Ontario Breast Screening Program Updates

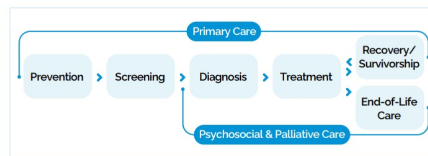
Dr Meredith Lynch, FRCPC, DABR
Radiologist, Hamilton Health Sciences
OBSP Regional Breast Imaging Lead, HNHBB
Associate Professor, McMaster University

Objectives

- Comprehend the reasoning behind the recent updates to the Ontario Breast Screening Program (OBSP) which now includes people age 40-49
- Discern OBSP's perspective on screening women utilizing digital breast tomosynthesis (DBT)
- Determine when supplemental imaging is required for screening exams

Ontario Breast Screening Program

- Province-wide organized breast cancer screening program, launched in 1990
- Designed to encourage people in Ontario to get screened, which may lower their chances of dying from breast cancer
- Screens two different groups of people in Ontario for breast cancer: those at average risk and those at high risk
- From the start of the program until 2021,
  - About 2.3 million people ages 50 to 74 were screened with mammography
  - About 10 million mammograms were performed
  - More than 55,000 breast cancers diagnosed



Ontario Cancer Plan 6: Ontario Health

OBSP Screening Recommendations

	Average Risk	Increased Risk	High Risk
Population	Ages 40 to 74	Ages 40 to 74	Ages 30 to 69
Modality	Mammogram	Mammogram	Mammogram and MRI (ultrasound if MRI is not medically appropriate)
Interval	Biennial recall (every 2 years)	Annual (ongoing) recall: • High-risk pathology lesions • Family history One-year (temporary) recall: • Extremely dense breasts (BI-RADS D) • Radiologist recommendation	Annual

OBSP Average Risk Eligibility

- Women, Two-Spirit people, trans people and nonbinary people ages 40 to 74 are eligible for screening through the OBSP if they:
  - have no new breast cancer symptoms
  - have no personal history of breast cancer
  - have not had a mastectomy
  - have not had a screening mammogram within the last 11 months
  - if transfeminine, have used feminizing hormones for at least 5 years in a row

OBSP High Risk Eligibility

Direct entry

Category A: Eligible for **direct entry** into the program. To fall under this category, **at least one** of the following criteria must be met:

- ☐ Known carrier of a pathogenic or likely pathogenic gene variant (e.g., *BRCA1, BRCA2, TP53, PALB2*) – ***(fax results with form)***
- ☐ First degree relative of a carrier of a pathogenic or likely pathogenic gene variant (e.g., *BRCA1, BRCA2, TP53, PALB2*), has previously **had** genetic counselling, and has **declined** genetic testing
- ☐ Previously assessed as having a ≥25% lifetime risk of breast cancer on basis of personal and family history *(a genetics clinic must have used **one** of the tools below to complete this assessment)* – ***(fax results with form)***
  - IBIS 10 Year Risk: IBIS Lifetime Risk:
  - CanRisk 10 Year Risk: CanRisk Lifetime Risk:
- ☐ Received chest radiation (not chest x-ray) to treat another cancer (e.g., Hodgkin Lymphoma) before age 30 and at least eight years ago

Genetics assessment required to determine eligibility

Category B: Genetic assessment required (i.e., counselling and/or testing) to determine eligibility for the program. To fall under this category, **at least one** of the following criteria must be met:

- ☐ An identified pathogenic or likely pathogenic gene variant that is associated with increased breast cancer risk (e.g., *BRCA1, BRCA2, TP53, PALB2*) in a close blood relative[1]
- ☐ A **personal history and/or close blood relatives**[1] with at least one of the following:
  - ☐ One case of breast or ovarian[2] cancer and at least one other case of breast, ovarian, prostate or pancreatic cancer, on the same side of the family[3]
  - ☐ More than one primary breast cancer in the same person
  - ☐ Both breast and ovarian[2] cancer in the same person
  - ☐ Family history of breast cancer ≤35 years of age
  - ☐ Breast and/or ovarian[2] cancer in people of Ashkenazi Jewish descent
  - ☐ Invasive ovarian[2] cancer
  - ☐ Breast cancer in a person assigned male at birth
- ☐ A **personal history** of at least one of the following:
  - ☐ Breast cancer ≤45 years of age
  - ☐ Breast cancer ≤50 years of age if limited family structure[4]
  - ☐ Triple negative breast cancer[5] ≤60 years of age

