

Breast Density: The New Law & What It Means for Breast Cancer Screening & Risk

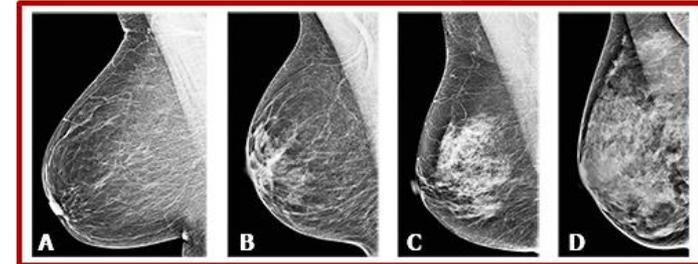
Sally Herschorn, MD

Vice Chair for the Patient and Provider Experience

Division Chief and Medical Director Breast Imaging Division

Associate Professor of Radiology

Faculty Member, Vermont Breast Cancer Surveillance System



Disclosure

- I am an unpaid investigator with Hologic and a member of their Advisory Board.
- I am a member of the Medical Advisory Board for DenseBreast-info.org, an education coalition.
- I have been interpreting mammograms for 26 years.
- I believe in the value of screening in saving lives.

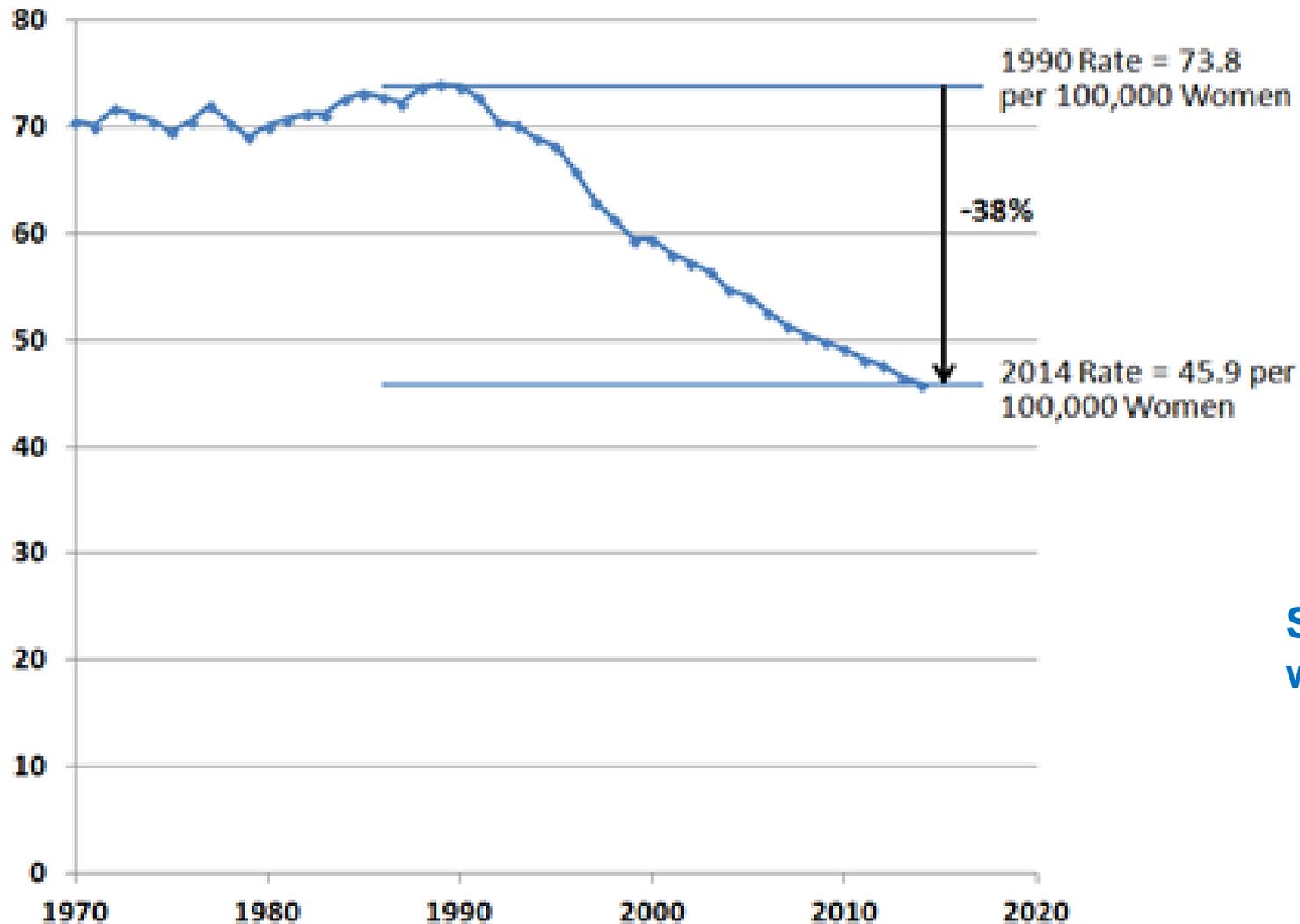


Objective: Empower you with knowledge to be proactive and make decisions about your health care

- Understand how **breast density** affects the ability to detect breast cancer on a mammogram and affects breast cancer risk.
- Understand the pros and cons of adding other methods of screening for cancer for women with dense breasts.
- Be aware that having dense breasts can change over a woman's lifetime.
- Know where to find resources to get reliable information about breast density.

Mammography screening saves lives

U.S. Breast Cancer Mortality Rates, Females Age 40+

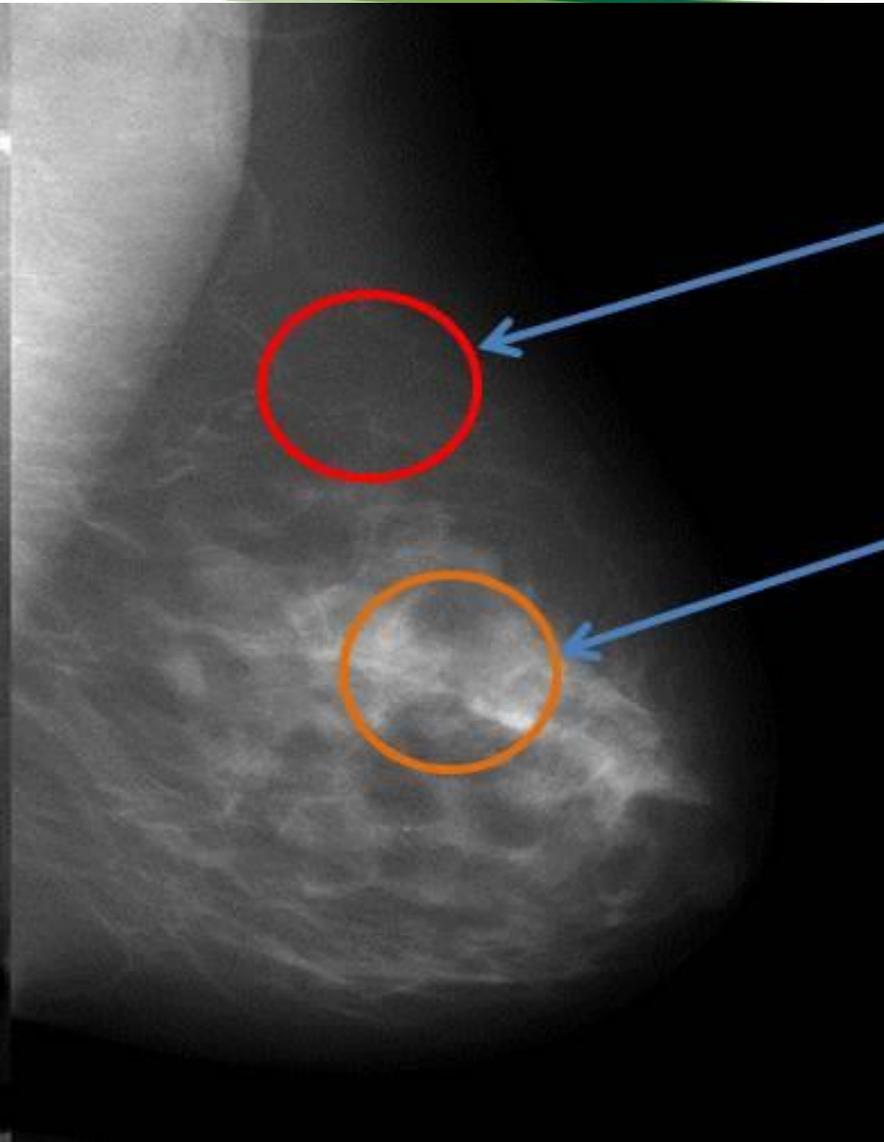


SEER data:
www.cdc.gov/nchs

*In addition to saving lives,
early detection can
help patients avoid expensive
and extensive treatment,
which may not have been
required had the
cancer been diagnosed earlier.*



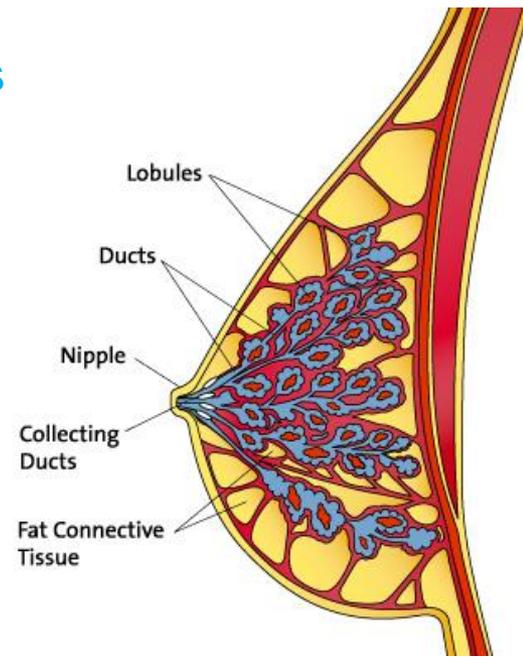
What is density?



mostly fatty tissue

some dense tissue

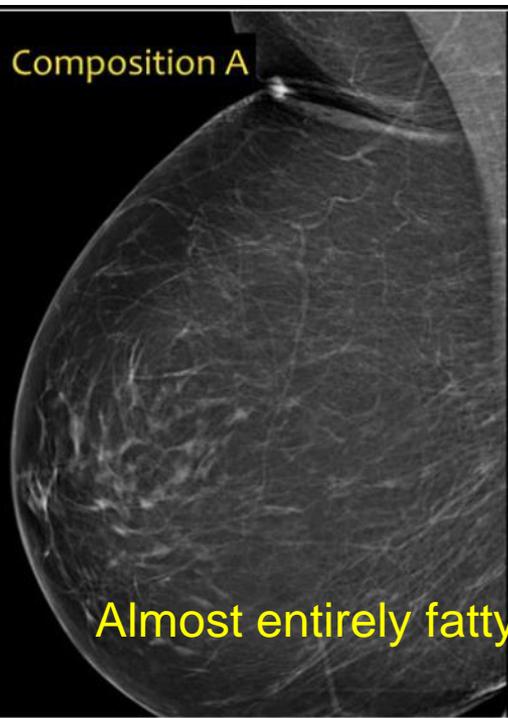
The relative amounts and distribution of fatty to non-fatty tissue determines breast density.



Breast density is an individual characteristic

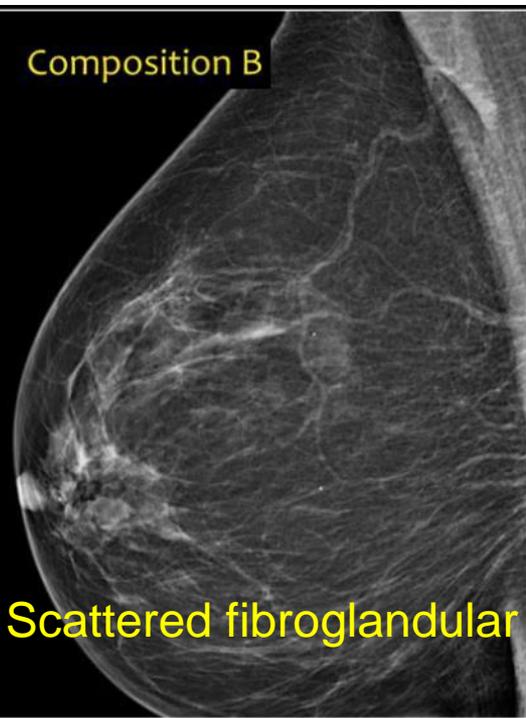


Composition A



Almost entirely fatty

Composition B



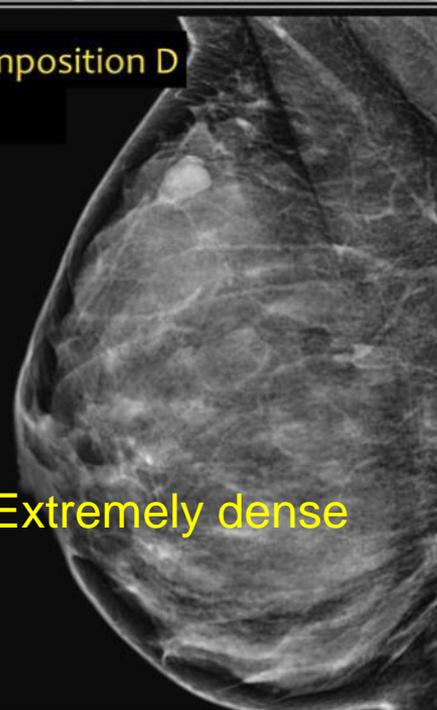
Scattered fibroglandular

Composition C



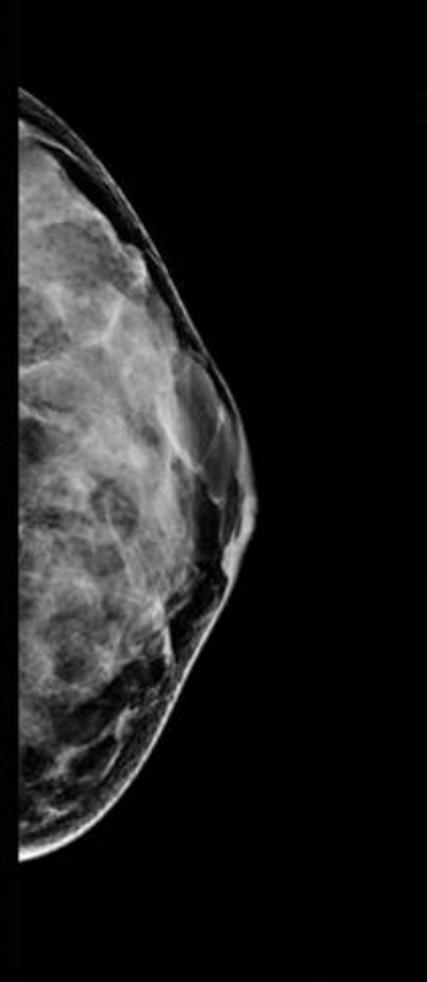
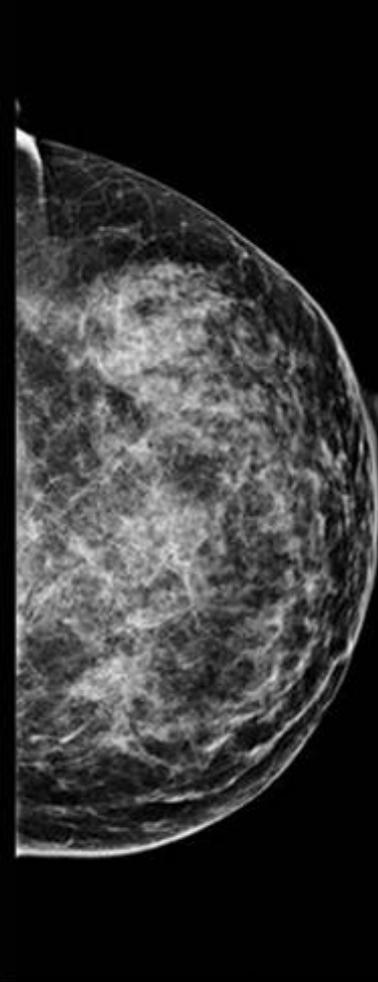
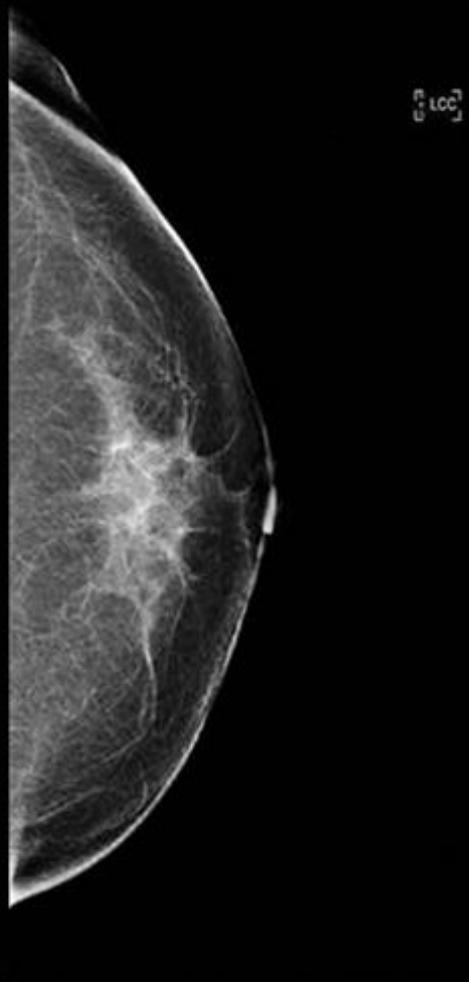
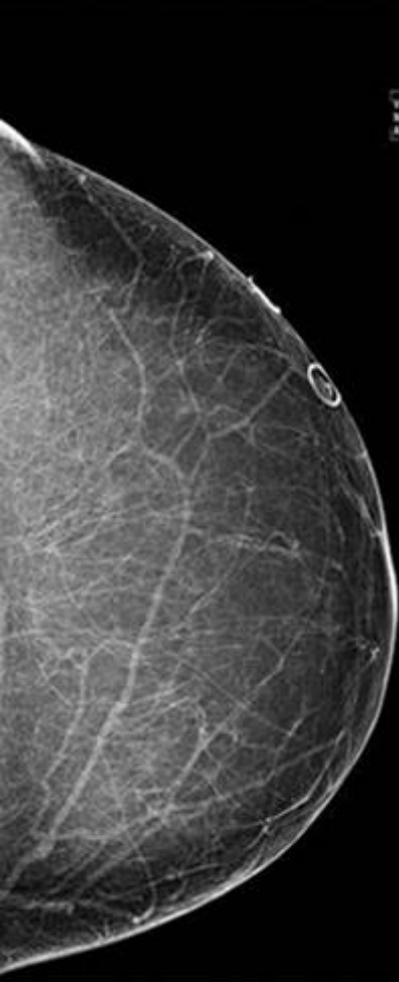
Heterogeneously dense

Composition D



Extremely dense

Density is unique to mammography



Fatty

Scattered fibroglandular density

Heterogeneously dense

Extremely dense

GE Healthcare mammography images

level I (A)

level II (B)

level III (C)

level IV (D)

