Frontline Mammography: Easy Answers to Tough Patient Questions

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1

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Key Objectives

- **Build confidence in patient communication** through concise, evidence-based answers to common and challenging patient questions
- **Enhance understanding of breast health and screening considerations**
- **Improve patient experience and trust** by integrating technical knowledge with empathy, addressing misconceptions and supporting informed, patient-centered conversations at the point of care.

3

Outline

- Communication Tips
- Screening guidelines
- Patient worries
- Alternative technologies
- Trending topics
- Questions

4

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Communication

- Rapport is foundational
- “Tell me more?” Patient concerns may be different than you think
- Individualized answers
- Meet patients where they are

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Screening guidelines

- When to start
- When to end
- Risk
- Genetic testing

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Screening guidelines- who do we trust?

- ACR/SBI: risk assessment by 25, yearly starting at 40 for average risk women, until life expectancy <5-7years
- USPTF: every 2 years for women 40-74
- ACS: yearly for women 45-54, every other year for women 55+, optional yearly mammography for women 40-45, stop life expectancy <10 years
- ACOG: start at age 40, continue every 1-2 years based on shared decision making.

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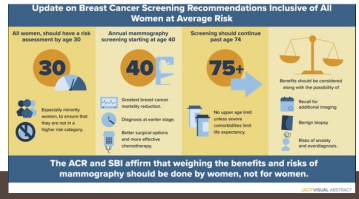
Screening guidelines- who do we trust?

- ACR/SBI: risk assessment by 25, yearly starting at 40 for average risk women, until life expectancy <5-7years
- All societies agree: yearly mammography starting at age 40 saves the most lives (for average risk women)



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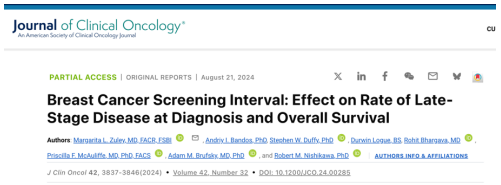
"Do I really need a mammogram every year?"

- Annual mammographic screening was associated with:
  - lower risk of late-stage cancer
  - better overall survival across clinical and demographic subgroups


Journal of Clinical Oncology

PARTIAL ACCESS | ORIGINAL REPORTS | August 21, 2024

Breast Cancer Screening Interval: Effect on Rate of Late-Stage Disease at Diagnosis and Overall Survival

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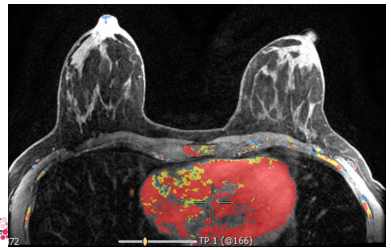
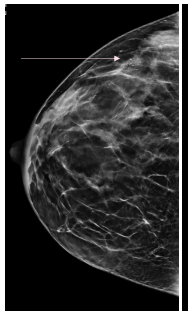
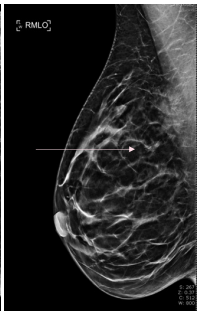
"Do I still need a mammogram if I have dense tissue?"

- Yes!







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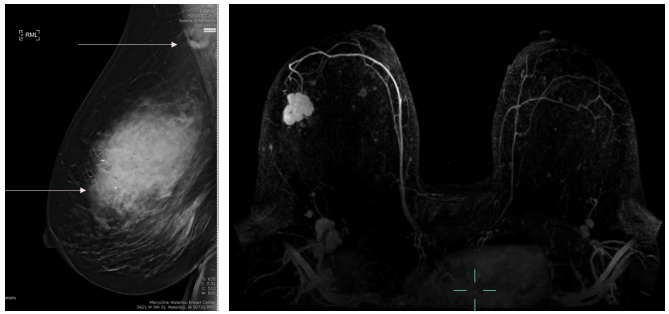
“Do I still need a mammogram if I have dense tissue?”