Please see bottom of page 2 for definitions of 1-5

* High risk screening participants age 30-69 receive annual mammogram and MRI

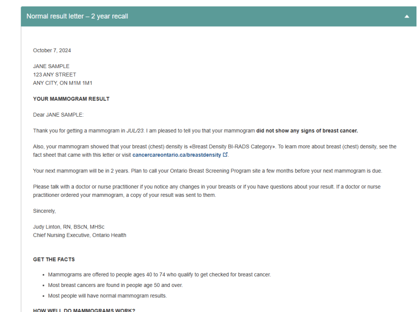
Benefits of OBSP Participation

Quality is the backbone of OBSP:

- Communication, coordination and navigation
- Canadian Association of Radiologists accredited facilities and radiologists
- MRT Image Reviews
- Equipment QA
- Performance Monitoring & Evaluation
  - E.g. yearly radiologist and facility outcome reports, wait times monitoring

OBSP Communication and Correspondence

- OBSP encourages women to get screened through various forms of correspondence including:
  - Invitations to participate in screening
  - Reminders
  - One and two year rescreen letters
  - Notifications of normal screening results and breast density to patient



Normal result letter – 2 year recall

October 7, 2024

JANE SAMPLE
123 ANY STREET
ANY CITY, ON M1M 1M1

YOUR MAMMOGRAM RESULT

Dear JANE SAMPLE:

Thank you for getting a mammogram in *JUL/23*. I am pleased to tell you that your mammogram **did not show any signs of breast cancer.**

Also, your mammogram showed that your breast (chest) density is «Breast Density BI-RADS Category». To learn more about breast (chest) density, see the fact sheet that came with this letter or visit **cancercareontario.ca/breastdensity**.

Your next mammogram will be in 2 years. Plan to call your Ontario Breast Screening Program site a few months before your next mammogram is due.

Please talk with a doctor or nurse practitioner if you notice any changes in your breasts or if you have questions about your result. If a doctor or nurse practitioner ordered your mammogram, a copy of your result was sent to them.

Sincerely,

Judy Linton, RN, BScN, MHSc
Chief Nursing Executive, Ontario Health

GET THE FACTS

- Mammograms are offered to people ages 40 to 74 who qualify to get checked for breast cancer.
- Most breast cancers are found in people age 50 and over.
- Most people will have normal mammogram results.

HOW WELL DO MAMMOGRAMS WORK?

OBSP Navigation

- Navigation in OBSP program includes:
  - Unattached patient navigation
    - Primary care designate
  - Sites have responsibility for ensuring follow up imaging and biopsies in accordance with wait time standards
    - Primary care authorization form

Site Letterhead

SAMPLE PRIMARY CARE PROVIDER AUTHORIZATION FORM

I authorize ________*site name*____________, an Ontario Breast Screening Program (OBSP) site, to arrange diagnostic imaging/biopsies as recommended by the reporting radiologist. *Site name*________ will be responsible for informing the OBSP participant as well as my office of the appointment location, date and time.

All tests will be booked under my name and I will be responsible for any recommended follow-up that results from these diagnostic tests.

I, as the primary care provider, authorize the following to be scheduled on my behalf:

Please check all diagnostic breast imaging studies to be booked on your behalf.

- ☐ Diagnostic mammography (special views) and /or ultrasound:
- ☐ Image guided biopsy (ultrasound or stereotactic)

I am able to opt out of the process at any time by informing the site(s) in writing.

____
Signature of Primary Care Provider

____
Date

Ontario Health
Cancer Care Ontario

Canadian Association of Radiologists accreditation

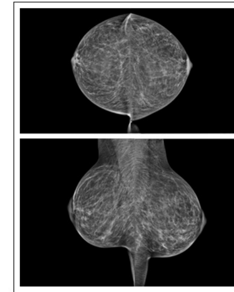


Figure 1. Well positioned mammogram meeting all criteria of clinical image review.

