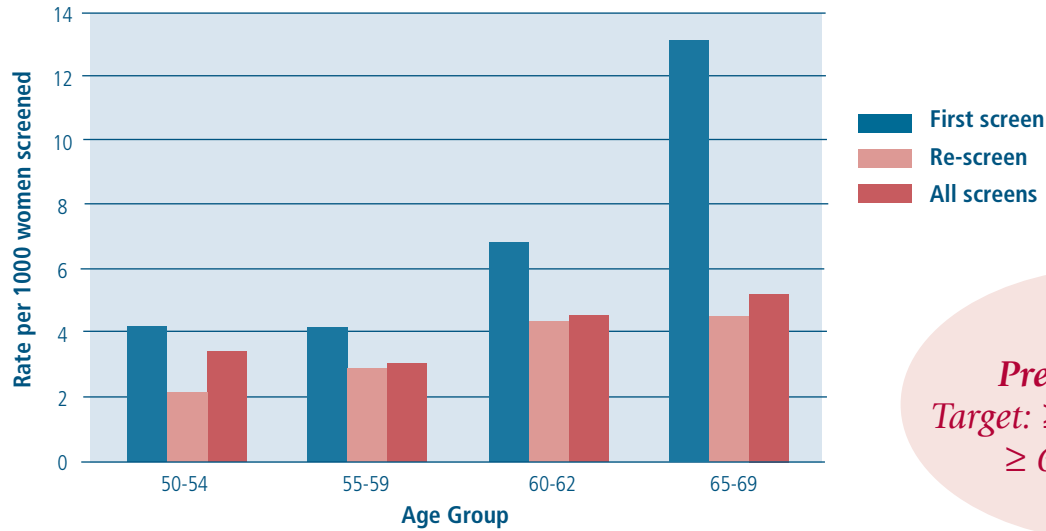
From 1995 to December 31, 2007, a total of 1524 women 50 to 69 years of age were diagnosed with invasive breast cancer. Figure 11 illustrates the screening process that occurred for women 50 to 69 years of age who were screened in 2006 and 2007 resulting in the diagnosis of 357 cases of breast cancer (271 were invasive, 77 were in situ, and 9 had an unknown morphology). Six cases of breast cancer were diagnosed in women greater than 69 years of age.

**Figure 11. Screening outcomes summary for women screened from January 2006 to December 2007**



The cancer detection rate was 3.8 per 1000 women screened (4.6 per 1000 women screened for first screens and 3.6 per 1000 women screened for re-screens (50-69 years of age)). The cancer detection rate was highest for first screens and increased with age (Figure 12).

**Figure 12. Cancer detection rates per 1000 women screened by age group and screen type from January 2006 to December 2007**



**Positive Predictive Value**  
Target:  $\geq 5\%$  first screens;  
 $\geq 6\%$  re-screens

The positive predictive value for women 50 to 69 years of age who were screened in 2006 and 2007 was 5% for first screens and 8% for re-screens.

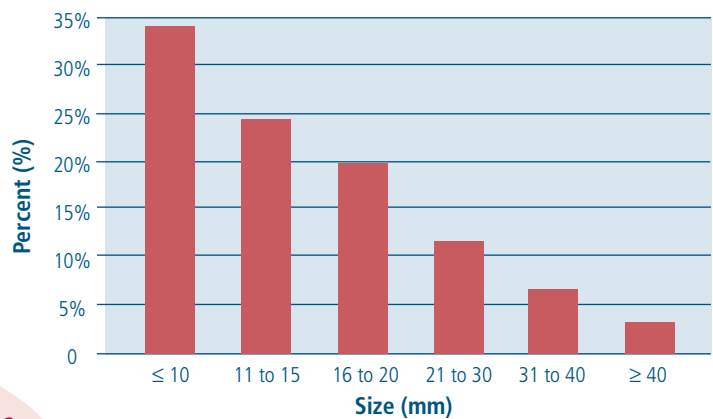
The benign to malignant open biopsy ratio during this time period was 3:1. The benign open surgical biopsy rate was 1.8 per 1000 women screened. The benign to malignant core biopsy ratio was 1:2. The benign core biopsy rate was 5.5 per 1000 women screened.