- Yes!



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“Do I still need a mammogram if I have dense tissue?

- Annual screening mammography reduces breast cancer death and disability
- Highest resolution imaging modality of the breast
- Optimal test for visualizing:
  - Calicifications
  - Distortions
- MRI/US supplement, not replace
- While sensitivity decreases with increasing density, still able to diagnose breast cancer

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“I’m too (young/old/healthy) to have breast cancer, right?”

- Being a woman is the most significant risk factor for developing breast cancer
- Other non-modifiable RFs: age, menstrual status, family history, etc.
- Modifiable RFs: weight, activity level, diet, EtOH, smoking,
- You can be at increased risk for breast cancer without a family history of breast malignancy
- Can be “genetics eligible” by NCCN criteria, but not have an elevated lifetime risk, opposite also true!
- Risk assesment is nuanced

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15

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Patient worries

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"Can you do anything to make this more comfortable?" Yes!

- Environment
- Timing
- Preparation
- Know your machine features

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Doesn't radiation cause cancer?

- Only if there is large and prolonged exposure, and even then, not always!
- For women undergoing yearly mammograms starting at age 40, the incidence of developing radiation-induced fatal cancer is once every 97,000 years (in other words, 1 case since giant sloths roamed)
- "Significant mortality benefit of diagnosing breast cancer at earlier stages substantially outweighs the small, theoretical carcinogenic risk of radiation from mammography." -SBI

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Doesn't radiation cause cancer?

- Routine mammograms have 0.4 mSv of radiation given over only a few seconds
- In order to reach a threshold level of radiation that might increase the risk of cancer developing you would need to have over 250 mammograms all at once

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One mammogram has the same amount of radiation as:

- Eating a typical diet for 6 months
- 5 cross country flights
- Living on earth for 7 weeks (or in Colorado for 3-4 weeks)

- Radiation dose equivalents:
  - 19 mammograms are equal to an abdominal CT
  - US limits for HCW (including technologists)is 50 mSv/ year or 125 mammograms

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"Can I have a thyroid shield for my mammogram"

- "Thyroid shields are unnecessary during mammograms because the thyroid dose from scatter radiation is exceedingly small"
  -position statement from SBI

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"Can I have a thyroid shield for my mammogram"

- Thyroid guard can interfere with the accuracy of the mammogram
- For perspective, the effective dose to the thyroid from a digital screening mammogram is 0.13 microSv, which is equivalent to 30 minutes of natural background radiation.

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"Does deodorant cause cancer?"

- No clear evidence showing use of aluminum-containing antiperspirants increases the risk of breast cancer
- Proposed mechanism: aluminum may be absorbed by the skin and have estrogen-like hormonal effects
- Deodorant may mimic cancer/calcifications on a mammogram

7. Mirick DK, Davis S, Thomas DB. Antiperspirant use and the risk of breast cancer. *Journal of the National Cancer Institute* 2002; 94(20):1578–1580. [PubMed Abstract]

5. Willhite CC, Karyakina NA, Yokel RA, et al. Systematic review of potential health risks posed by pharmaceutical, occupational and consumer exposures to metallic and nanoscale aluminum, aluminum oxides, aluminum hydroxide and its soluble salts. *Critical Reviews in Toxicology* 2014; 44 Suppl 4:1-80. [PubMed Abstract]

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"Do we have to use compression?"

- Concerns:
  - May cause temporary pain or tenderness
  - Can be triggering in cases of past abuse
  - Case reports of hematomas, implant ruptures
  - No evidence to support seeding or accelerating of cancer
- Benefits of compression:
  - Decreased radiation dose
  - Decreased motion artifact
  - Improves accuracy

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"Does core needle biopsy spread cancerous cells?"

Preoperative core needle biopsy does not increase local recurrence rate in breast cancer patients

Florian Fitzal et al. Breast Cancer Res Treat. 2006 May.