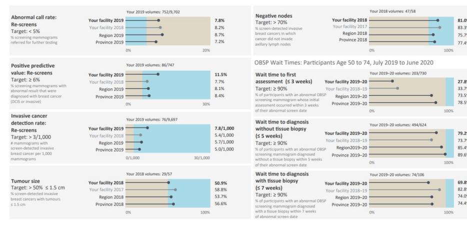
OBSP sites require CAR accreditation which includes multiple quality reviews

- Radiologist CME and volume requirements
- Physicist quality report of workstations and equipment
- Clinical image assessment

Canadian Association of Radiologists' Journal Canadian Association of Radiologists Mammography Accreditation Program—Clinical Image Assessment Nancy A. T. Wadden, MD and Connie Hapgood, MD 2022, Vol. 73(1) 157–16

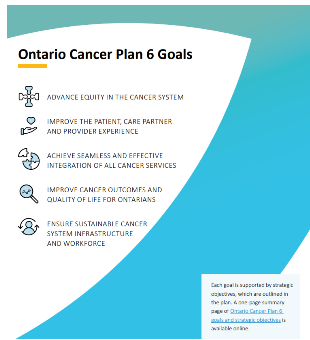
OBSP Performance Monitoring

- Abnormal call rate
  - 5% rescreens
  - 10% baseline screens
- 3/1000 invasive cancer detection rate: rescreens
- ≥6% Positive predictive value: rescreens
- 50% less than 1.5 cm
- 70% node negative
- Wait time first assessment ≤3 weeks ≥ 90%
- Wait time to diagnosis with tissue biopsy ≤ 7 weeks ≥90%



OBSP Outcome Reporting

Yearly radiologist and facility outcome reports displaying key metrics against targets



- Ontario Health monitors performance of all screening sites through Regional Cancer Programs
- Also responsible for other screening programs such as Colorectal Cancer Screening, Ontario Cervical Screening Program and Ontario Lung Screening Program

https://hnhbregionalcancerprogram.ca/

13

Recent Updates to OBSP

- Inclusion of transgender and non binary people
- Lowering screening age to include people age 40-49
- Screening with digital breast tomosynthesis (DBT)
- Supplemental screening recommendations for people with dense breasts

14

Inclusion of transgender and binary people in OBSP screening

- Health equity important component of Ontario Cancer Plan
- Trans and non-binary people medically underserved
- Less likely to be up to date with screening
- Gender affirmation can include exogenous hormone use/antiandrogen therapy and breast implant
- In Oct 2023 policy updated to include:
  - Trans men without top surgery and Trans women who have had at least five year of exposure to exogenous estrogen therapy
  - People with breast implants

Guidance for Ontario Breast Screening Program (OBSP) Sites: Improving Breast Screening for Two-Spirit, Trans and Nonbinary People in the OBSP

Cancer Screening, Ontario Health (Cancer Care Ontario)

July 31, 2023

15

Inclusion of transgender and binary people in OBSP screening

- Trans women have risk of breast cancer secondary to use of exogenous estrogen
- May also take anti-androgen treatment
- Exact risk unknown, likely lower than cis women

Guidance for Ontario Breast Screening Program (OBSP) Sites: Improving Breast Screening for Two-Spirit, Trans and Nonbinary People in the OBSP

Cancer Screening, Ontario Health (Cancer Care Ontario)

July 31, 2023

16

General recommendations for inclusivity

- Refer to all participants using inclusive pronouns (i.e., "they/them") unless a participant discloses their preferred pronouns.
- OBSP site staff may consider introducing themselves with their pronouns.
- Call all participants by the name that they provided, even if this is different from what is on their screening record or health card.
- Do not make assumptions about a participant's gender.
- When asking about relevant personal information, do so in a sensitive and respectful way.
- Staff should educate themselves on how to provide safe and inclusive care for Two-Spirit, trans and nonbinary people, including trauma-informed care.
- Staff should understand the barriers to accessing and receiving care that are faced by people in this community.
- Use gender inclusive language in websites and other public-facing products

Breast (Chest) Density Information for Ontario Breast Screening Program Participants