Non-dense

Dense

SOURCE: American
College of Radiology

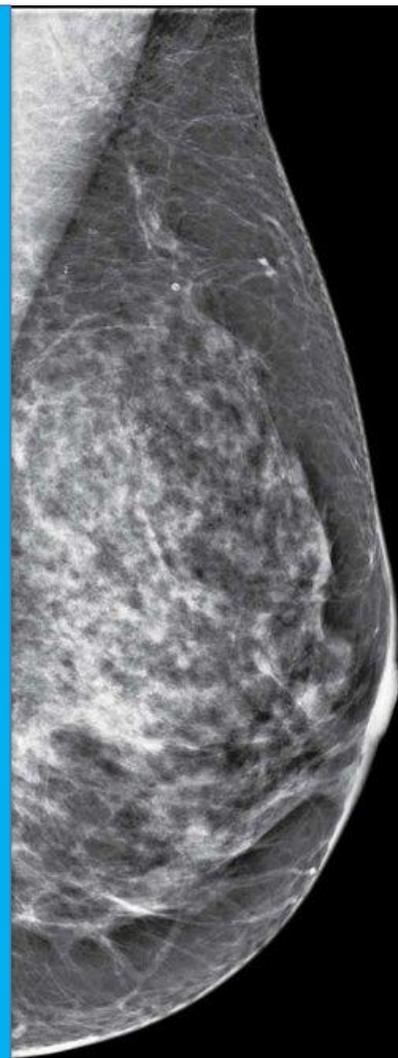
LML



**Entirely
fatty breasts**
(10% of women)



**Scattered
fibroglandular
density** (40%)



LML

**Heterogeneously
dense** (40%)

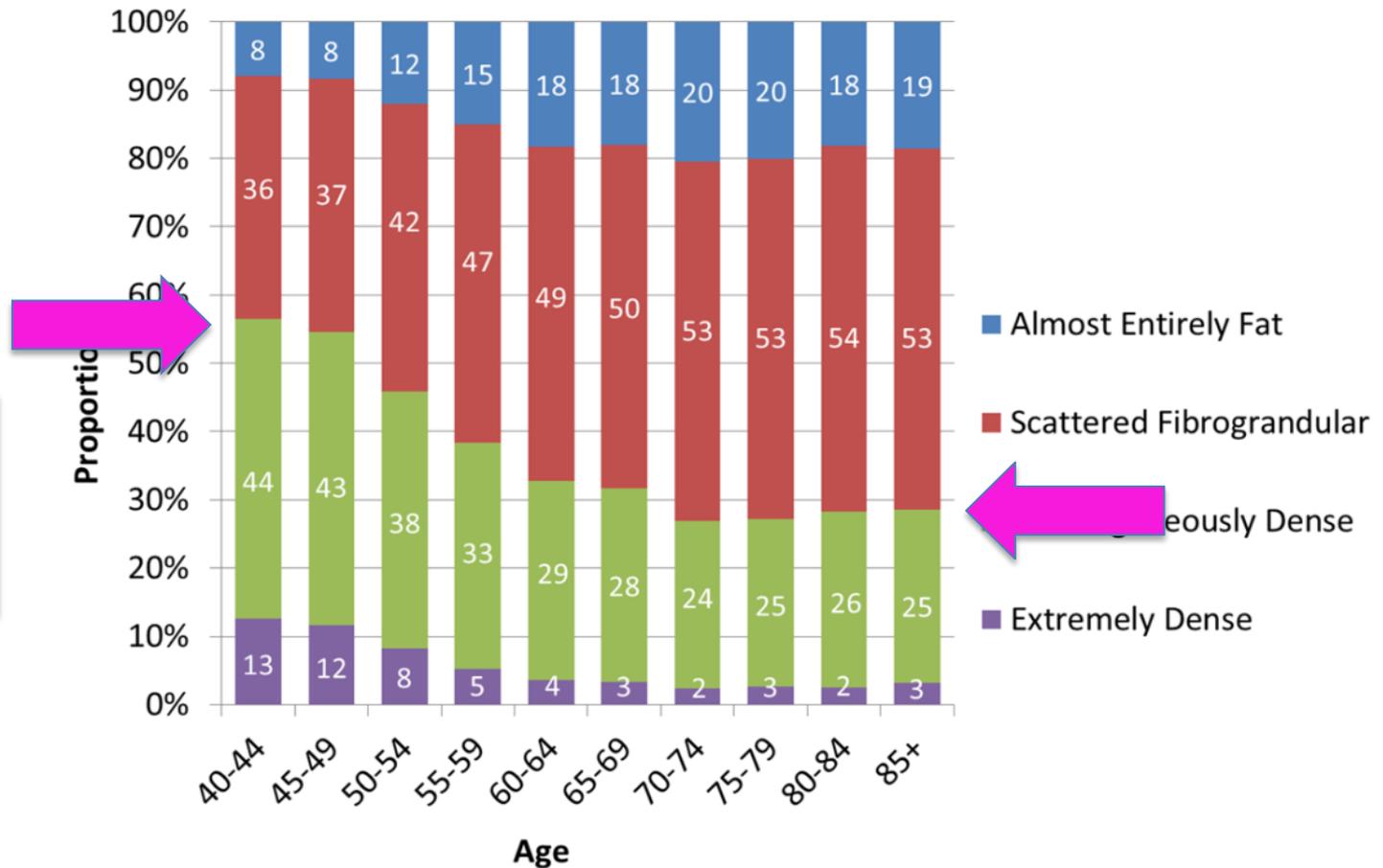


L

Extremely dense
(10%)

How common are “dense breasts”?

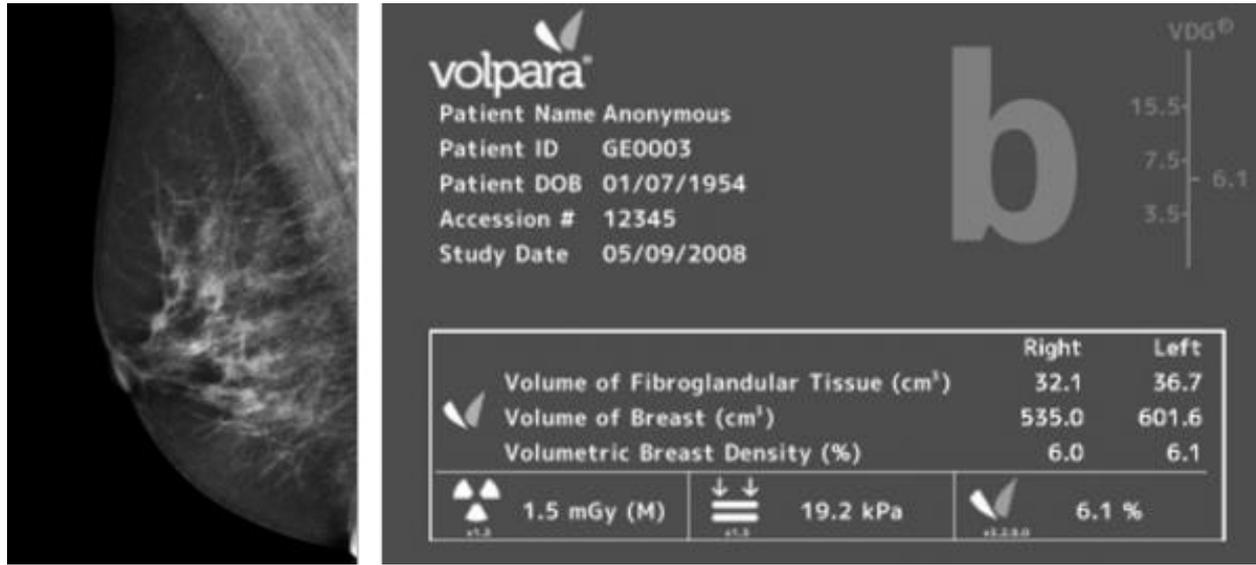
About 40% of screened women aged 40-74 have dense breasts



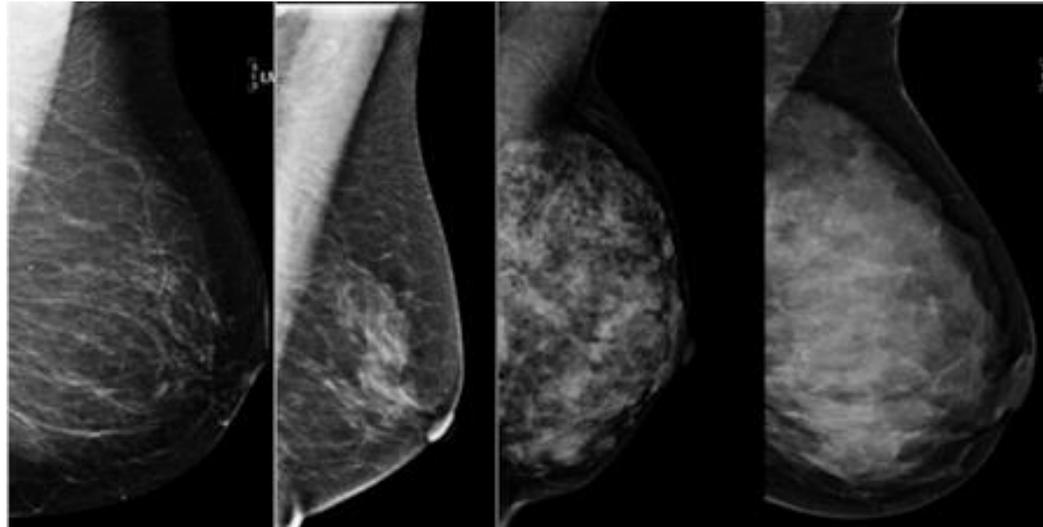
Sprague, et al.
2014 *Journal of the
National Cancer
Institute*

How do we measure breast density?

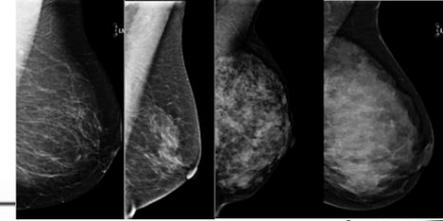
- Volumetric or area computer measurements



- Radiologist assessment



Breast density assessment is subjective!



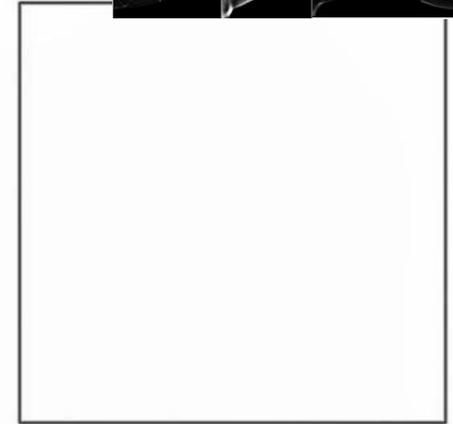
75% Gray



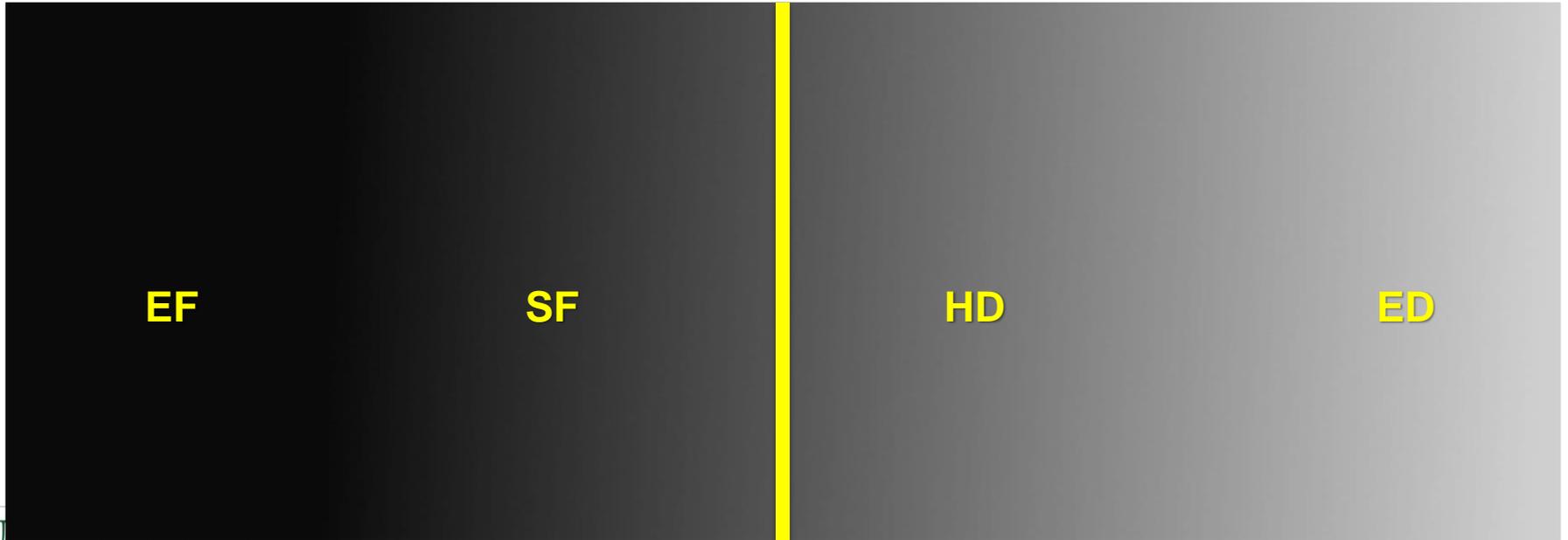
50% Gray



25% Gray



White



EF

SF

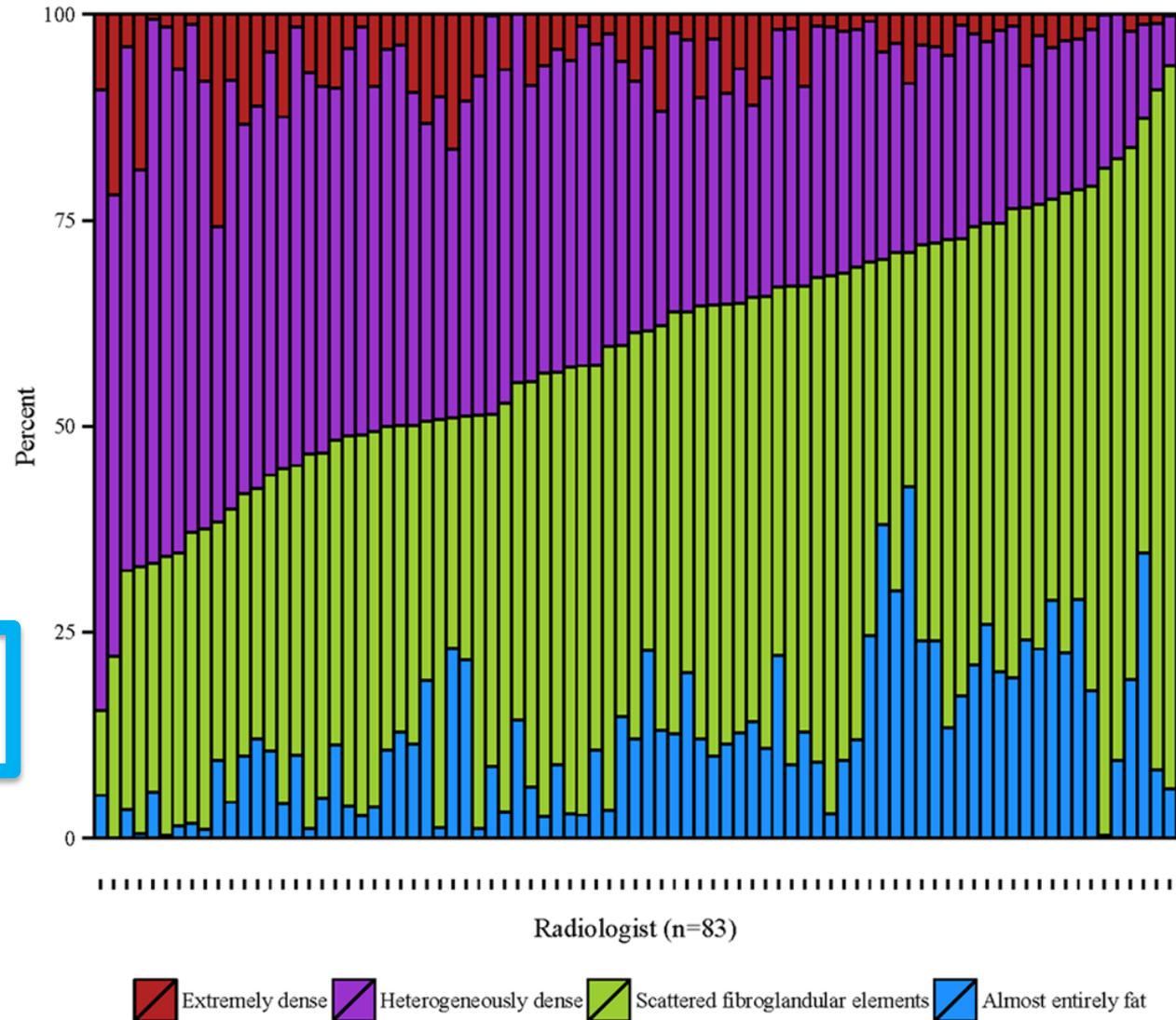
HD

ED

How much variability is there in how radiologists classify breast density?