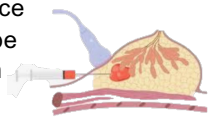
Are malignant cells displaced by large-gauge needle core biopsy of the breast?

L K Diaz et al. AJR Am J Roentgenol. 1999 Nov.

The impact of preoperative breast biopsy on the risk of sentinel lymph node metastases: analysis of 2502 cases from the Austrian Sentinel Node Biopsy Study Group

C Peters-Engl et al. Br J Cancer. 2004.

- Core biopsy does not increase chance of local recurrence
- Cancerous cells *may* be displaced but have been shown to be nonviable
- Core biopsy does not increase risk of axillary metastasis
- Coaxial technique and vacuum assistance *may* decrease amount of displacement



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26

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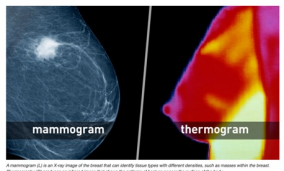
"Should I have a thermogram?"

Breast Cancer Screening: Thermogram No Substitute for Mammogram



- Shows patterns of heat on or near the surface of the body
- Not FDA approved as a standalone breast exam in the screening or diagnostic settings
- Multiple large breast cancer screening trials on thermography were stopped early or showed no benefit over mammography
- Can miss obvious cancers and has a low sensitivity (~50%) compared to FDA approved breast imaging modalities

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"Should I have a thermogram?"

- Not recommended by the SBI, ACR, or ASBS.
- Indeterminate thermography findings should undergo diagnostic mammography, ultrasound, or MRI to determine management.
- Thermography is not typically covered by insurance and results in out-of-pocket expenses for patients, unlike screening mammography.

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Thermography- Beware false claims

1. Lawson, RN. A new infrared imaging device. Can. Med. Assoc. J. 1958: 79: 402.
6. Moskowitz M, Milbrath J, Gartside P, Zermeno A, Mandel D. Lack of efficacy of thermography as a screening tool for minimal and Stage I breast cancer. N Engl J Med. 1976; 295(5):249-252.
7. Feig SA, Shaber GS, Schwartz GF, et al. Thermography, mammography, and clinical examination in breast cancer screening. Review of 16,000 studies. Radiology 1977; 122:123-127.

- " Patients who undergo a thermography test alone should not be reassured of the findings because the device was not cleared to be used without another testing method like mammography."
- "Some websites claim thermography can find breast cancer years before it would be detected through other methods, and they have unproven claims about improved detection of cancer in dense breasts using thermography. The FDA is not aware of any evidence that supports these claims."

https://www.fda.gov/consumers/consumer-updates/breast-cancer-screening-thermogram-no-substitute-mammogram

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Ultrasound alternative: QT(quantitative transmission)

- Fully automated whole breast/3D imaging modality
- FDA cleared, but not approved as stand-alone exam
- Combines transmission ultrasound with reflection ultrasound
- Scan time: 10-20 minutes/breast
- Ongoing clinical trials needed to validate the QT technology against conventional modalities

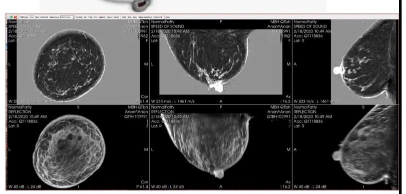

Figure 1. QT images of a normal fatty breast. From left to right, the top row images are coronal, axial, and sagittal views of the "spe sound" images demonstrating glandular and ductal tissue, and the bottom row images are coronal, axial, and sagittal views of th flection" images demonstrating connective tissue structures of the breast. QT, quantitative transmission.