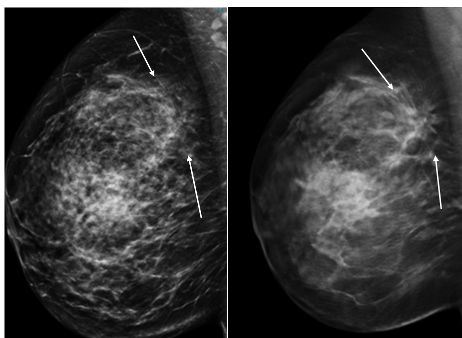
17

Screening with DBT in OBSP

- Since 2014 sites have been required to screen with digital mammography
- Previously, sites performing DBT reported these exams separately outside of OBSP
- In October 2024, OBSP has allowed for use of DBT for screening with either standard or synthetic 2D views

18

Benefits of Tomosynthesis

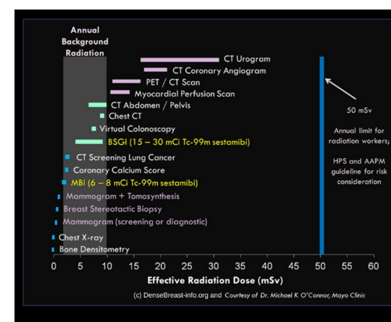


Increased conspicuity of screen detected breast cancer on tomosynthesis image (right) in comparison with 2D mammogram image (left)

- DBT involves multiple projections acquired across an arc that are reconstructed into a series of stacked images of the breast.
- Studies have found DBT decreases recall rates and cancer detection rates compared to 2D mammography alone
- Friedewald et al showed the recall rate decreased from 10.7% to 9.1% (relative decrease 15%) using DBT, with a concomitant increase in cancer detection rate (CDR) from 4.2 in 1,000 to 5.4 in 1,000 (relative increase 29%)
- Trials underway on affect on mortality and prognosis eg TMIST

19

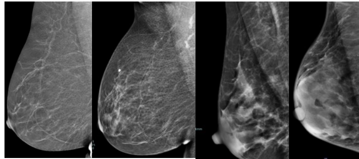
Limitations of Tomosynthesis



- Increased radiation
- Licensing requirements
- Data storage
- Image interpretation time
- Limited availability
  - HNBB region -currently at JHCC, SJHH, Niagara Health, Joseph Brant and coming to Brantford and Simcoe in 2025

20

Breast density notification and supplemental screening

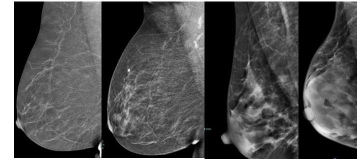


BI-RADS Breast Density categories A to D

-Since July 2023 participants receive density notification with normal results letter
-BIRADS density reporting mandatory on all screening reports

- Category A – the breasts are almost entirely fatty
- Category B – there are scattered areas of fibroglandular density
- Category C – the breasts are heterogeneously dense, which may obscure small masses
- Category D – the breasts are extremely dense, which lowers the sensitivity of mammography

Breast density notification and supplemental screening



BI-RADS Breast Density categories A to D

- Mammographic screening allows earlier detection of breast cancer
- Large observational population based studies show 40% decrease in mortality
- Swedish two county trial showed 27-31% decrease breast cancer mortality with 29 years follow up
- Reduces breast cancer morbidity and mortality
  - Smaller cancers, less nodal involvement, more treatment options
- Sensitivity varies –decreased in women with dense breasts due to masking effect of dense breast parenchyma
- Dense breasts also have increased cancer risk (RR 3-4)

Breast density notification and supplemental screening

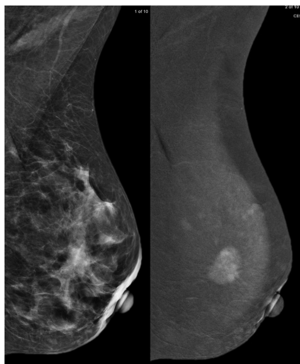


Table 3.
Outcomes from Supplemental Screening After Standard 2D Mammography in Women With Dense Breasts (or All Densities for MRI)

Method	Incremental cancer detection rate per 1000	Additional false positive rate	Interval cancers reduced
US (first round)[a]	2–3 (73)	8%–12% (73, 81, 82)	Yes
US (subsequent rounds)[b]	1–3 (71,81,82)	2%–5% (71,81,82)	Yes
Contrast-enhanced mammography[c]	7–13 (66,67,83,84)	6.5% (66,67,83,84)	Unknown
MRI or abbreviated MRI (first round)	10–20 (55,57,64,82,85)	9% (55,57,64,82,85)	Yes
MRI (subsequent rounds)	6–7 (58,85)	2% (58,85)	Yes

[a]Performance characteristics of screening US are similar with handheld US, automated US, and semiautomated US.
[b]Includes results from screening US after tomosynthesis (71).
[c]Results reflect a mix of prevalence (first) and incidence (subsequent) screens.