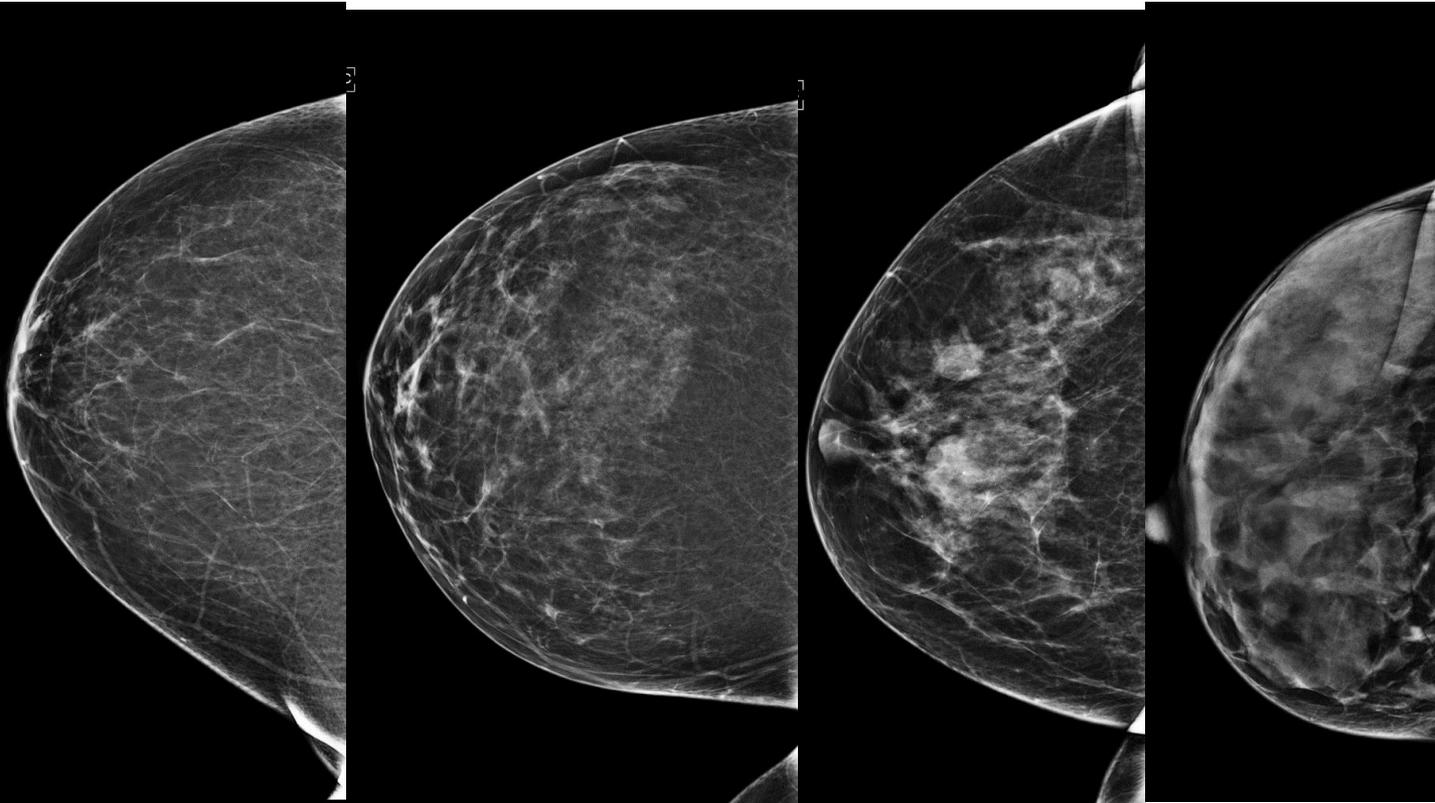
Data from 83 radiologists from Vermont, University of Pennsylvania, Dartmouth-Hitchcock, Brigham & Women's Hospital networks

Sprague, Herschorn, Weaver, et al.
2016 *Annals of Internal Medicine*



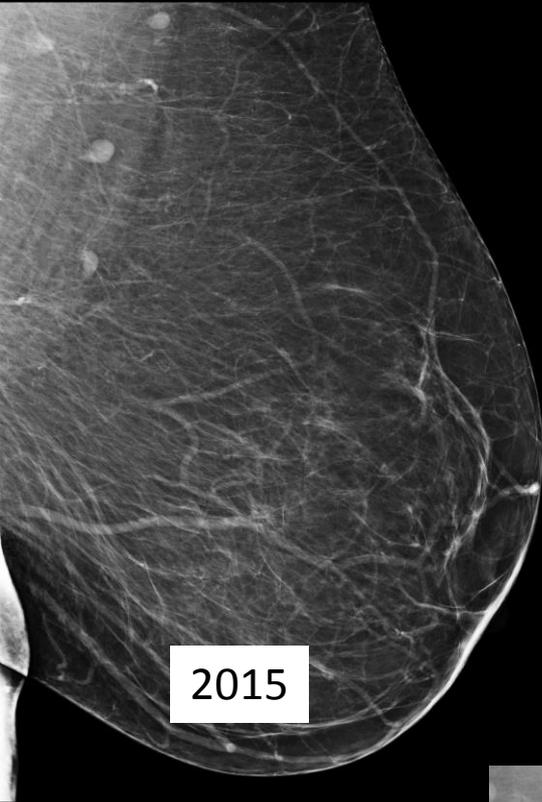
Density readings may change year to year

- Inter-observer agreement 49% of time in BCSC.



Density distribution is different at different ages and body weights

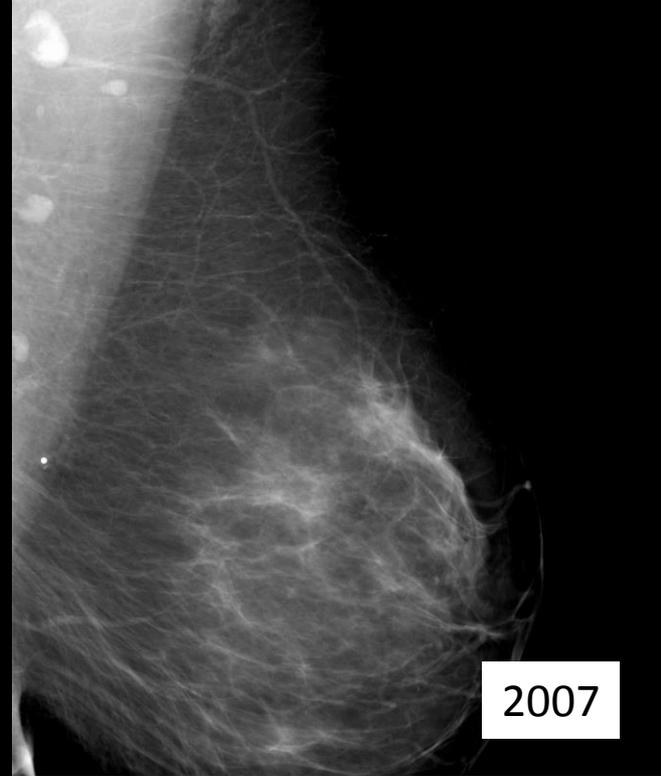
- 74% of women in their 40's have dense breasts.
- 36% of women in their 70's have dense breasts.
- Breast density varies over a woman's lifetime.
- Average decline in density over 10 years was 11%
- Breast density varies with amount of fat.



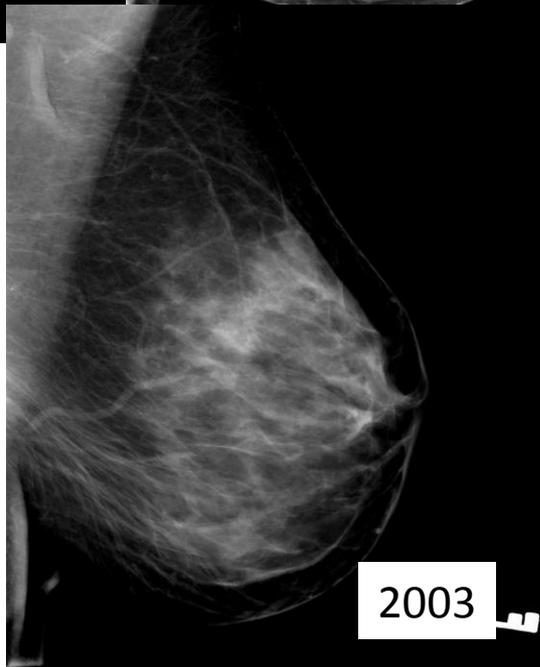
2015



2011



2007

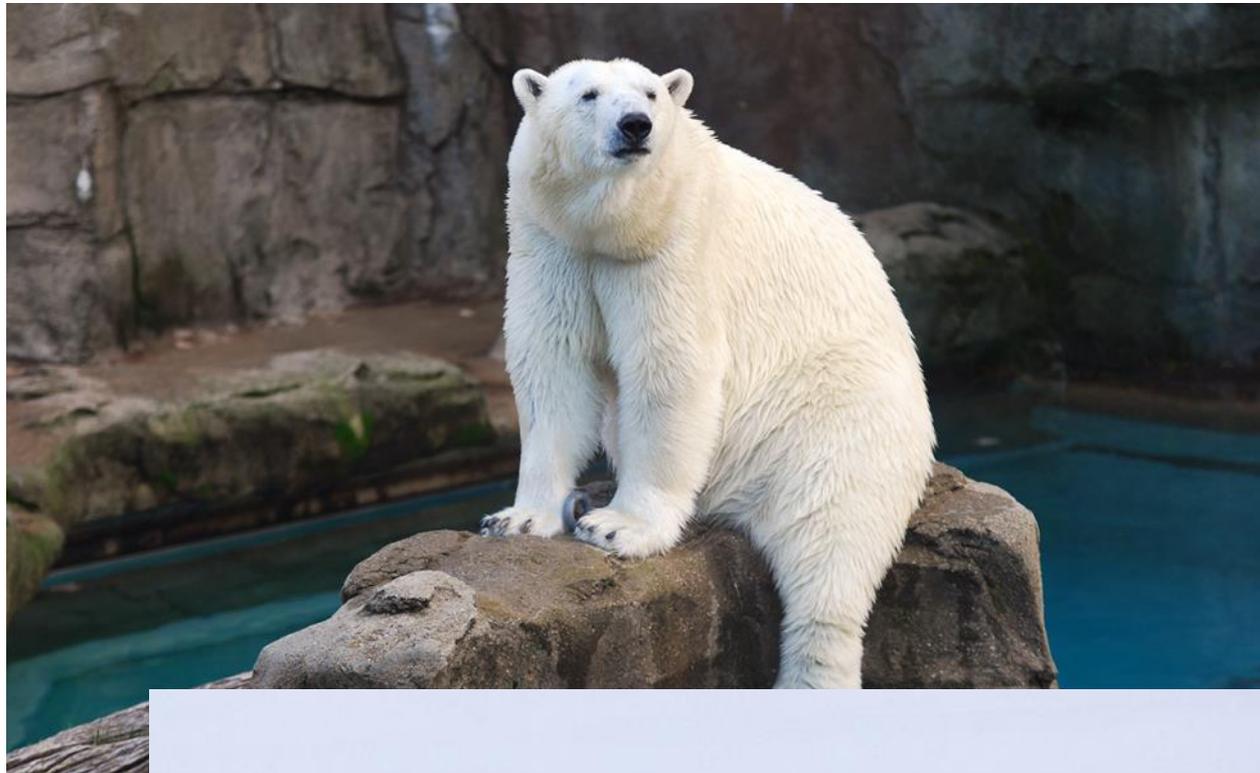


2003

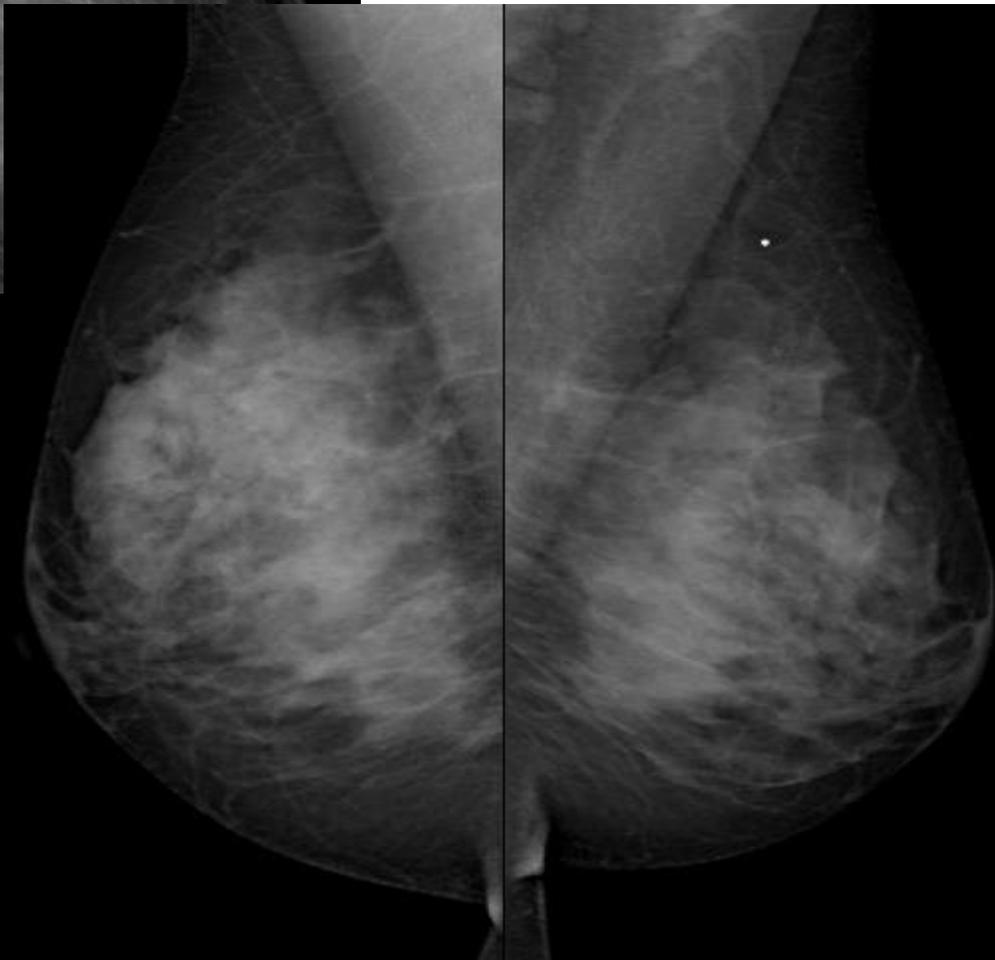
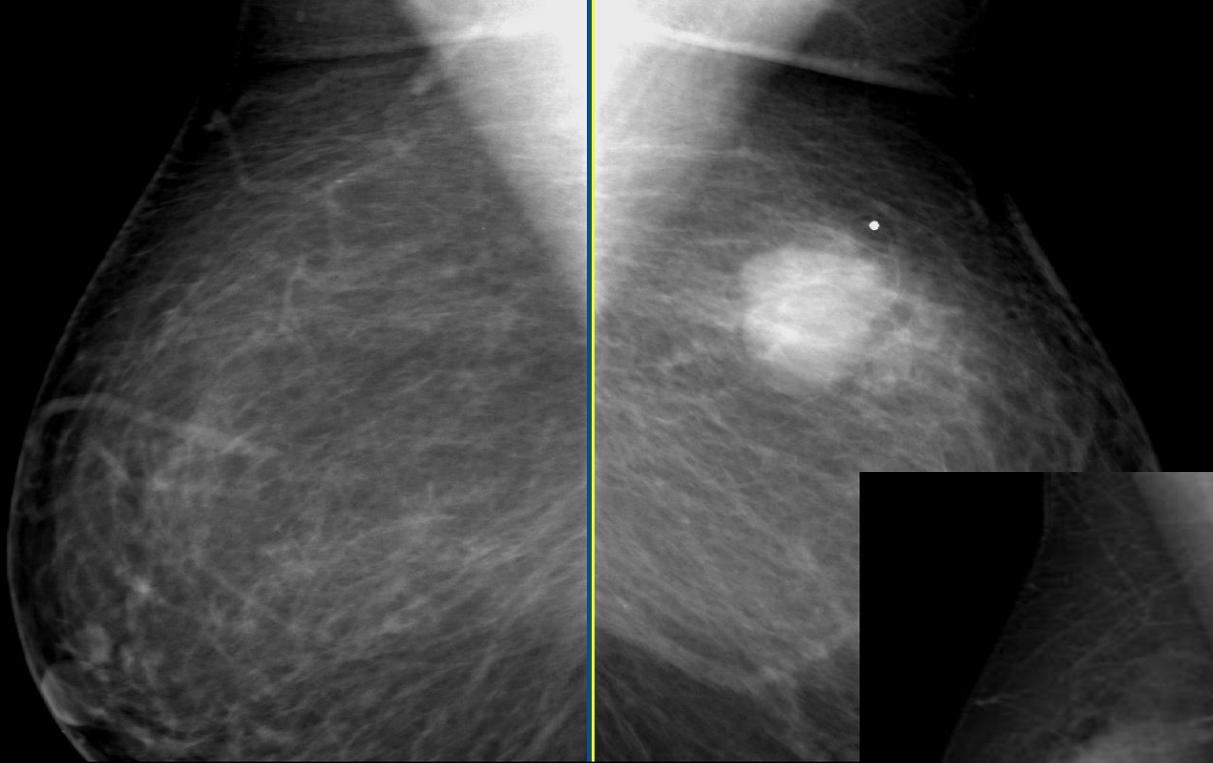
Masking effect



Having **dense breasts** is the #1 cause of a **missed cancer diagnosis** on mammography.



Masking effect

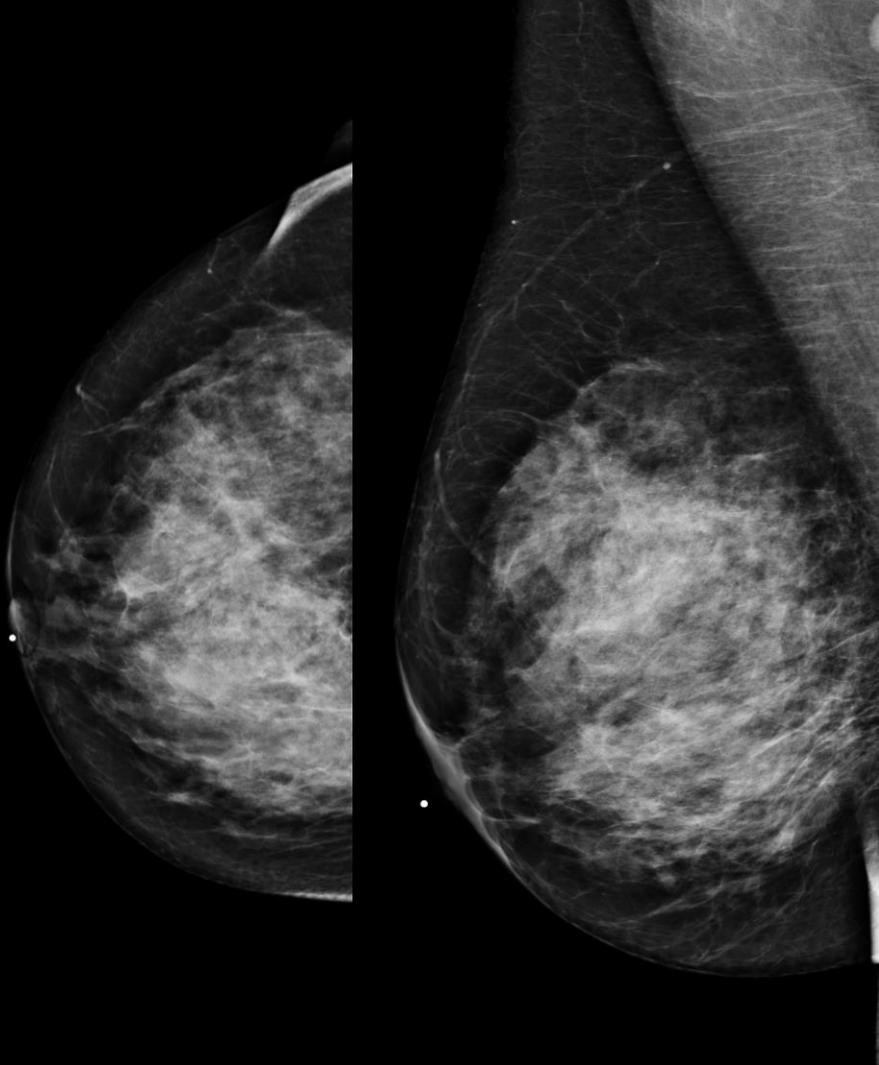


GE
15

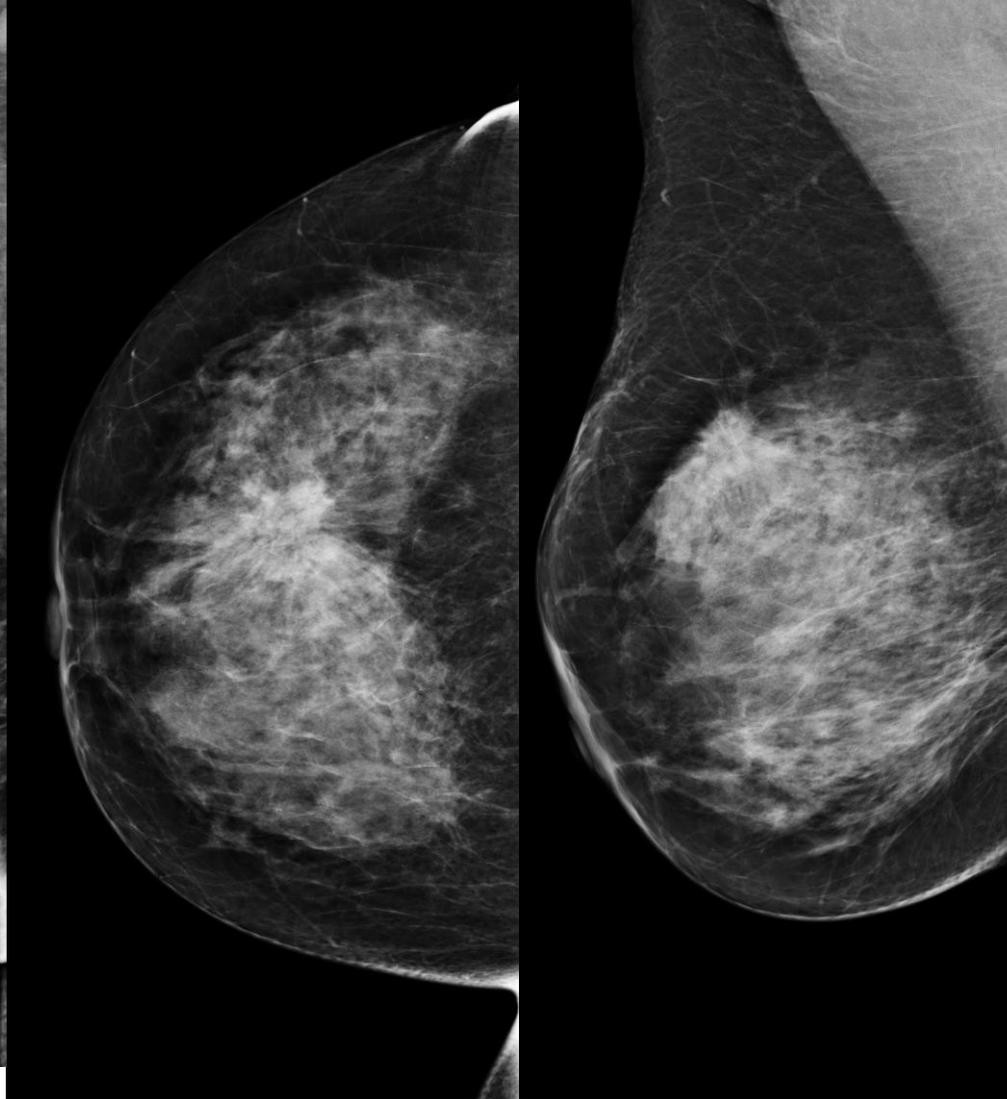
LT BREAST
RPO
1:00
6.5 CM OUT
RADIAL

?AREA DR FELT LUMP

- B CHI
- Frq 14.0 MHz
- Gn 67
- S/A 3/1
- Map H/1/1
- D 4.0 cm
- DR 72
- FR 11 Hz
- AO 100 %