**Benign to malignant open biopsy ratio**  
Target:  $\leq 2:1$

Since the purpose of screening is to detect cancers before symptoms are present when the cancers are small and localized, tumour size, lymph node involvement, and stage are used as interim measures of screening effectiveness. Tumour size was available for 247 out of 271 cases (91%) of invasive breast cancer screened during 2006 and 2007 (50 to 69 years of age). Thirty-four percent of invasive breast cancers were less than or equal to 10 mm in size; 58% were less than or equal to 15 mm in size (Figure 13).

**Invasive tumour size**  
Target:  
 $>25\% \leq 10\text{mm};$   
 $>50\% \leq 15\text{mm}$

**Figure 13. Invasive Tumour Size from January 2006 to December 2007 (n=247)**

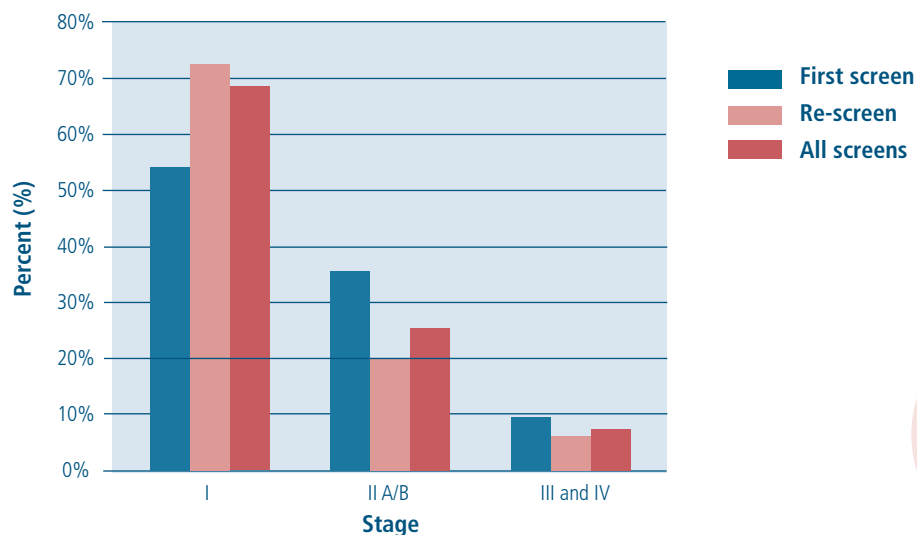


Lymph node information was available for 250 out of 271 cases (92%) of invasive breast cancer screened during 2006 and 2007 (50 to 69 years of age). Seventy-eight percent of cases were lymph node negative. The percentage of cases that were negative was lowest for the 50-54 age group (73%) and highest for the 60 to 64 age group (84%).

**Negative lymph nodes**  
 Target: >70%  
 node negative

Stage was available for 256 cases of invasive breast cancer detected during 2006 and 2007 (50 to 69 years of age). Sixty-eight percent of cases staged were stage I, 25% were stage II, and 7% were stage III or IV. A higher proportion of re-screens were diagnosed at stage I compared to first screens (Figure 14).

**Figure 14. Stage of Invasive Breast Cancers from January 2006 to December 2007 (n=256)**



**Post-screen detected invasive cancer rate**  
 Target: < 6 per 10,000  
 person-years (0-12 months)  
 < 12 per 10,000 person-years  
 (0-24 months)

The post-screen detected invasive cancer rate for women 50 to 69 years of age screened in 2004 and 2005 was 5.1 per 10,000 person-years (0-12 months) and 6.4 per 10,000 person-years (0-24 months).