Berg WA J Breast Imaging 2023 5 (6): 712-723

Supplemental screening in conjunction with mammogram can include various modalities with incremental cancer detection rates

Breast density notification and supplemental screening

- To understand evolving evidence on supplemental screening for people with dense breasts, Ontario Health conducted a health technology assessment (HTA) [1]
  - HTA reviewed published evidence on the effectiveness and cost-effectiveness of supplemental screening for people with dense breasts
  - Supplemental screening modalities examined: contrast-enhanced mammography, ultrasound, digital breast tomosynthesis (DBT) and magnetic resonance imaging (MRI)

Benefits	Risks
• Generally increased the sensitivity of breast screening	• Generally decreased the specificity of breast screening
• Increased breast cancer detection rates	• Increased abnormal recalls
• Decreased interval cancer rates	• Increased false-positive results

Short-term plan: Information for OBSP sites

- Information provided to OBSP sites and shared for reference with primary care providers
- Currently supplemental screening completely outside OBSP and requires requisition by health care provider
- If a person with BI-RADS D density is referred for supplemental screening with MRI or ultrasound:
  - Breast screening with **mammography + MRI should occur once every two years**
  - Breast screening with **mammography + ultrasound should occur once every year**
- MRI and ultrasound services should continue to be prioritized according to clinical urgency
  - People requiring diagnostic imaging should be prioritized, followed by screening for participants in the High Risk OBSP
  - If there is remaining capacity, MRI and ultrasound can be used for supplemental screening of average risk OBSP participants with BI-RADS D density

OBSP sites that offer digital breast tomosynthesis may consider using it with 2D mammography to screen OBSP participants with BI-RADS D density.

OBSP planned approach

- **Short-term plan:** Release high-level information on supplemental screening to OBSP sites and share an update with primary care providers to provide support on managing referrals and inquiries about incorporating supplemental screening into existing breast screening recommendations
  - OBSP recommendations for screening participants with BI-RADS D density are unchanged as supplemental screening is not currently offered through the program*
  - OBSP will continue to recall participants with BI-RADS D density for a screening mammogram one year after their last mammogram
- **Long-term approach:** Implement supplemental screening in the OBSP

Long-term approach

- **Goal:** Implement supplemental screening for people with BI-RADS D density in the OBSP
  - Planning and implementation of supplemental screening into the OBSP will be a multi-year initiative
- Will consider various factors such as:
  - Variability in access to supplemental screening modalities across Ontario
  - Impact of modality on system (e.g., impact on abnormal recall rates and biopsy rates)
  - Potential legislative and regulatory changes
  - Changes required to IM/IT infrastructure for data collection, reporting and correspondence

Expansion of OBSP to age 40-49

- As of Oct 8 2024, OBSP program expanded to include women age 40-49
  - US Preventive Services Task Force recommended women receive biennial screening starting at age 40
  - Modelling performed by USPSTF
  - 1.8 additional breast cancer deaths averted/1000 women screened over lifetime
    - Screening ages 50 to 74, **6.9** breast cancer deaths averted over a lifetime
    - Starting screening at age 40, **8.4** breast cancer deaths averted over a lifetime

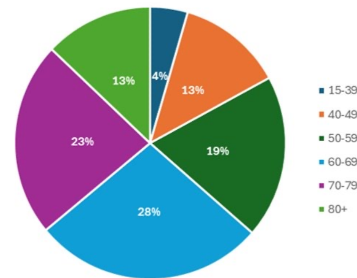
Recommendation Summary

Population	Recommendation	Grade
Women aged 40 to 74 years	The USPSTF recommends biennial screening mammography for women aged 40 to 74 years.	B
Women 75 years or older	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening mammography in women 75 years or older.	I
Women with dense breasts	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of supplemental screening for breast cancer using breast ultrasonography or magnetic resonance imaging (MRI) in women identified to have dense breasts on an otherwise negative screening mammogram. See the "Practice Considerations" section for more information on the patient population to whom this recommendation applies and on screening mammography modalities.	I