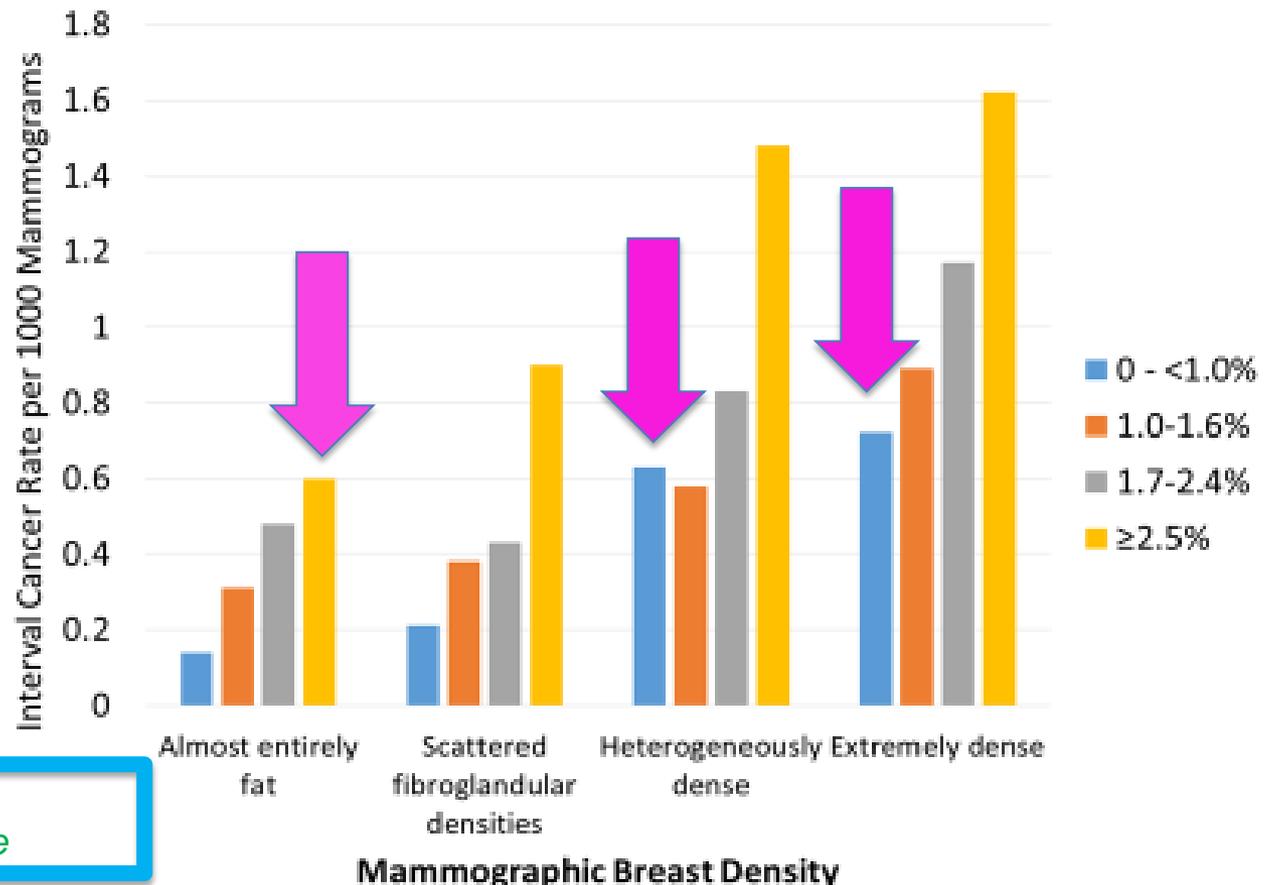


47 year old, screening
2010



48 year old, new palp lump
2011 (interval cancer)

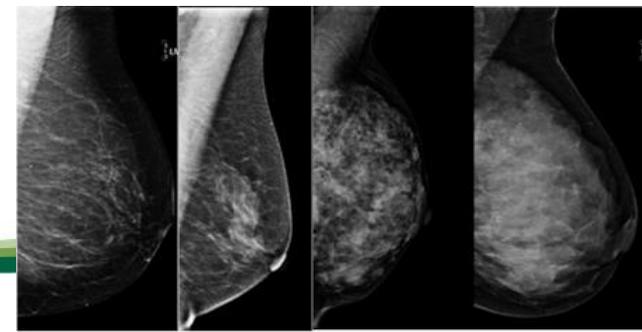
Which women with dense breasts are at highest risk for a false negative screen?



Kerlikowske, Sprague, et al.
2015 *Annals of Internal Medicine*

Density and Risk of Breast Cancer

Increased risk

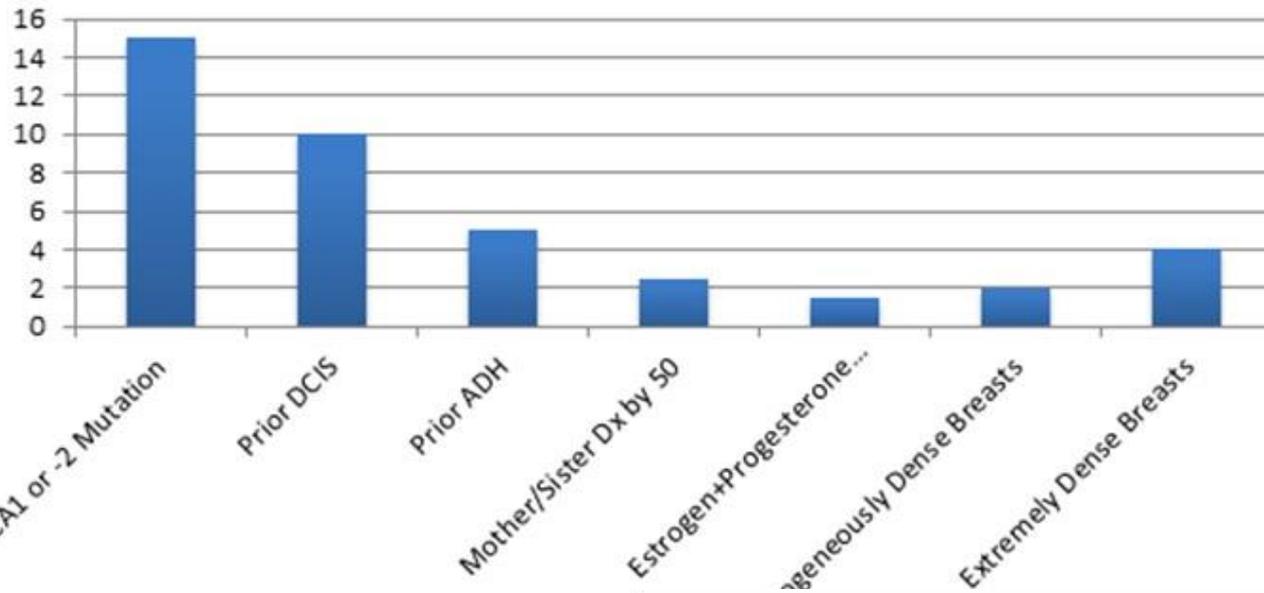


- Multiple studies show breast density is itself a risk factor for breast cancer.
- ED breasts **3-4x** likelihood of cancer compared with EF.
- But ED (10%) and EF (10%) of population.
- Most women have SF or HD.
- Comparing HD with SF: only **1.2 to 1.5x** likelihood.
- Comparing ED with SF, **2.1 to 2.3x** likelihood.

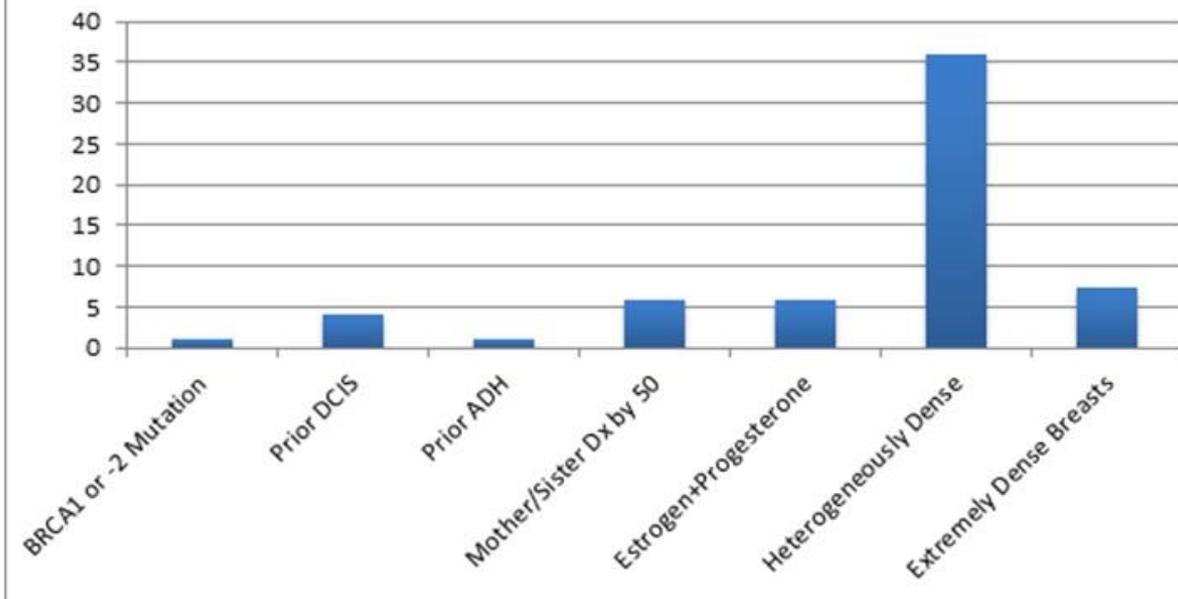
Breast density and breast cancer risk, a practical review; Wang et al, Mayo Clinic Proceedings, 2014

Relative Risk

Putting risk into perspective



Percent Affected



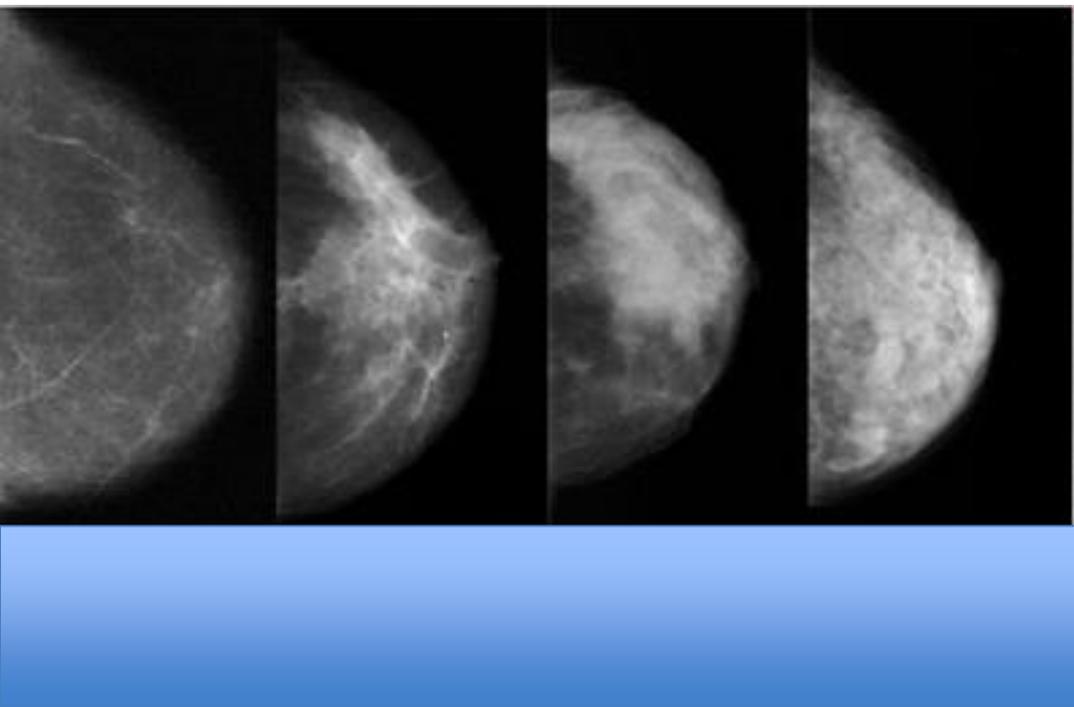
Reprinted from DenseBreast-Info.org

**Population-Attributable Risk
Proportion of Clinical Risk Factors
for Breast Cancer.**

Engmann, Sprague et al, *JAMA
Oncol.* Published online February 02,
2017.

Mammographic Sensitivity

- 98% in women ≥ 50 with fatty breasts
- 30-69% sensitivity in women with dense breasts, particularly low if < 50 or at increased risk



Kerlikowske et al JAMA 1996;276:33-38
Kolb et al Radiology 2002;225:165-175
Mandelson et al JNCI 2000;92:1081-1087

"Fatty Breast
Tissue"

"Scattered
Density"

"Heterogeneously
Dense"

"Extremely
Dense"

BI-RADS

5th Edition



a

The breasts are almost entirely fatty

b

There are scattered areas of fibroglandular density

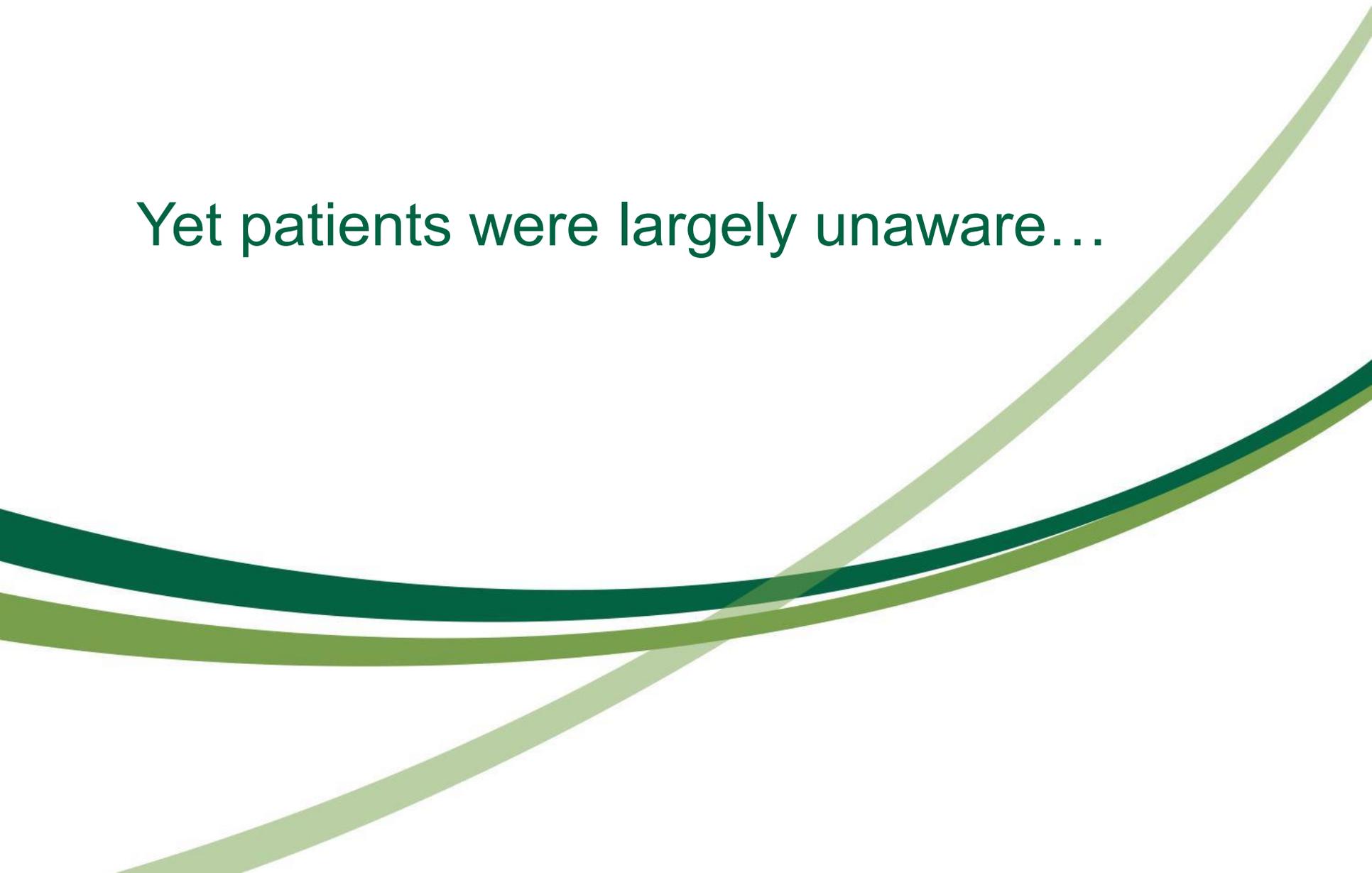
c

The breasts are heterogeneously dense, which may obscure small masses

d

The breasts are extremely dense, which lowers the sensitivity of mammography

Yet patients were largely unaware...

The slide features three thick, curved lines in shades of green. One line is a dark forest green, another is a medium olive green, and the third is a light sage green. They sweep across the bottom and right side of the slide, creating a sense of movement and depth.