## Mortality Analysis

The most important measure of the success of a screening program is its impact on the number of deaths from breast cancer. In order to examine this impact, we evaluated the effect of the MBSP on breast cancer mortality among Manitoba women 50 to 69 years of age using the same methodology as Coldman et al.<sup>2</sup> All women screened through the MBSP between August 31st 1995 and December 31st, 2006 were included. The observed outcomes for screened women were compared with what would be expected for screened women based on information on Manitoba women who had not participated in the MBSP. We found that women who entered the MBSP had a 40% lower-than-expected risk of dying from breast cancer. Since some of that reduction may be due to factors such as self-selection bias, the risk was adjusted and we found that for Manitoba women 50 to 69 years of age who were screened the mortality rate from breast cancer was reduced by 24%.

<sup>2</sup> Coldman A, Phillips N, Warren L, Kan L. Breast cancer mortality after screening mammography in British Columbia women. *Int J Cancer*, 2006; 120:1076-1080.

# Comparison to Canadian Targets

As part of the on-going evaluation of the MBSP, several interim measures of program effectiveness are regularly compared to national targets<sup>3</sup>. Table 3 shows the performance measure, target, and MBSP outcome for women 50 to 69 years of age who were screened from April 2006 to March 2008. The MBSP meets the targets set for retention rate, abnormal call rate, invasive cancer detection rate for re-screens, positive predictive value, invasive tumour size, and negative lymph nodes.

**Table 3. Comparison of MBSP outcomes from April 2004 to March 2006 with Canadian Standards (50-69 years of age)**

Performance Measure	Target	MBSP
Participation rate	≥ 70% of the eligible population	52%
Retention rate	≥ 75% re-screened within 30 months	76% (2005/06)
Abnormal call rate	< 10% first screen; < 5% re-screen	9.3% 4.5%
Invasive cancer detection rate <sup>4</sup>	> 5 per 1000 first screen; > 3 per 1000 re-screen	4.6 3.6
In situ cancer detection rate <sup>4</sup>	Monitoring purposes only (per 1000 women screened)	1.1
Diagnostic interval	≥ 90% within 5 weeks – no tissue biopsy; ≥ 90% within 7 weeks – tissue biopsy	76% 41%
Positive predictive value <sup>4</sup>	≥ 5% first screen; ≥ 6% re-screen	5% 8%
Benign to malignant open biopsy ratio <sup>4</sup>	≤ 2:1 first and re-screens	3:1
Invasive tumour size <sup>4</sup>	> 25% ≤ 10mm; > 50% ≤ 15mm	34% 58%
Negative lymph nodes in cases of invasive cancer <sup>4</sup>	> 70% node negative	78%
Post-screen detected invasive cancer rate <sup>5</sup>	< 6 per 10,000 person years (0-12 months); < 12 per 10,000 person years (0-24 months)	5.1 6.4

<sup>3</sup> Evaluation Indicators Working Group. *Guidelines for Monitoring Breast Screening Program Performance*. Ottawa, ON: Public Works and Government Services, 2002.

<sup>4</sup> For 2006 and 2007.

<sup>5</sup> For 2004 and 2005

# Acknowledgements

This report was prepared by Kathleen Decker, Evaluator, Screening Programs, and Katie Watters, Manager, Program Development and Education, Manitoba Breast Screening Program. We would like to acknowledge the assistance of Patricia Carrière, Office Supervisor, Manitoba Breast Screening Program; Selvam GnanaSekaran, Programmer Analyst, CancerCare Manitoba; and the staff at the Manitoba Cancer Registry.

## Appendix 1. Supplementary Tables

**Table 4. Number of women screened by age group and RHA (April 2006 to March 2008)**

	Winnipeg	Brandon	North Eastman	South Eastman	Interlake	Central	Assiniboine	Parkland	Nor-Man	Burntwood	Churchill	Total
<50	118	2	46	44	63	63	77	54	43	33	3	546
50-59	23307	1769	1574	1899	3112	3187	2728	1580	903	846	31	40936
60-69	14473	1178	1201	1293	2359	2337	2147	1254	479	407	12	27140
70+	113	10	120	60	169	147	157	211	51	15	3	1056
All ages	38011	2959	2941	3296	5703	5734	5109	3099	1476	1301	49	69741
50-69	37780	2947	2775	3192	5471	5524	4875	2834	1382	1253	43	68138*

\* includes 67 women 50-69 years of age who did not have a postal code that could be assigned a RHA.