Background: Screening in age 40-49 in Canada

- In Canada, 13% projected Breast Cancer cases occur in age 40-49
- Breast cancer incidence in age 40-49 has increased in Canada from 1984-1988 to 2015-2019 approximately 2% per year (Ontario Health 2021 :Ontario Cancer Profiles: Cancer Incidence)

Breast Cancer Diagnosis by age in Canada



Source: Canadian Cancer Statistics 2023

29

Background: Screening in age 40-49 in Canada

- Lower income and ethnically concentrated communities have lower rates screening in age 40-49 (Ontario health 2023. Internal analysis)
- Non white women
  - 72% more likely to be diagnosed before age 50
  - 58% more likely to be diagnosed with advanced stage breast Ca before age 50
  - 127% more likely to die of breast cancer before age 50
- Access to self referred screening may improve screening rates in these groups

30

Screening age 40-49 in Canada

- Most Canadian provinces and territories were already starting screening at age 40 or 45
- Women age 40-49 diagnosed in jurisdictions without organized annual screening programs had higher rates stage II, III and IV cancer (AN Wilkinson et al Current Oncology 2022)

Provincial screening practices for women age 40s

	Practice		
Province	Can self-refer at age 40	Can self-refer annually in 40s	Need a requisition from age 40-49
BC	X		
NS	X	X	
PEI	X	X	
YT	X	X	
AB	Age 45		1st Screen Only Age 40-45
MB			X
NB	X		
SK	X Jan. 2025		X
ON	X Fall 2024		X
NL	X		
QC	Under review		X
NWT	Age 45		1st Screen Only Age 40-45

Source: Dense Breasts Canada Screening Guide 2024

31

Benefits and Harms of Screening

Median lifetime benefits and harms of screening strategies with Digital Mammography for a cohort of 1,000 40-year-old female persons compared with no screening[1]

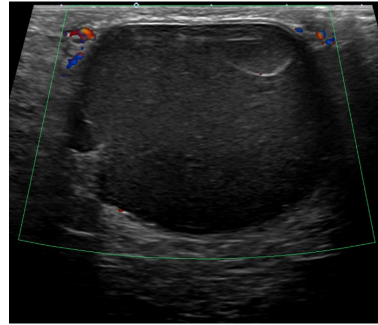
	Mortality Reduction (%)	Deaths averted (/1000)	False positives (n)	Over diagnosed cases (n)
Biennial 50-74	**24.3*** (18.3-27.5)	**6.9** (4.8-8.6)	**1,021** (1,003-1,027)	**10** (4-29)
Biennial 40-74	**28.4** (22.3-31.7)	**8.4** (5.6-10.1)	**1,540** (1,520-1,551)	**12** (4-33)
Comparison of screening starting at age 40 vs 50	**4% more reduction in mortality**	**1-2 more deaths prevented over a lifetime**	**519 more false positives**	**2 more cases overdiagnosed**

[1]Trentham-Dietz A, Chapman CH, Jayasekera J, et al. Collaborative Modeling to Compare Different Breast Cancer Screening Strategies: A Decision Analysis for the US Preventive Services Task Force. JAMA. Published online April 30, 2024. doi:10.1001/jama.2023.24766 https://jamanetwork.com/journals/jama/fullarticle/2818285

32

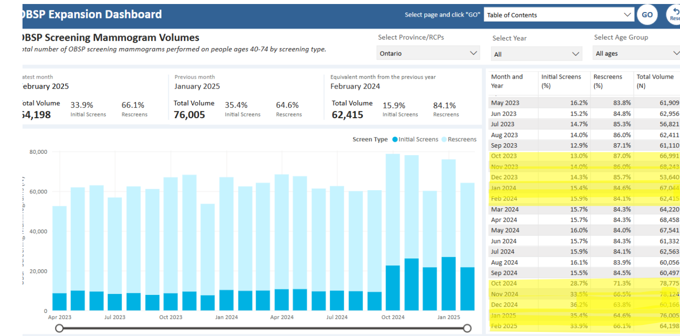
Screening in Pregnant and Lactating Women