The History of Breast Density Reporting Legislation:

A story of patient engagement and activism





Nancy's story

Dr. Nancy Cappello, PhD

Had no relatives with breast cancer, ate healthy, exercised, did monthly self exams

Went for yearly checkups and yearly mammograms

Nancy felt a lump weeks after a normal mammogram and was diagnosed with stage IIIC breast cancer with 13 lymph nodes!

How did this happen?



- Physician: “**Nancy, you have dense breast tissue.**”
- Nancy: “**What does that mean?**”
- Physician: “**This makes it more difficult to detect cancer on mammography.**”
- Nancy: “**You knew? Why didn’t I?**”
- **Why??! Why wasn’t I told?**

So Nancy became an activist

- Went to radiologists, physicians
- Went to CT legislature
- Went to the public and women around the country and around the world!
- Goal: **Reduce the incidence of advanced breast cancer diagnosis for women with dense breasts!**



Early Matters

Reducing Advanced Disease is a Predictor of Reducing Breast Cancer Mortality

[KNOW YOUR BREAST DENSITY >>](#)

[PREVIOUS
WHAT DO I DO?](#)

What is Dense Breast Tissue?

[NEXT
HOW DO I KNOW?](#)

Dense breast tissue is comprised of less fat and more connective tissue which appears white on a mammogram. Cancer also appears white thus tumors are often hidden by the dense tissue. As a woman ages, her breasts usually become more fatty. However, 2/3 of pre-menopausal and 1/4 of post menopausal women (40%) have dense breast tissue. Radiologists have been reporting a woman's dense breast tissue to her referring doctor for

Giving Women with
 Dense Breast Tissue
 access to Early Detection.



DONATE NOW



OCTOBER 2009: Connecticut first state to mandate Breast Density Notification.

Breast Density is one of the strongest, if not the strongest, predictor of the failure of mammography screening to detect cancer.

— Mandelson et al 2000



NEWS >>

Connecticut Women's Hall of Fame honors Dr. Cappello

[More >>](#)

Dr. Cappello's Blog Post: Sealing the Cracks of Breast Cancer Screening: The Connecticut Experiment

[More >>](#)

Density Reporting Bills Championed by Legislators/Dr. Cappello testifies in Lincoln NE in support of Cheri's Law

[More >>](#)

Joan Lunden joins Dr. Cappello at FDA meeting to standardized the reporting of dense tissue to patients.

[More >>](#)



RESOURCES >>

Breast Screening Tools for Dense Breasts with Dr. Kathy Schilling

[More >>](#)

Mayo Clinic For Innovation Talks Dense Breasts with Dr. Cappello

[More >>](#)

Are You Dense Brochure: A Must-Have Resource in Spanish, English, French & Japanese

[More >>](#)

Are You Dense Inc. Launches Hispanic/Latina Breast Health Program

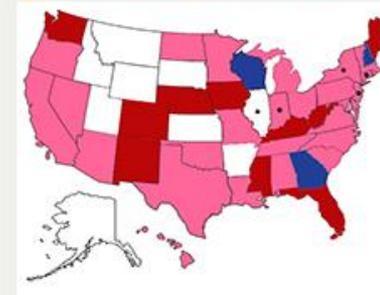
[More >>](#)

Dr. Cappello's Published Article in JACR - Decades of Normal Mammography Reports - The Happygram

[More >>](#)

VIDEO: Dr. Cappello on Capitol Hill Speaking to Senate Staff

STATE MANDATORY BREAST DENSITY NOTIFICATION



KEY:

PINK: Enacted Law

RED: Introduced Bill

BLUE: Working on Bill

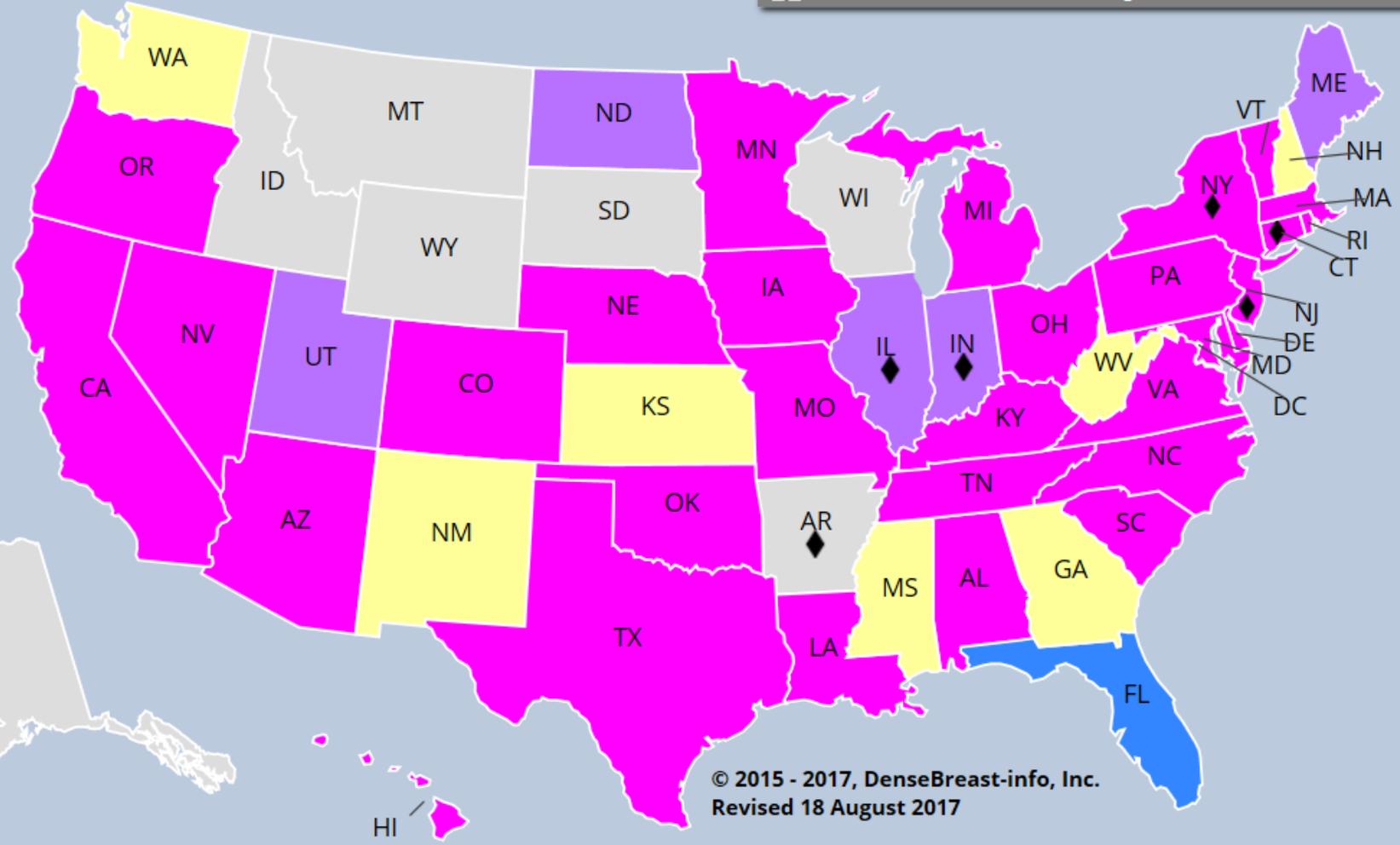
WHITE: No Action

BLACK * : Insurance Coverage Law

© 2011–2017, Are You Dense Advocacy, Inc.

Map Legend

- Some density notification required (30 states)
- Effort for inform/education; notification not required
- Active bill
- Inactive bill/no notification enacted
- State with insurance coverage



VERMONT



Effective date: This act shall take effect on July 1, 2016 and shall apply to exams performed on or after January 15, 2017.

Who receives: Every patient must receive information that identifies the patient's individual breast density classification. Patients with heterogeneously or extremely dense breasts must receive the notification below.

How informed: In the letter sent to patients after their mammograms.

Notification required:

The summary of the mammography report shall include a notice substantially similar to the following: "Your mammogram indicates that you have dense breast tissue. Dense breast tissue is a normal finding that is present in about 40 percent of women. Dense breast tissue can make it more difficult to detect cancer on a mammogram and may be associated with a slightly increased risk for breast cancer. This information is provided to raise your awareness of the impact of breast density on cancer detection and to encourage you to discuss this issue, as well as other breast cancer risk factors, with your health care provider as you decide together which screening options may be right for you."

Mammography is not a perfect test!

Every day, there are women are being diagnosed with an advanced breast cancer after finding a lump; often soon after a normal mammogram.

Given the masking effect and increased risk...

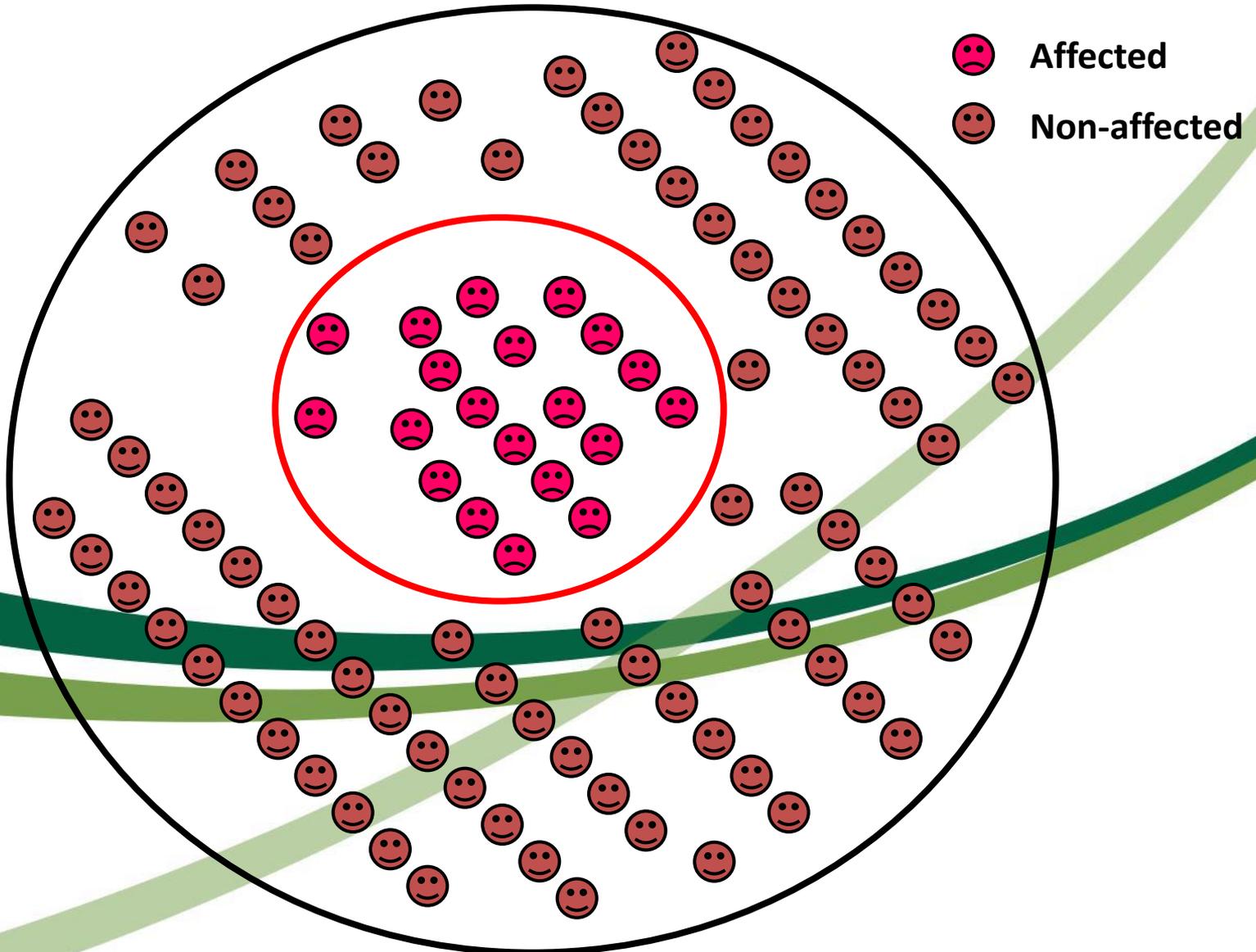
It's clear that mammography is not performing well for women with dense breasts.

Should women with dense breasts have something else besides mammograms?

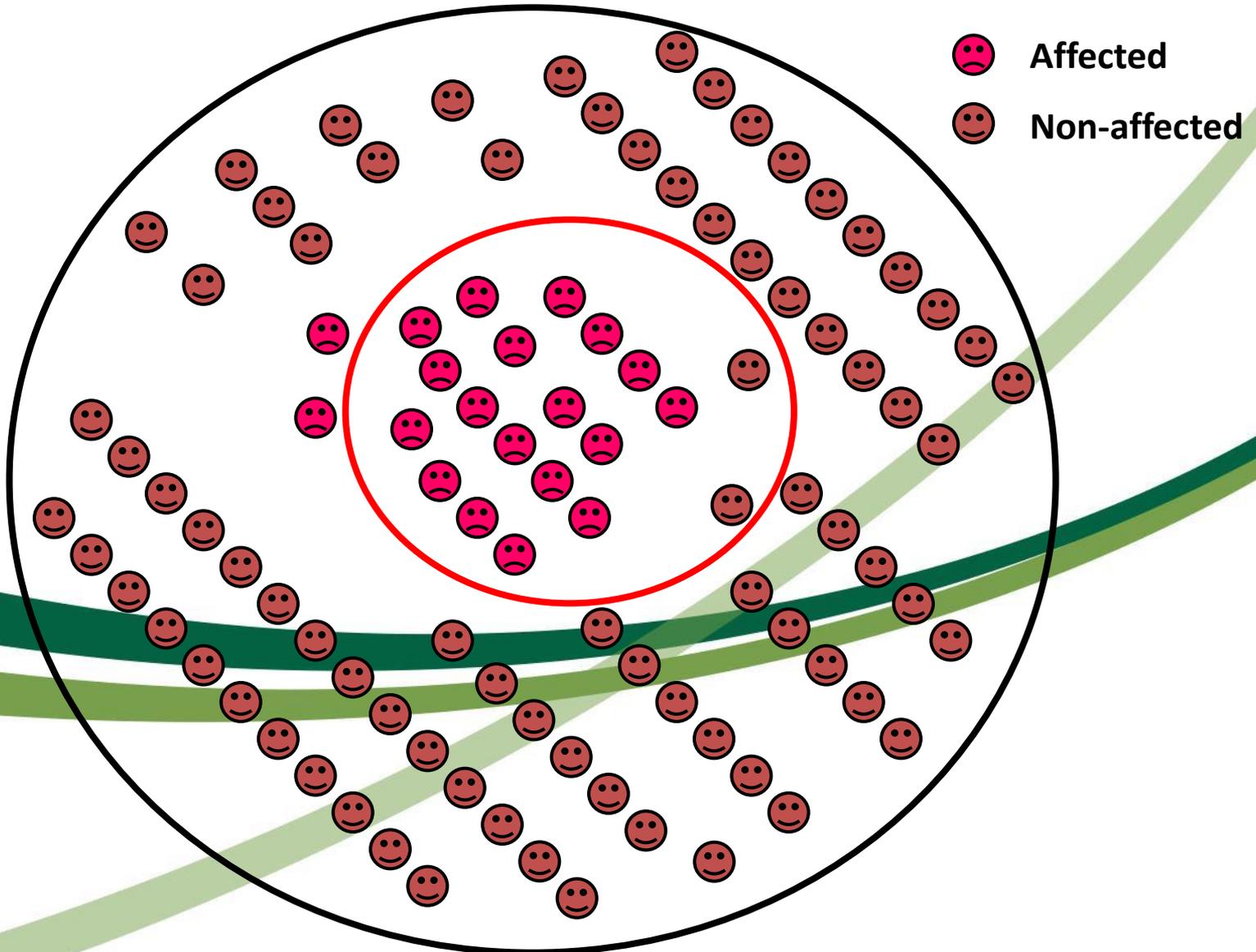
How can we improve cancer
detection?

The slide features three thick, curved lines in various shades of green (dark green, medium green, and light green) that sweep across the bottom and right side of the page, creating a modern, abstract design.

A perfect diagnostic test identifies the affected individuals only



In reality, tests are not perfect



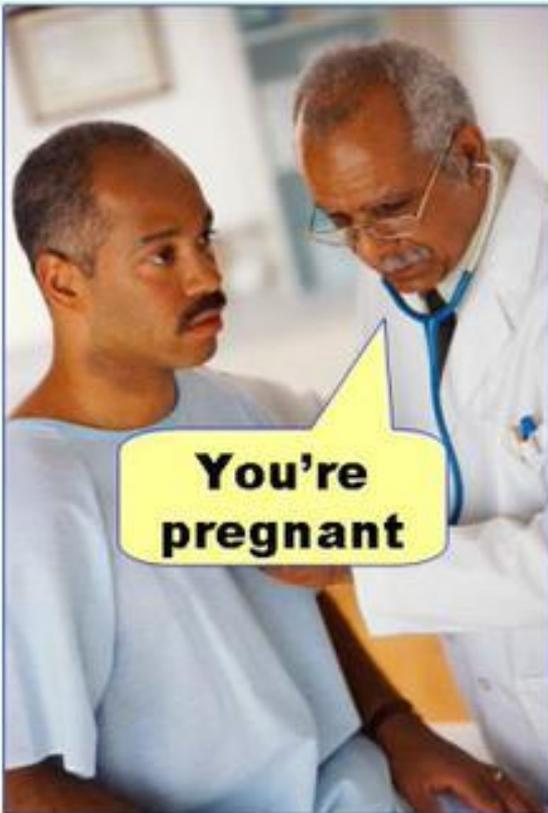
Definitions

- **False positive:** A screening test that says you might be affected when in reality you are not
- **False negative:** A screening test is normal but you really have the disease
- **Call back rate:** the number of patients called back from a screening test: most will be false positives but some will be true positives
- **Cancer detection rate:** the number of cancers detected per 1000 women screened

False positive

Test says I have the disease but in reality I don't have the disease

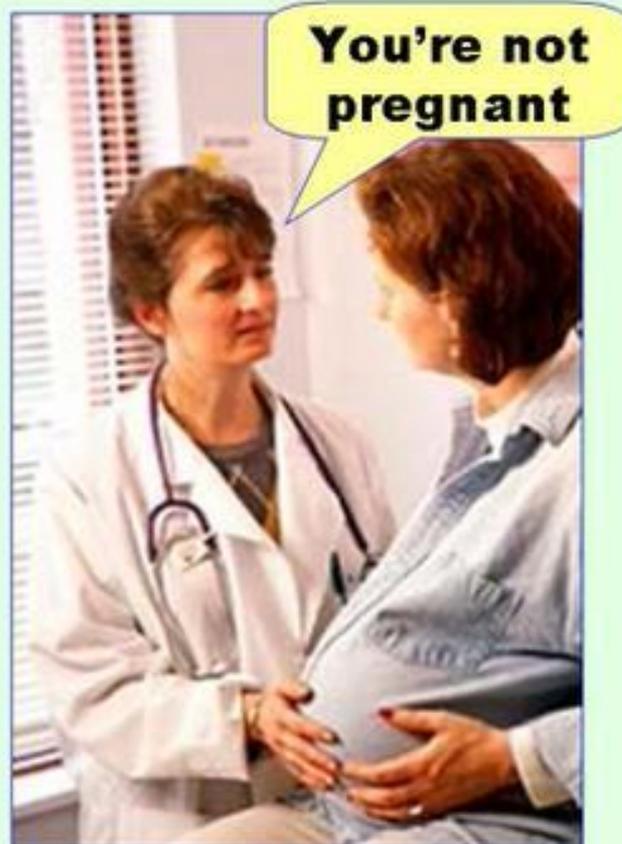
Type I error
(false positive)



False negative

Test says I don't have the disease but in reality I do

Type II error
(false negative)



For every **1,000** women who have a screening mammogram

100*
out of the 1,000

will return for additional mammogram and/or ultrasound due to something seen in the initial mammogram

Call back rate



20*
out of the 1,000

will find what was seen in the imaging is likely not cancer and return in 6 months to keep watch on the finding

Cancer detection rate



5

out of the 1,000
will be diagnosed with breast cancer

When breast cancer is found this way the **cure rate is very high**

61

out of the 1,000
will have the additional imaging and find nothing is wrong



19

out of the 1,000
will have a minimally invasive needle biopsy

To learn more about the benefits and risks of annual mammography, visit MammographySavesLives.org.