**Table 5. Participation in the last 24 months by RHA, 50 to 69 years of age (April 2006 to March 2008)**

	Winnipeg	Brandon	North Eastman	South Eastman	Interlake	Central	Assiniboine	Parkland	Nor-Man	Burntwood	Churchill	Total
Screened	37780	2947	2775	3192	5471	5524	4875	2834	1382	1253	43	68138
Population*	76476	5276	5009	5843	9649	10084	8331	4911	2297	2705	89	130670
%	49.4%	55.9%	55.4%	54.6%	56.7%	54.8%	58.5%	57.7%	60.2%	46.3%	48.3%	52.1%

\* Population is from Manitoba Health women 50-69 years of age, June 1, 2007

**Table 6. Number of program detected cases of invasive breast cancer by Regional Health Authority, 50-69 years of age (2006 and 2007)**

	Winnipeg	Interlake	Central	Assiniboine	Parkland	North Eastman	South Eastman	Brandon	Nor-Man/Burntwood/Churchill	Total
50-69	160	26	21	17	14	13	8	7	5	271

**Table 7. Number of program detected cases and cancer detection rate of invasive breast cancer by age group and screen type (2006 and 2007)**

	Women screened			Invasive breast cancer			Cancer detection rate per 1000 women screened		
	First	Re-screen	Total	First	Re-screen	Total	First	Re-screen	Total
50-59	13514	29642	43156	56	79	135	4.1	2.7	3.1
60-69	1407	26879	28286	13	123	136	9.2	4.6	4.8
50-69	14921	56521	71442	69	202	271	4.6	3.6	3.8

**Table 8. Number of women diagnosed with in situ breast cancer by age group and screen type (2006 and 2007)**

	First screen	Re-screen	Total
50-59	14	31	45
60-69	4	28	32
50-69	18	59	77

**Table 9. Number of open and core biopsies over time (50-69 years of age)**

	2003	2004	2005	2006	2007
Open*	93	107	71	86	85
Benign	62	80	46	64	60
Malignant	31	27	25	21	21
Benign to malignant ratio	2.0	3.0	1.8	3.0	2.9
Core*	318	309	305	408	394
Benign	169	171	143	190	186
Malignant	115	138	162	156	153
Benign to malignant ratio	1.5	1.2	0.9	1.2	1.2
<b>Total</b>	<b>411</b>	<b>416</b>	<b>376</b>	<b>494</b>	<b>479</b>

\* Includes tests with equivocal results

**Table 10. Stage of invasive breast cancer, 50 to 69 years of age by screen type (2006 and 2007)**

Stage	First screen	Re-screen	Total	First screen	Re-screen	All screens
I	37	137	174	55%	72%	68%
II A/B	24	40	64	36%	21%	25%
III and IV	6	12	18	9%	6%	7%
<b>Total</b>	<b>67</b>	<b>189</b>	<b>256</b>			



# Appendix 2. Education Resources

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## Resource List

Most resources are available to view and order on line at <http://www.cancercare.mb.ca/MBSP> in the breast health resource page. Please note: All pamphlets will be updated in the coming year to reflect the recent changes in access to our program. All women over age 50 can now make their own appointment at the Manitoba Breast Screening Program.

### Posters:

- Community Education Poster/handout series of 3:
  - Early detection is your best protection with mammogram facts
  - Breast screening facts and mobile location map
  - Breast Health – There is so much you can do.
- What You Should Know About Breast Cancer Screening

### Fact Sheets and resources for health workers:

- A Trip for Health
- Breast Health Services
- Key facts about breast cancer screening
- Should women age 40 to 49 be screened?
- RX pad for breast screening
- Planning for a community mobile
- Wallet sized appointment card
- Teaching breast models/lump display - for loan only