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Ultrasound alternative: QT

- Not covered by insurance
- Small, early studies do not address performance in detecting breast cancer compared to mammography
- Cases with clips and marker were excluded from study
- Posterior tissue, axillary tail, axilla excluded

Breast Imaging

A Multireader Multicase (MRMC) Receiver Operating Characteristic (ROC) Study Evaluating Noninferiority of Quantitative Transmission (QT) Ultrasound to Digital Breast Tomosynthesis (DBT) on Detection and Recall of Breast Lesions

Yulei Jiang, PhD, Elaine Iuanow, MD, Bilal Malik, PhD, John Klock, MD

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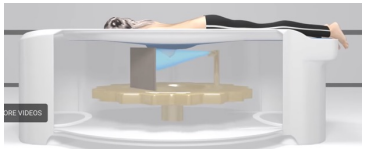
Is cone beam breast CT an option for me?

- Insurance coverage variable
- Resolution better than typical CT, but not as good as mammography
- IV contrast needed in setting of dense breast tissue
- No compression
- 10 sec/breast scan time
- Radiation dose similar to mammo
  - FDA PMA approval for both diagnostic CT and 3D-guided biopsy
  - Sn 83.7%, Sp 71.3%



Comparison of Diagnostic Test Accuracy of Cone-Beam Breast Computed Tomography and Digital Breast Tomosynthesis for Breast Cancer: A Systematic Review and Meta-Analysis Approach

Temitope Emmanuel Komolafe [1 2 3], Cheng Zhang [1], Oluwatosin Atinuke Olagbaju [4 5], Gang Yuan [1], Qiang Du [1], Ming Li [1], Jian Zheng [1], Xiaodong Yang [1]

Epub 2024 Jan 8.

Head-to-head comparison of cone-beam breast computed tomography and mammography in the diagnosis of primary breast cancer: A systematic review and meta-analysis

Lingcong Yang [1], Zijie Zhou [2], Jun Wang [3], Qiang Lin [4], Yahui Dong [5], Zhirong Guo [6], Fujun Shi [7]

Affiliations + expand

PMID: 38211395 DOI: 10.1016/j.ejrad.2024.111292

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"Do GLP-1s impact breast health ?"

- Yes!....

GLP-1s and Breast Health

- GLP-1 medications mimic the natural glucagon-like peptide-1 hormone
- Types:
  - Semaglutide (Ozempic, Wegovy, Rybelsus)
  - Tirzeptide (Mounjaro, Zepbound)
  - Liraglutide (Victoza, Saxenda)
- Used to treat Type 2 diabetes and obesity
- Work by:
  - ⬆ insulin, ⬇glucagon, slows stomach emptying, ⬇ appetite
- Result: better blood sugar control and often weight loss
- Other impacts:
  - ⬇ blood pressure, improves cholesterol levels,
  - ⬇ heart disease and kidney disease risk
  - improved cognitive function, ⬇ inflammation
  - Improved outcomes in cancer?

GLP-1s and Breast Health

- "Ozempic breasts"
  - Rapid loss in breast volume, sagging, skin laxity (from weight loss)
  - Hormonal fluctuation
  - Pain and increased sensitivity
- Increased breast density ↓

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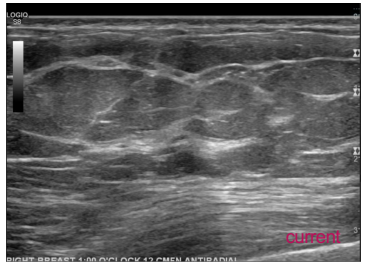
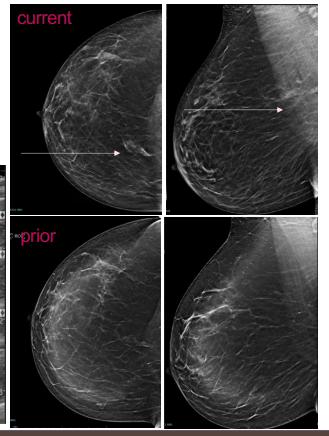
GLP-1s and Breast Health