MammographySavesLives™

... one of them may be yours

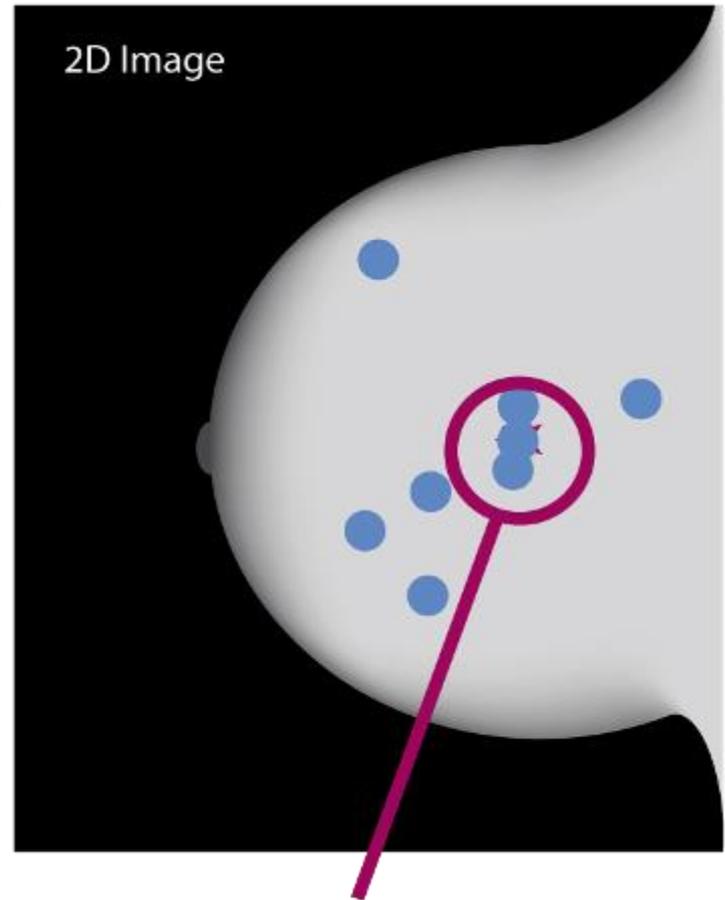
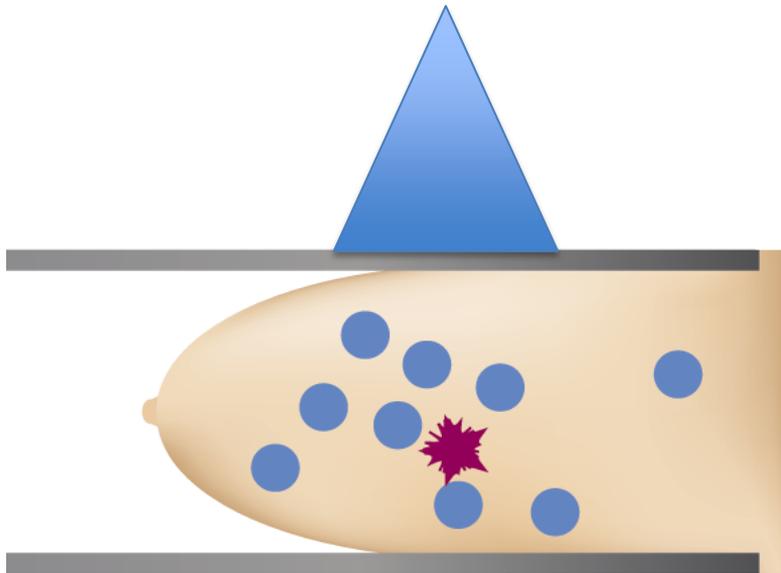
**This will be lower for women who have had prior mammograms and higher for women who are having their first mammogram.*

Available supplementary screening methods

- **3D mammography (DBT, tomosynthesis)**
- **Whole breast ultrasound**
 - Handheld
 - Automated
- **-MRI**
- **-Abbreviated MRI**
- **Molecular imaging (BSGI, MBI)**
- **Contrast enhanced mammography**

Digital Breast Tomosynthesis (DBT)?

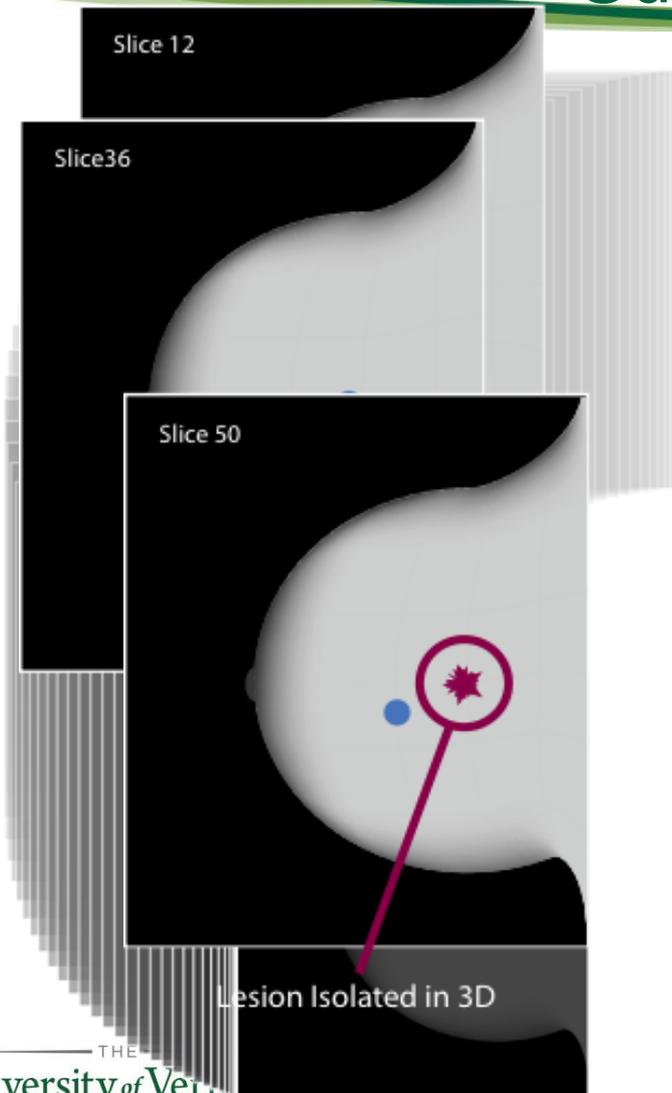
- Tissue superimposition hides pathologies in 2D
- Tissue superimposition mimics pathologies in 2D



Lesion Superimposed in 2D

Courtesy Hologic, Inc.

DBT Improves Visibility by Reducing Tissue Superimposition



DBT

- DBT increases cancer detection (**10 - 40% increase** in cancer detection!)
- DBT decreases false positives (**20 - 40% decrease** in callback rate!)
- **Net result: more cancers detected with fewer false positives!**

Does tomosynthesis improve screening performance?

UVM in collaboration with Dartmouth, University of Pennsylvania, and Brigham & Women's Hospital

- Overall
 - DBT had lower recall rate (8.7% vs. 10.4%)
 - DBT had increased cancer detection rate (5.9 vs. 4.4 per 1000)
- For women with dense breasts
 - DBT had lower recall rate (10.3% vs. 12.6%)
 - DBT had increased cancer detection rate (6.8 vs. 4.7 per 1000)

Conant, Beaber, Sprague, Herschorn, Weaver, et al.
2016 *Breast Cancer Research & Treatment*

Is the increase in cancer detection significant across all breast densities?

- Yes for fatty breasts 😊
- Yes for scattered fibroglandular breasts 😊
- Yes, yes and yes for heterogeneously dense breasts 😊 😊 😊
- Not significant for extremely dense breasts 😞

But DBT still improves recall rate in extremely dense breasts

Breast Cancer Screening Using Tomosynthesis and Digital Mammography in Dense and Nondense Breasts Rafferty et al; JAMA. 2016;315(16):1784-1786

60 year old with non-dense breasts

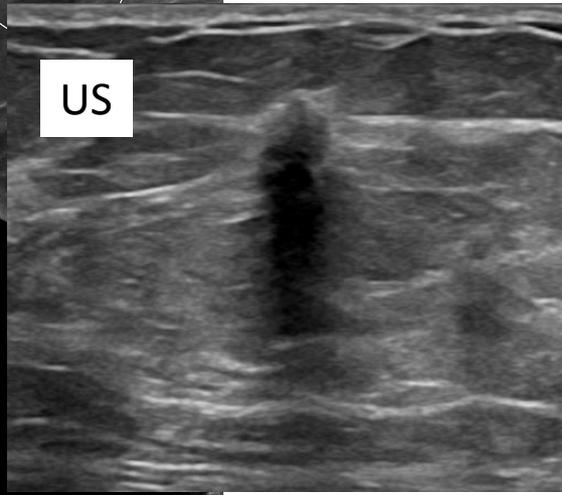
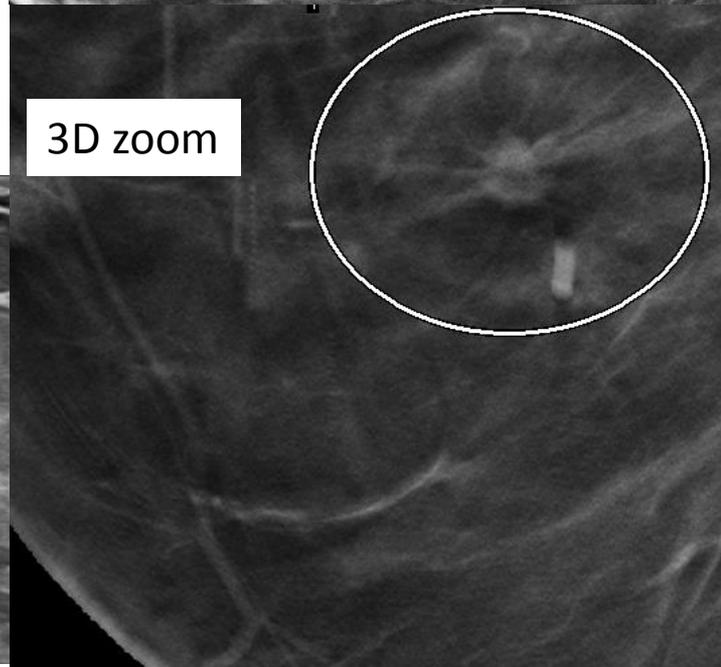
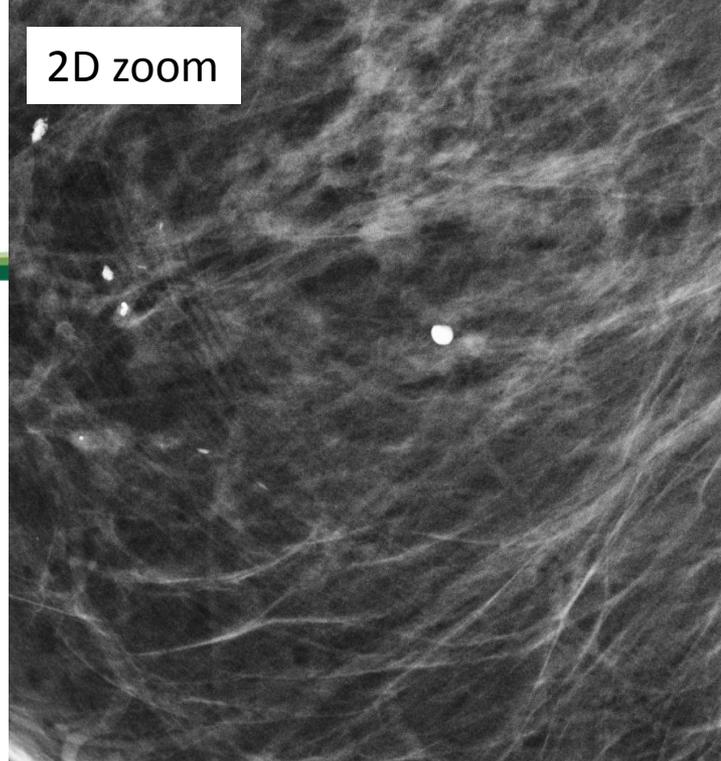
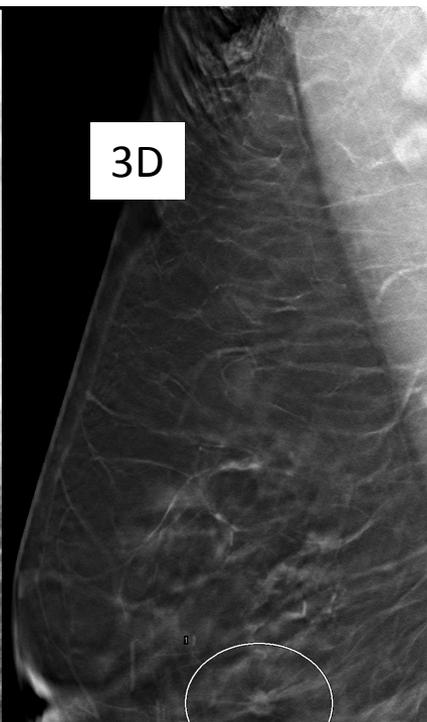
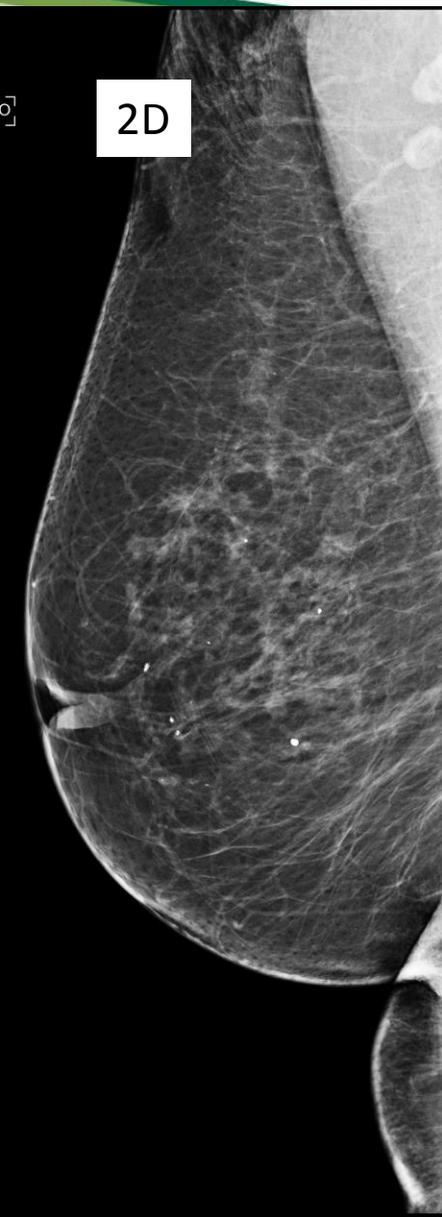
2D

3D

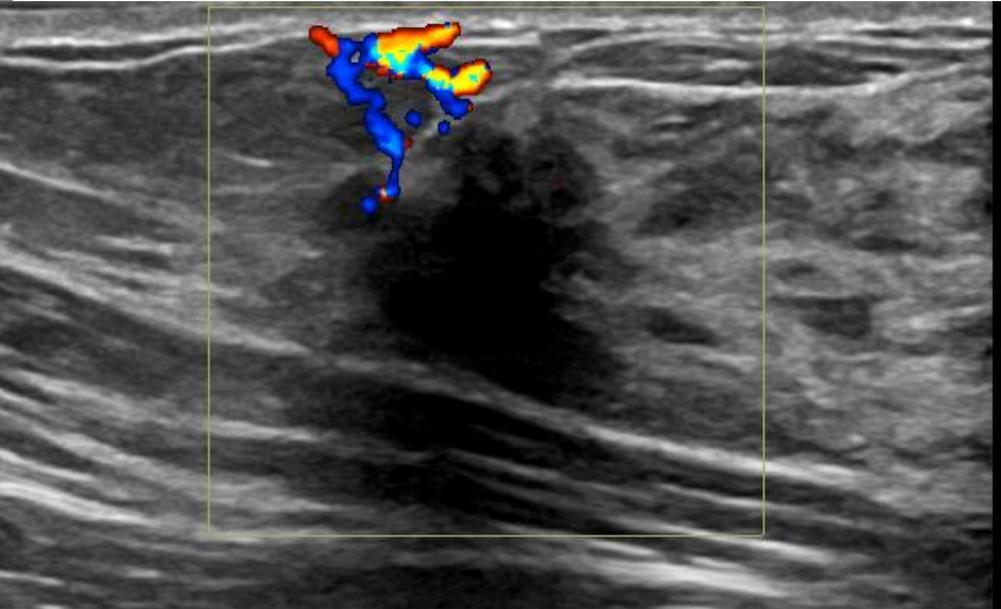
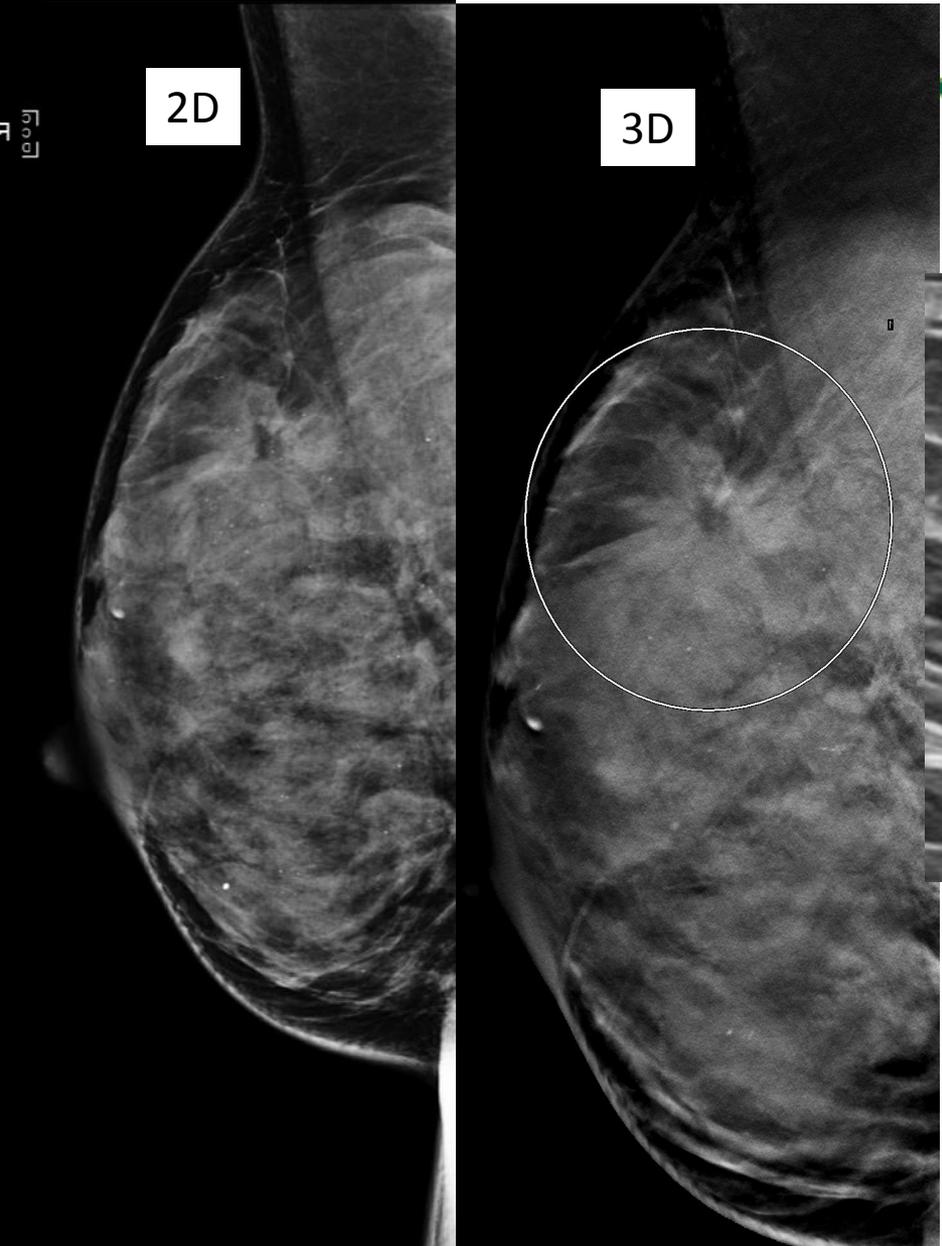
2D zoom