### Pamphlets:

- Finding Breast Cancer Early Could Save Your Life  
*Available in English, French, Arabic, Chinese, Farsi/Persian, Filipino, German, Hindi, Italian, Korean, Panjabi, Portuguese, Polish, Russian, Spanish, Tigrinya, Urdu, and Vietnamese*
- After Your Visit (*same languages as above*)
- A Free Breast Health Program for Women 50 - 69 years of age  
*One page fact sheet - low literacy - line drawings of steps in screening. English only.*
- Breast Health Shower Card - 4 Easy Steps
- Your Breasts: Questions & Answers
- Reduce Your Risk newspaper insert  
*Four sections: General cancer, breast cancer, cervical cancer and colorectal cancer*

### Videos:

- VHS (For loan only) A visual tour: What happens at the screening program?  
*Available in English, Chinese, Cree, Oji Cree, Hindi, Punjabi, Portuguese, Spanish, Tagalog and Vietnamese.*
- DVD Reduce Your Cancer Risk Series: *Four sections: General cancer, breast cancer, cervical cancer and colorectal cancer with voice over in Chinese, Cree, Hindi, French, Ojibway, Punjabi, Portuguese, Spanish, Tagalog and Vietnamese.*  
Pass it On DVD: Reduce your Cancer Risk  
Kit: Reduce your Cancer Risk Facilitator guide and DVD  
*The kit includes an outline, the DVD, discussion activities and sample resources of all 3 screening programs.*

## Appendix 3. Glossary and Definitions

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**Participation rate:** The percentage of women who have a screening mammogram (calculated biennially) as a proportion of the eligible population.

**Retention rate:** The estimated percentage of women who are re-screened within 30 months of their previous visit.

**Family history of breast cancer:** A high risk of breast cancer is defined as a 25% or greater lifetime risk (for example, one first or second degree relative diagnosed with both breast and ovarian cancer at any age).

Low risk is defined as a lifetime risk of between 12% and 25% (at least one first or second degree relative on either side of the family with a history of breast or ovarian cancer that does not fall into any of the high risk categories).

No risk is defined as an 11% risk or the risk of the general population (no first or second degree relative on either side of the family with a history of breast or ovarian cancer).

**Abnormal call rate:** The percentage of women screened who are referred for further testing because of abnormalities found by mammography.

**Invasive cancer detection rate:** The number of women detected with invasive cancer during a screening episode per 1000 women screened.

**In situ cancer detection rate:** Number of ductal carcinoma in situ cancers (rather than invasive cancer) during a screening episode per 1,000 women screened.

**Diagnostic interval:** The total duration from abnormal screen to resolution of abnormal screen.

**Positive predictive value:** The proportion of abnormal cases with completed follow-up found to have breast cancer (invasive or in situ) after diagnostic work-up.

**Benign to malignant open biopsy ratio:** Among open biopsies, the ratio of the number of benign cases to the number of malignant cancer cases.

**Invasive tumour size:** The percentage of invasive cancers with tumour size of  $\leq 10$  mm in greatest diameter as determined by the best available evidence: 1) pathological, 2) radiological, 3) clinical.

**Negative lymph nodes in cases of invasive cancer:** The proportion of invasive cancers in which the cancer has not invaded the lymph nodes.

**Stage of invasive cancer:** Breast cancers are staged using the TNM7 classification system. Approximate stage definitions of breast cancer are as follows: Stage I – tumour less than 2 cm, no cancer in lymph nodes, Stage II – tumour 2 to 5 cm, not involving the chest wall, if lymph nodes are involved they are movable, Stage III – advanced local tumour, fixed to skin or chest wall, or presence of lymph nodes attached to structures in the axilla, and Stage IV – cancer spread beyond breast and axilla to lymph nodes above the collarbone or to distant organs.

**Post-screen detected interval cancer rate:** The number of women with a diagnosis of invasive breast cancer after a negative screening episode per 10,000 person-years at risk within 12 and 24 months of the screen date.

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<sup>7</sup> American Joint Committee on Cancer. *AJCC Cancer Staging Manual - 5th Edition*. Chicago (IL): American Joint Committee on Cancer, 1997.



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[www.cancercare.mb.ca/MBSP/index.shtml](http://www.cancercare.mb.ca/MBSP/index.shtml)



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