- Lowering screening age to 40 means guidance required for pregnant and lactating women
- People who are pregnant or lactating who present for screening can be screened with mammography
- Fetal radiation dose from a 4-view mammogram (<0.03 mGy) is low compared to the threshold for teratogenic effect (100 mGy)
- As the exam is non-urgent, average risk patients who are pregnant or unsure if they are pregnant should be given option to defer exam or return after confirming pregnancy status
- If patients do not want mammographic screening while pregnant, screening can be resumed 3 months post delivery (lactational change in the breast most pronounced first 3 months post partum which can make mammogram less effective)
- Diagnostic work up starts with breast ultrasound



33

Screening age 40-49: Increased screening volumes



Month and Year	Initial Screens (%)	Rescreens (%)	Total Volume (N)
May 2023	16.2%	83.8%	61,909
Jun 2023	15.2%	84.8%	62,956
Jul 2023	14.7%	85.3%	56,821
Aug 2023	14.0%	86.0%	62,411
Sep 2023	12.9%	87.1%	61,110
Oct 2023	13.0%	87.0%	66,991
Nov 2023	14.0%	86.0%	68,243
Dec 2023	14.3%	85.7%	53,640
Jan 2024	15.4%	84.6%	67,044
Feb 2024	15.9%	84.1%	62,415
Mar 2024	15.7%	84.3%	64,220
Apr 2024	15.7%	84.3%	68,458
May 2024	16.0%	84.0%	67,541
Jun 2024	15.7%	84.3%	61,332
Jul 2024	15.9%	84.1%	62,563
Aug 2024	16.1%	83.9%	60,056
Sep 2024	15.5%	84.5%	60,497
Oct 2024	28.7%	71.3%	78,775
Nov 2024	33.5%	66.5%	78,124
Dec 2024	36.2%	63.8%	60,166
Jan 2025	35.4%	64.6%	76,005
Feb 2025	33.9%	66.1%	64,198

34

Screening volume in patients age 40-49

Month and Year	Initial Screens (%)	Rescreens (%)	Total Volume (N)
Oct 2024	100.0%	0.0%	12,259
Nov 2024	100.0%	0.0%	16,315
Dec 2024	100.0%	0.0%	13,942
Jan 2025	100.0%	0.0%	17,350
Feb 2025	100.0%	0.0%	14,104

Screening participation rate in Ontario

- 61.2% age 50-74
- 14.9% age 40-49
  - More baselines
  - Increased density
  - Higher abnormal call back rates

35

Additional Resources

Indigenous Cancer Navigators are located across Ontario within 10 Regional Cancer Programs and provide support for Indigenous patients with cancer and their families along every step of the cancer journey by:

- Liaising and advocating for the needs of Indigenous patients with cancer and their families
- Addressing cultural and spiritual needs

Prevention Specialists

Health 811

36

SUMMARY

- Screening mammogram has been shown to reduce breast cancer morbidity and mortality
- Organized screening through OBSP has many quality components that benefit patients such as navigation, communication and performance management
- Breast density notification is now provided directly to participants and annual mammogram for category D density
  - Long term plan includes addition of supplemental screening
- Recent changes in OBSP have extended the program to eligible transgender people, people with breast implants and people age 40-49 which improves equitable access to screening
  - Implications for callback rates, biopsies, breast MRI
- Access to DBT is increasing and improves mammographic performance by decreasing recall rates and increasing cancer detection rates

37

References

Berg WA , Seitzman RL and Pushkin J. Implementing the National Dense Breast Reporting Standard, Expanding Supplemental Screening Using Current Guidelines, and the Proposed Find it Early Act. J Breast Imaging Nov 2023 5 (6): 712-723.

Dense Breasts Canada

Monticciolo DL, Newell MS, Moy L, Lee CS, Destounis SV. Breast Cancer Scree ning for Women at Higher-Than
Average Risk: Updated Recommendations From the ACR. Journal of the Ameri can College of Radiology [Internet]. 2023 Sep 1;20(9):902–14.

Neill BL et al. ACR Appropriateness Criteria® Female Breast Cancer Screening: 2023 Update. JACR

38

Thank you!

39