3D zoom

US

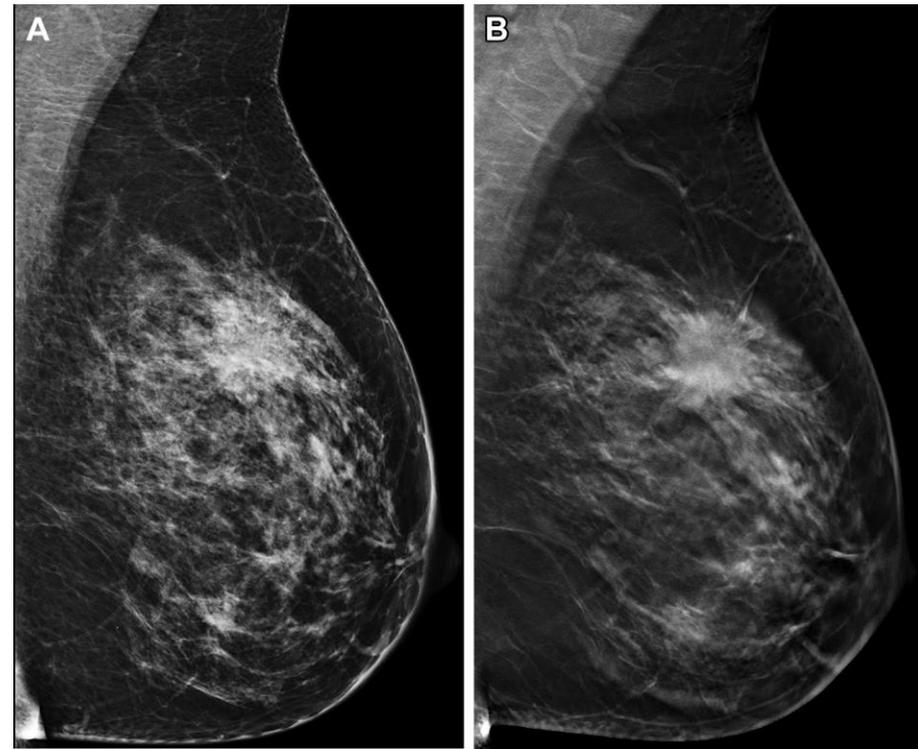


51 year old with extremely dense breasts



DBT is the first step in screening dense breasts

- Increased detection and decreased false positives
- Radiation dose no longer significantly increased if using synthetic 2D
- Cost is still a factor for some



Combined Screening With Ultrasound and Mammography vs. Mammography Alone in Women at Elevated Risk of Breast Cancer (ACRIN 6666 trial)

- 2800 women; **4.2 cancers detected per 1000 high risk women.**
- US found some cancers not seen on mammo (mostly small invasive).
- Higher biopsy rate than mammo.
- Only 8.8% of biopsies prompted by US showed cancer (compared with 30% for mammo)



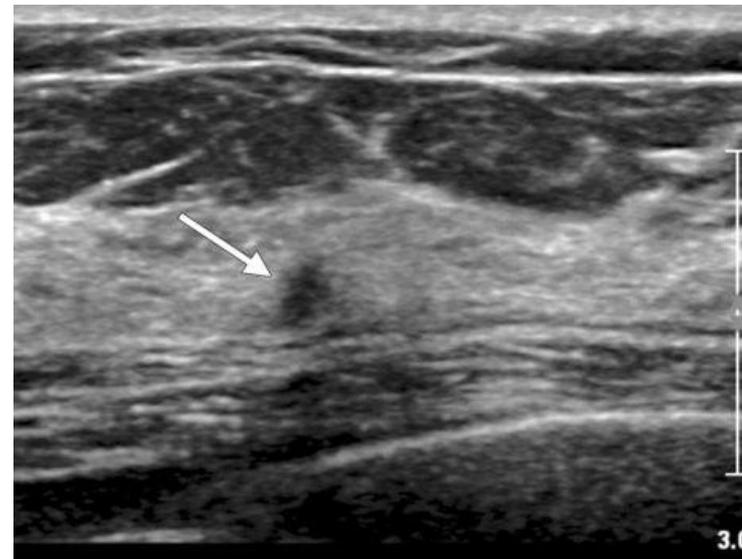
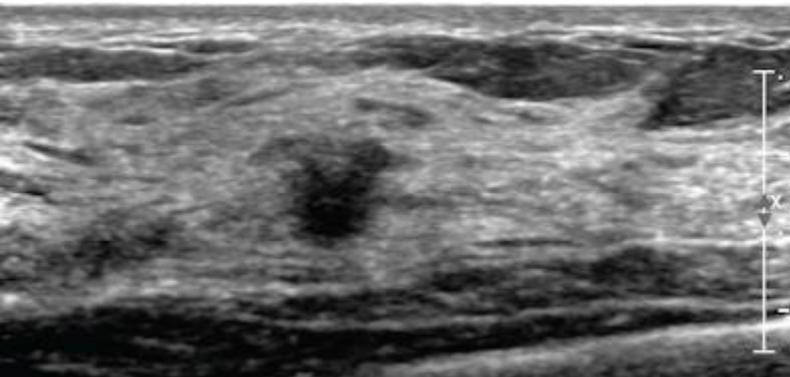
Handheld US



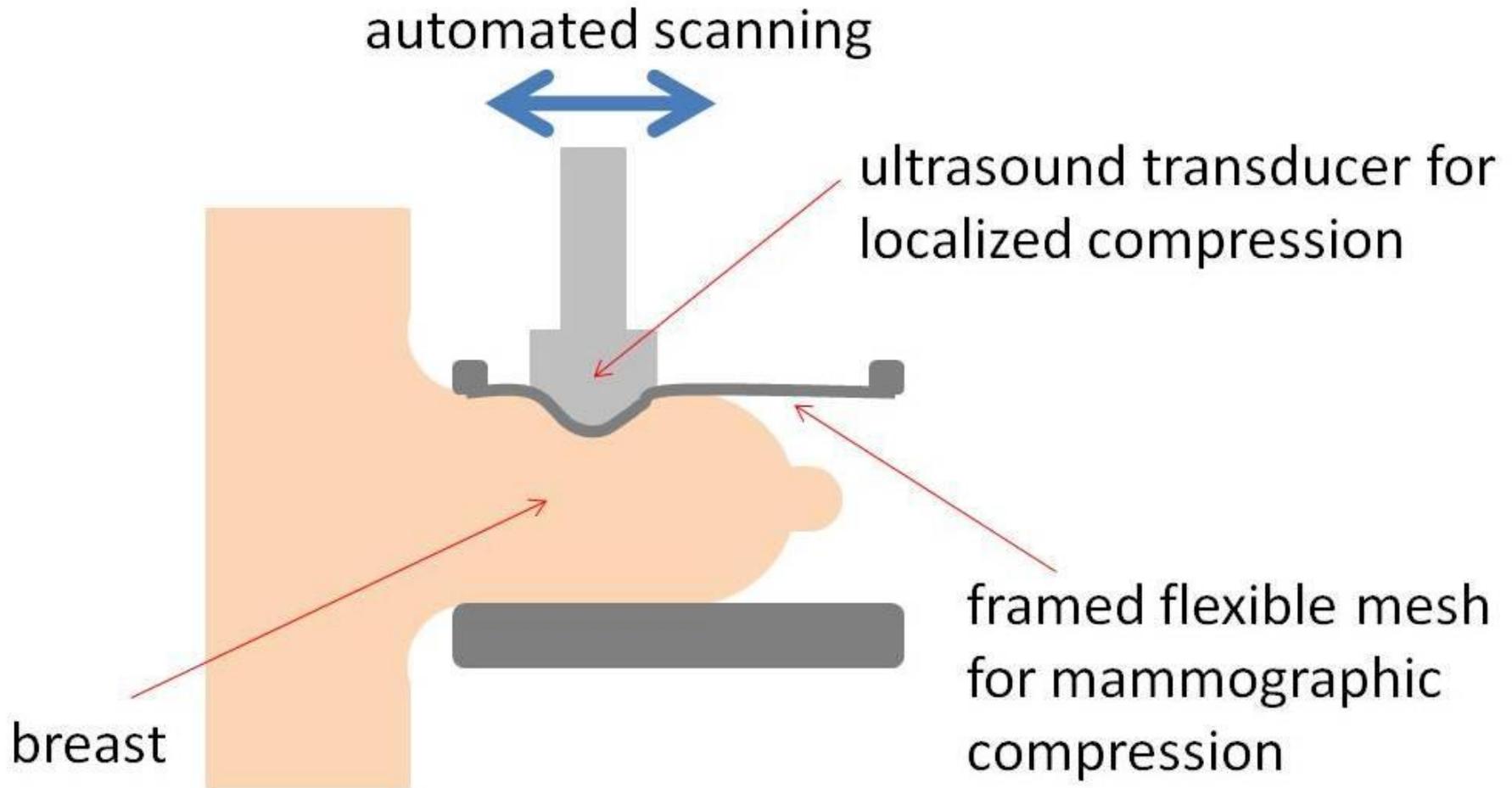
- Performed by radiologist

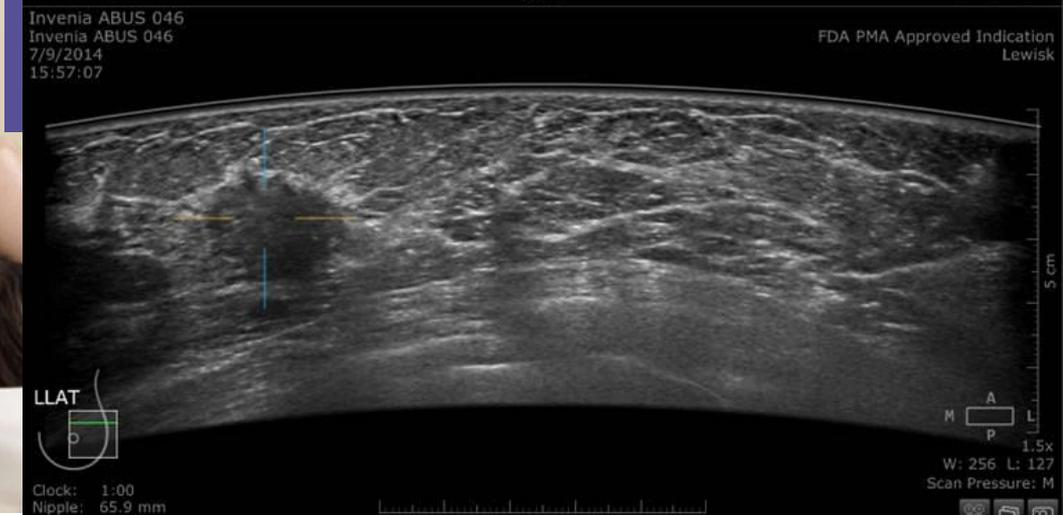
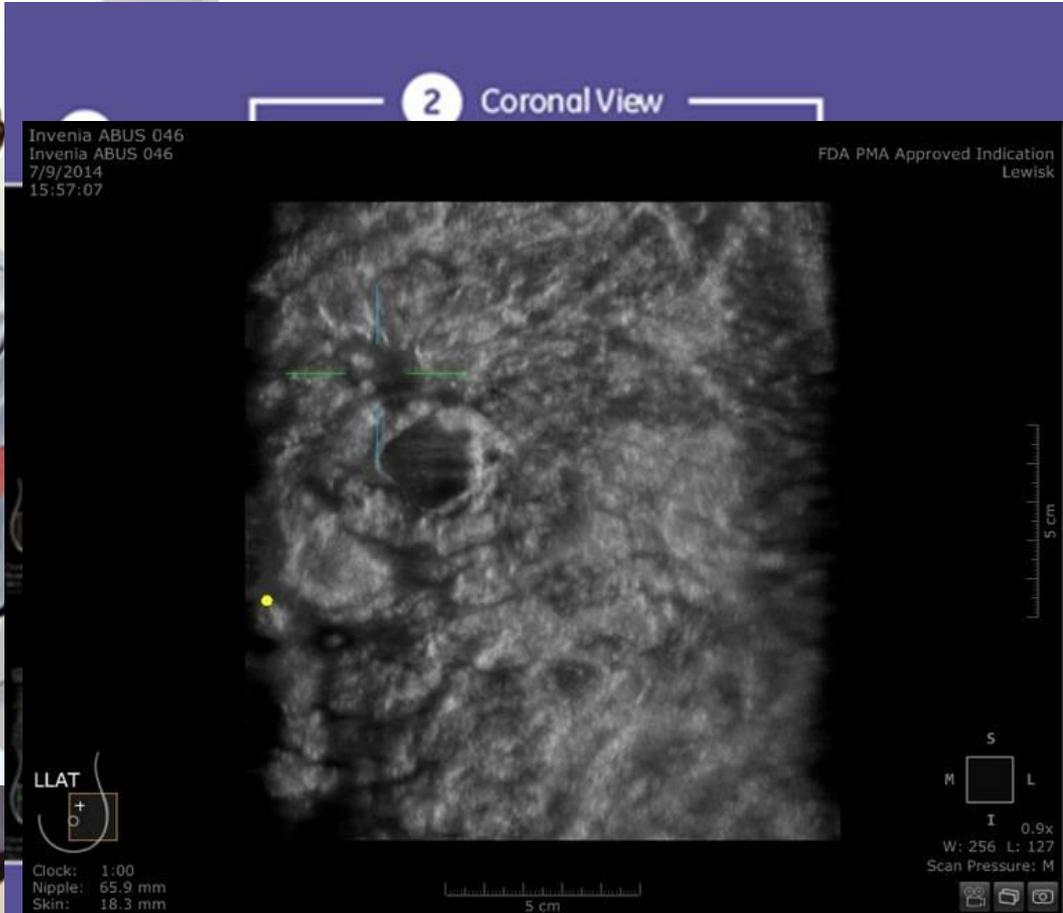


- Performed by sonographer



Automated Breast UltraSound (ABUS)



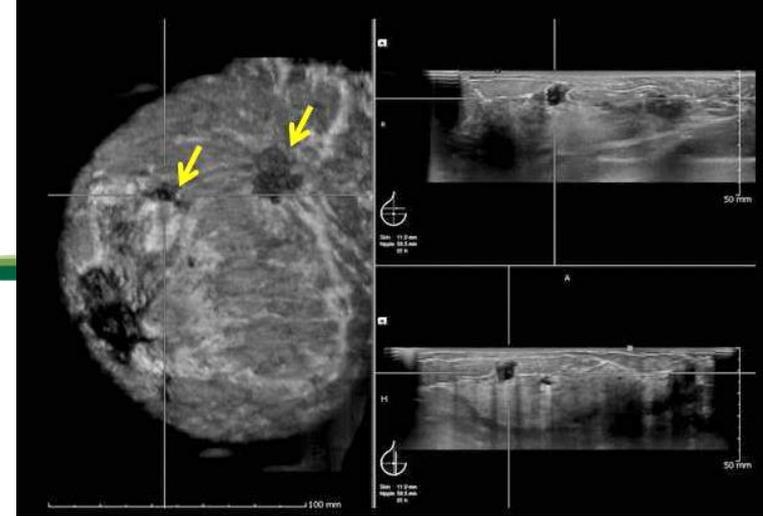


ABUS vs. Handheld US

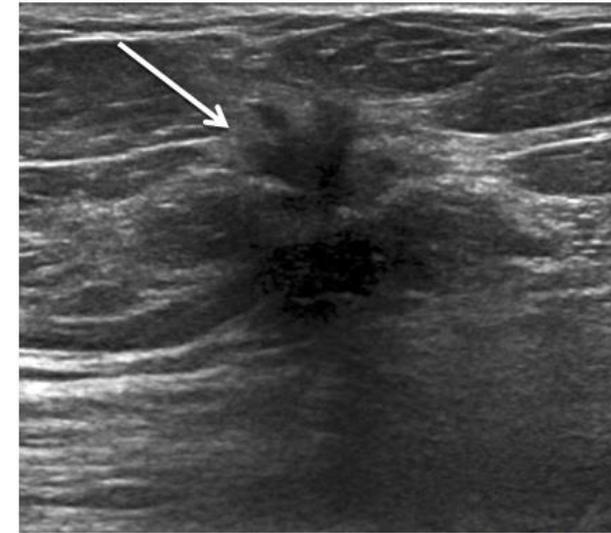
- Exam is quicker for patient so more patients can be scanned per hour.
- Exam is easier for sonographer.
- Images more reproducible.
- Any abnormality found at ABUS must come back and be verified and examined (and biopsied) with handheld.

Both handheld and ABUS

- No radiation
- No compression
- No injection
- Well tolerated
- Reasonable cost
- Many callbacks/false positives
(but improves if not baseline study)
- Almost all cancers detected are small
invasive with negative nodes.