- Focal asymmetry
- 130 lbs interval reduction





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GLP-1s and Breast Cancer

- "Breast cancer risk reduction?
  - Losing 10lbs = 32% ↓ in breast cancer risk
- GLP1 was associated with better survival in patients on endocrine therapy (60% lower risk of death in women <50 yo, 40% lower in women >50 yo), but higher related side effects (hot flashes, GI sx, joint paint and depression) [2]
- Improved outcomes in breast cancer survivors
  - Reduced treatment complications
  - Increased efficacy of chemotherapy and endocrine therapy
  - Decreases risk of recurrence, improved survival
  - Proposed mechanism (↓ inflammation, ↓ estrogen)

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Breast cancer risk and Obesity

- Menopausal status key:
  - Premenopausal
    - Higher risk of aggressive breast cancers, like triple negative
  - Postmenopausal
    - Higher risk of hormone driven breast cancers

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Weight gain in breast cancer patients/thrivers

- Nearly 1 in 5 breast cancer thrivers gain >10% of their body weight
- Likely multifactorial
  - Chemotherapy (lower metabolism, induce menopause)
  - Steroids (stimulates appetite)
  - Hormone therapy (suppression of hormones, increase body fat)
  - Lower activity levels/ fatigue

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GLP-1s not advised?

- During active chemotherapy
  - Lack of safety data, potential interactions/side effect
- Personal or familiy history of medullary thyroid cancer or MEN syndrome type 2
- History of pancreatitis
- Allergy/Hypersensitivity to medication
- History of gastroparesis or inflammatory bowel disease
- Use in lactation- caution advised, especially in oral formulations

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HRTs and the breasts

- Benefits: Symptom relief, Bone health, cardiac health, etc
- Breast cancer risk?
  - Estrogen alone does not increase risk, may decrease breast cancer risk
  - Combined E + P therapy has been associated with a “slight” increase risk of breast cancer, add P to reduce risk of endometrial/uterine cancer
  - Duration really matters, especially with combined therapy
  - Overall baseline risk matters too
  - Best made by informed individualized conversation

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“Do I need a breast cancer vaccine?”

- Currently in early (Phase 1) clinical trials
- Goals:
  - prevent recurrence in TNBC
  - Trigger strong immune response against aggressive tumors (personalized mRNA)
  - Others being explored
- Designed to stimulate immune system response against tumor cells

Invented at Cleveland Clinic, Anixa obtained an exclusive global licence for the breast cancer vaccine technology. Credit: MargJohnson/Shutterstock.

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"Do I need a breast cancer vaccine?"

- 1st cohort: postsurgical TNBC pt with incomplete response to neoadjuvant chemotherapy
- 2nd cohort will include pt with BRCA1/2 and PALB2 mutations
- 3 doses, Q2weeks
- Activates T cells; IFNγ, IL-17

Invented at Cleveland Clinic, Anixa obtained an exclusive global licence for the breast cancer vaccine technology. Credit: MargJohnsonV Shutterstock.

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"Can't we just do a blood test for cancer?"

- "Liquid biopsy" looks for circulating tumor DNA (ctDNA)- small fragments of tumor DNA in the bloodstream.
- Focuses on Minimal Residual Disease (MDR)
- Names: Signatera, RaDaR
- Can see how treatment is working, signs of recurrence etc.

- ctDNA positive, but imaging negative?
- False negatives go down over time with serial testing

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"Can't we just do a blood test for cancer?"

- Multicancer early detection ctDNA tests are available
- Marketed towards cancers without established screening programs
- Recommend to be used in concert with routine screening, like mammography
- Not typically covered by insurance ($950+ OOP)

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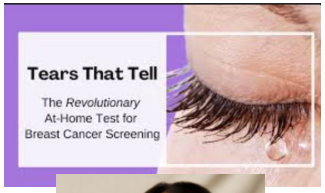
"Should I get a tear test?"

- Tests for 2 proteins:
  - S100A8 and S100A9
- Proteins are not specific to breast cancer:
  - Nonspecific inflammation
  - Infection, normal aging, Alzheimers, acute coronary syndromes, etc
- Sn: 92%, Sp 58%
- Not covered by insurance
- If positive, need a diagnostic workup



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48

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