Courtesy of Dr. Ellen Mendelson



Courtesy of Dr. Wendie Berg

Images reproduced from DenseBreast-Info.org

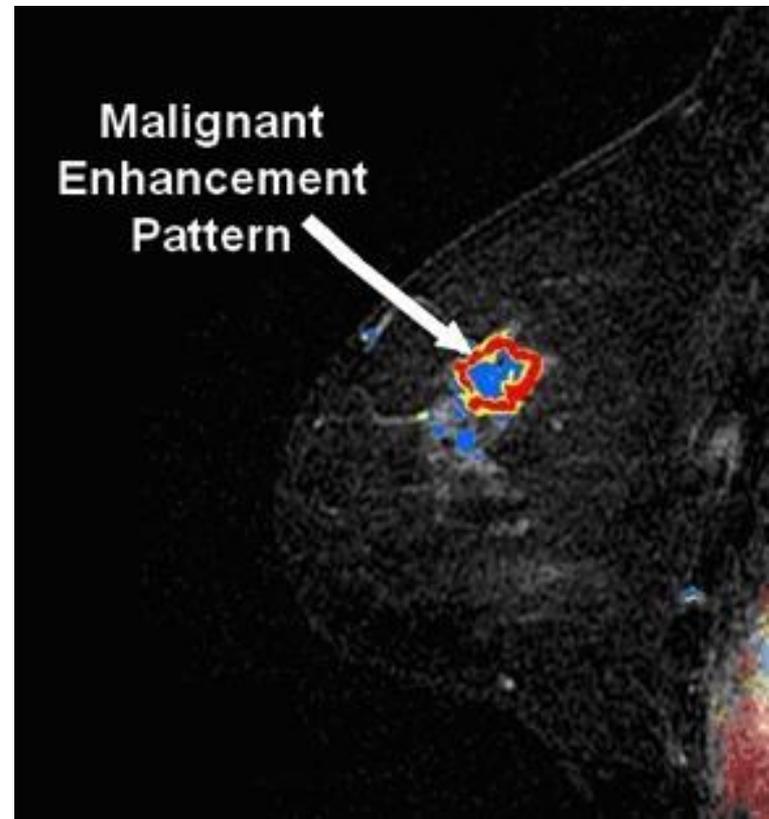
Combined Screening With Ultrasound and Mammography vs. Mammography Alone in Women at Elevated Risk of Breast Cancer

- → **4.2 cancer/1000** by adding screening US
- → **additional 14.7 cancers/1000** by adding MRI



Who should have screening MRI?

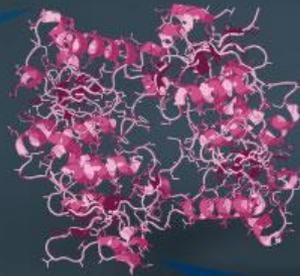
Risk, not density is the most important determinant.



ACS Screening Recommendations for High-Risk Women

An annual screening mammogram and bilateral breast MRI are recommended for women with the following:

Known *BRCA1* or *BRCA2* gene mutation



First-degree relatives with a *BRCA1* or *BRCA2* gene mutation and who have not been tested themselves for the gene

Had radiation therapy to the chest wall when they were between

10 YEARS OLD & 30 YEARS OLD

Two silhouettes of women, one smaller and one larger, representing the age range 10 to 30 years old. The silhouettes are positioned between the numbers 10 and 30, with an ampersand (&) between them.

for lymphoma, etc

- For most women at high risk of breast cancer, screening with MRI and mammography should begin at age 30 years and continue as long as the woman is in good health.

Lifetime risk of breast cancer > 20% based on family history

ACS Screening Recommendations for Breast MRI in Moderate-Risk Women

Not enough evidence exists to recommend for or against annual MRI screening in women at moderate risk of breast cancer or in those with certain risk factors.

These risk factors include:

A personal history of breast cancer

A history of high-risk lesions (eg, ductal carcinoma in situ [DCIS], lobular carcinoma in situ [LCIS], atypical ductal hyperplasia [ADH], atypical lobular hyperplasia [ALH])

A dense breast parenchymal pattern

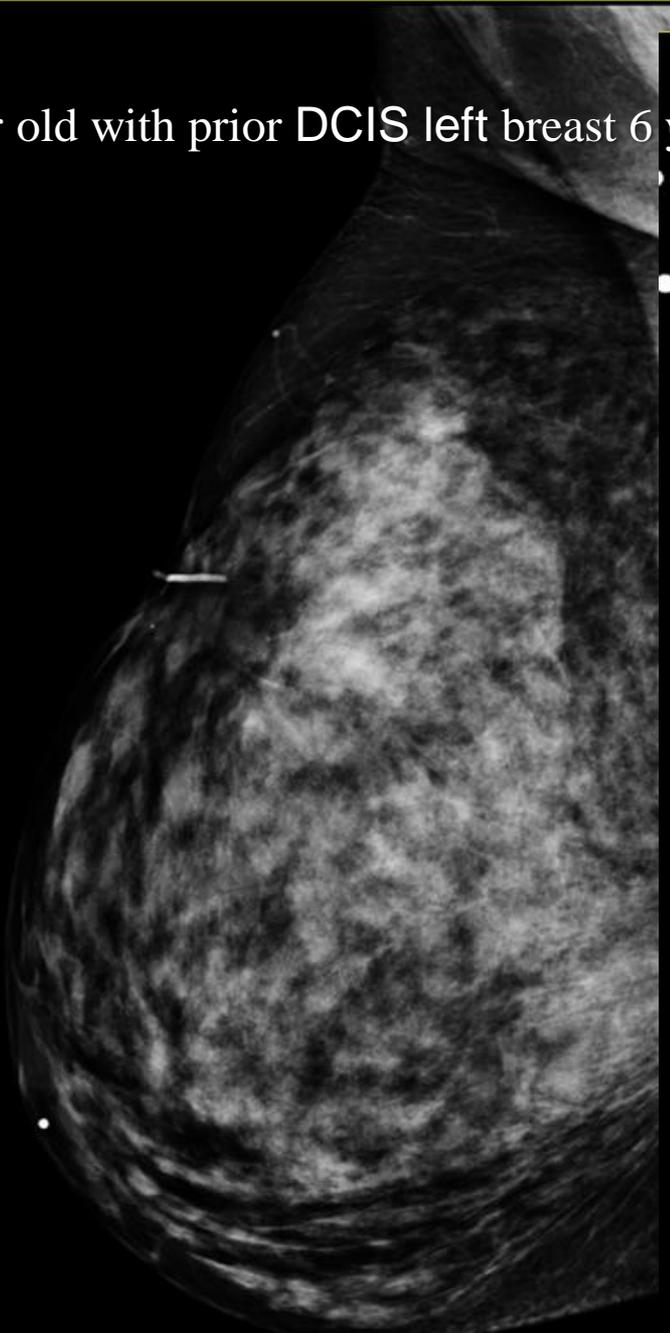
ACS recommends against breast screening MRI for women whose lifetime risk of breast cancer is less than 15%.

MRI as a high risk screening tool

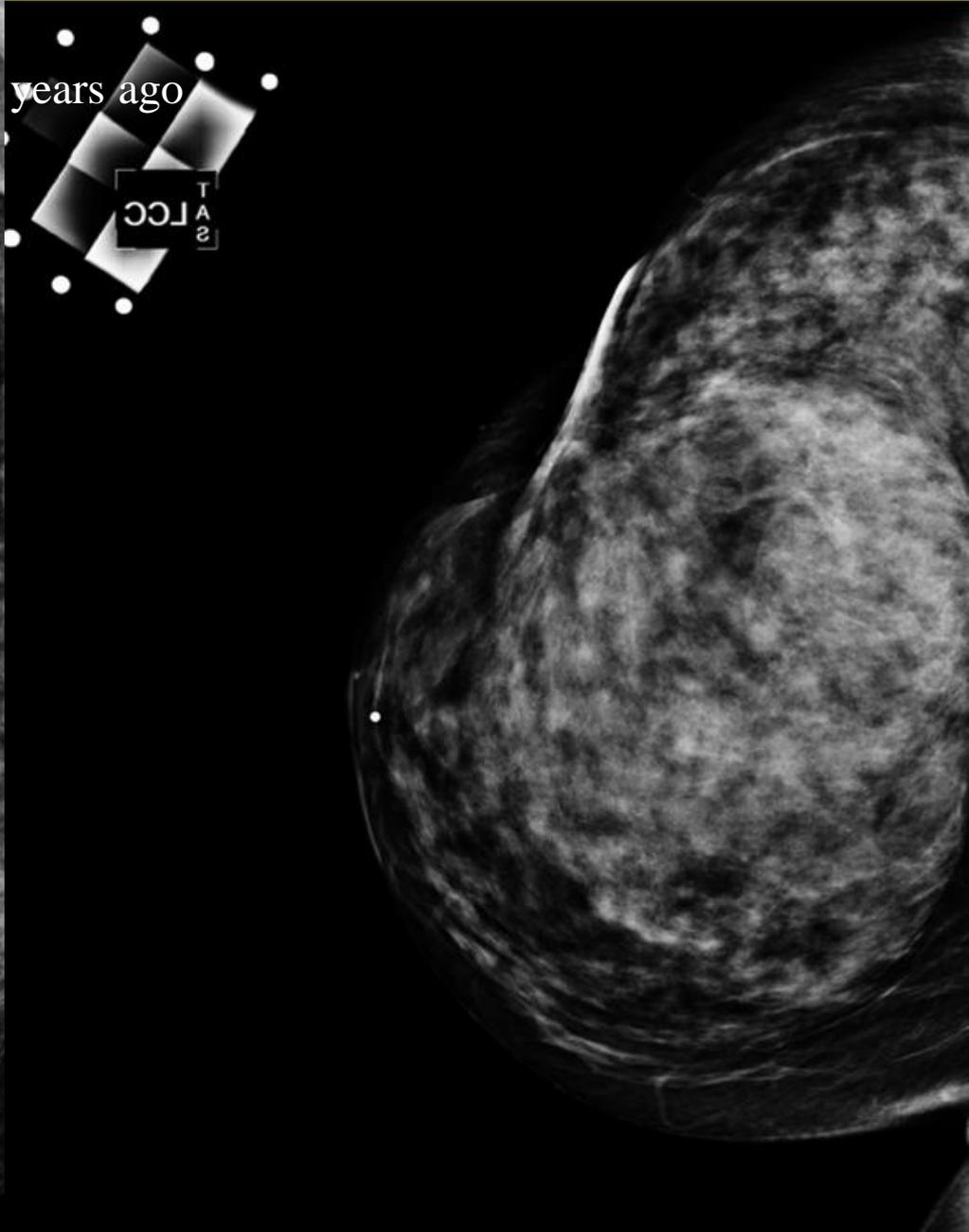
- Sensitivity of MRI is very high for detection of invasive cancer.
- Higher false positive rate than mammography but lower than ultrasound.

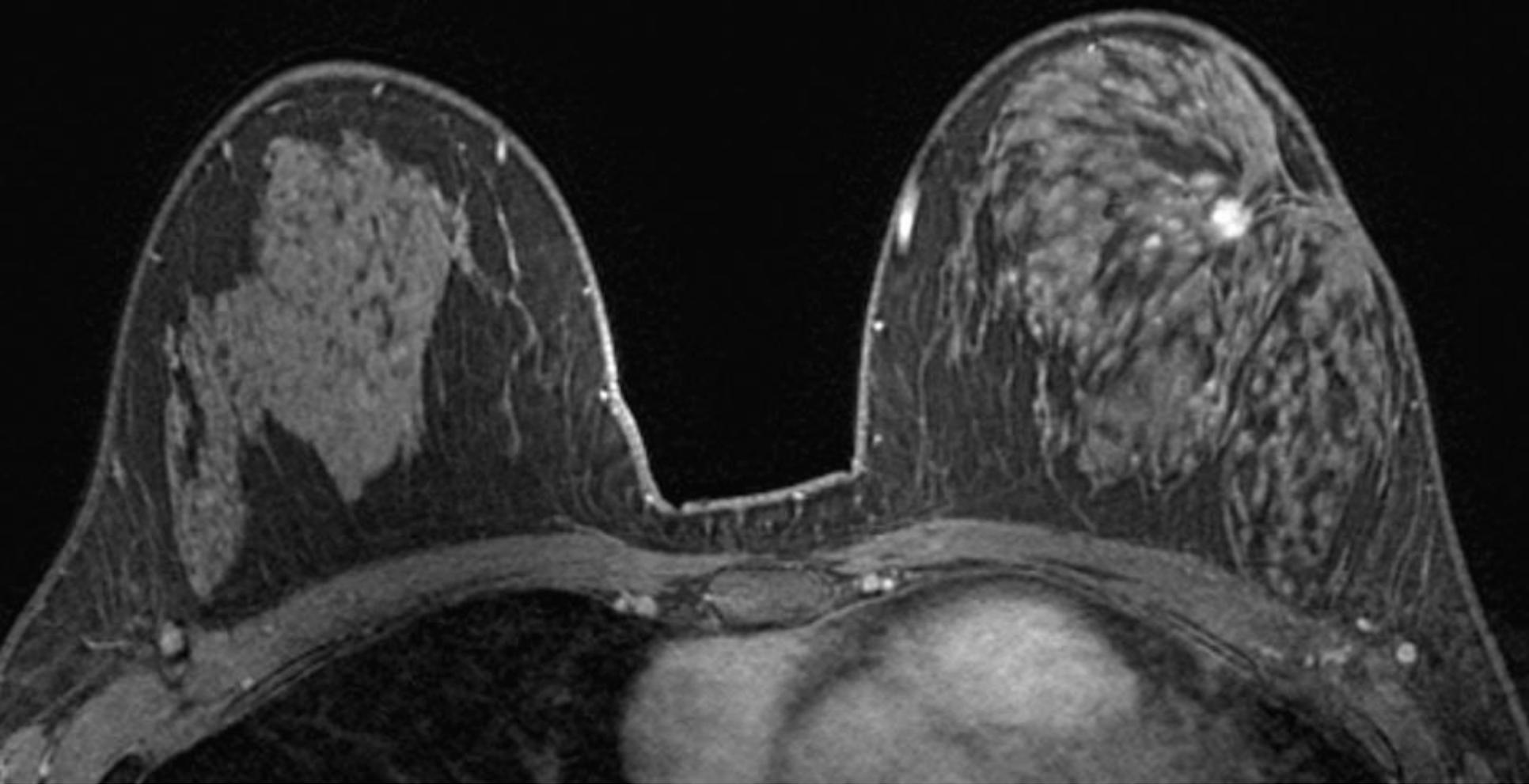
46 year old with prior DCIS left breast 6 years ago

OJMJ
TAS



TAS
LCC





46 year old with prior DCIS left breast 6 years ago

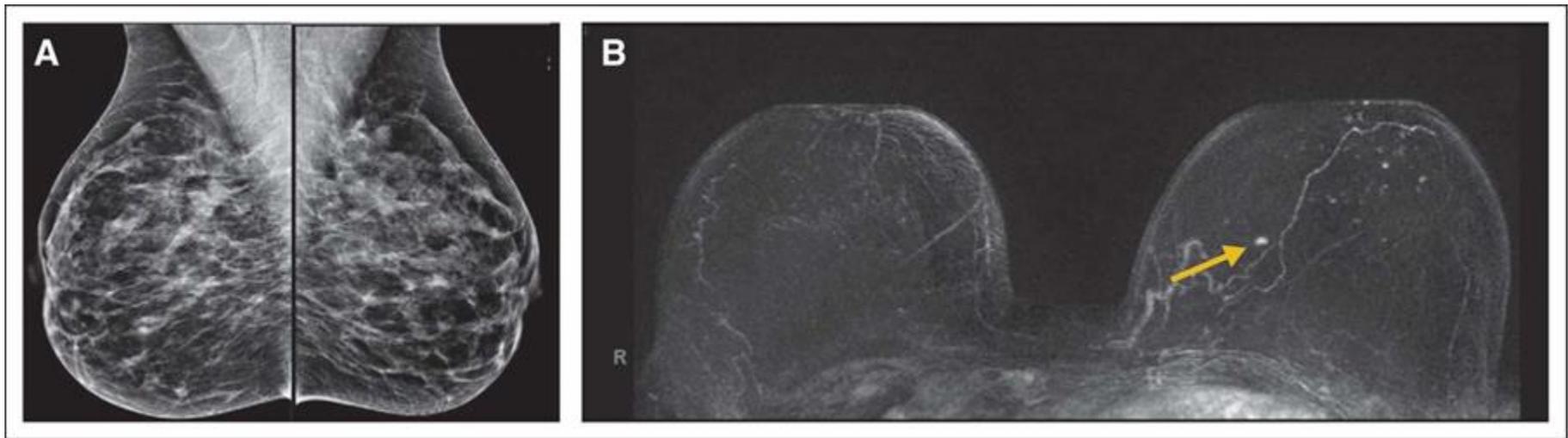
MRI screening in women of **average risk**

- Improved detection of small **high grade** cancers
- Additional cancer detection of **15.8/1000**
- Interval cancer rate 0%
- Supplemental cancer detection not dependent on breast density

Kuhl et al; **Supplemental Breast MR Imaging Screening of Women with Average Risk of Breast Cancer** ,
Radiology, published ahead of print

Abbreviated Breast Magnetic Resonance Imaging (MRI): First Postcontrast Subtracted Images and Maximum-Intensity Projection—A Novel Approach to Breast Cancer Screening With MRI

18.2 cancers/1000



Christiane K. Kuhl et al. JCO 2014;32:2304-2310

Abbreviated MRI compared with traditional breast MRI

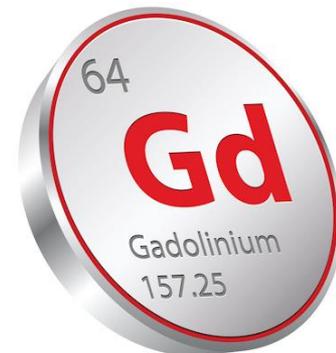
Traditional breast MRI:

- Time: 20-40 minutes
- Cost: high (\$\$\$\$)
- Interpretation time: high, > 2000 images
- Ability to detect breast cancer: very high

Abbreviated breast MRI:

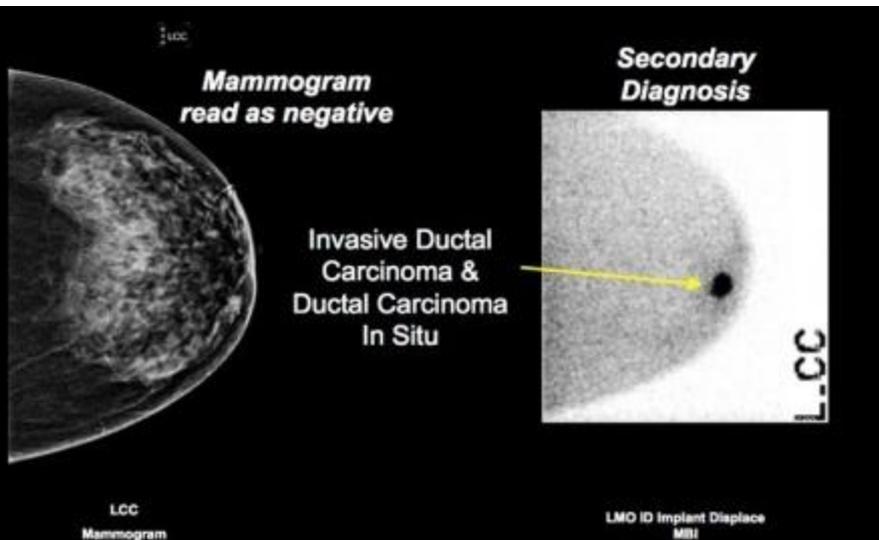
- Time: 5-10 minutes
- Cost: lower, similar to US in some places (\$\$\$)
- Interpretation time: lower, hundreds, not thousands of images
- Ability to detect breast cancer: very high

Both tests require gadolinium injection!

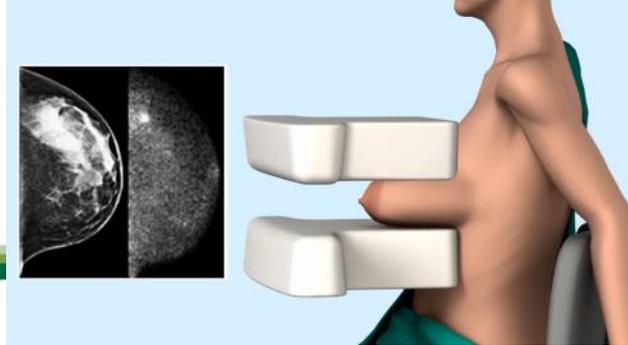


Molecular breast imaging

- Inject radioisotope that is taken up by areas of high metabolism
- Same isotope used for cardiac scanning



Molecular breast imaging

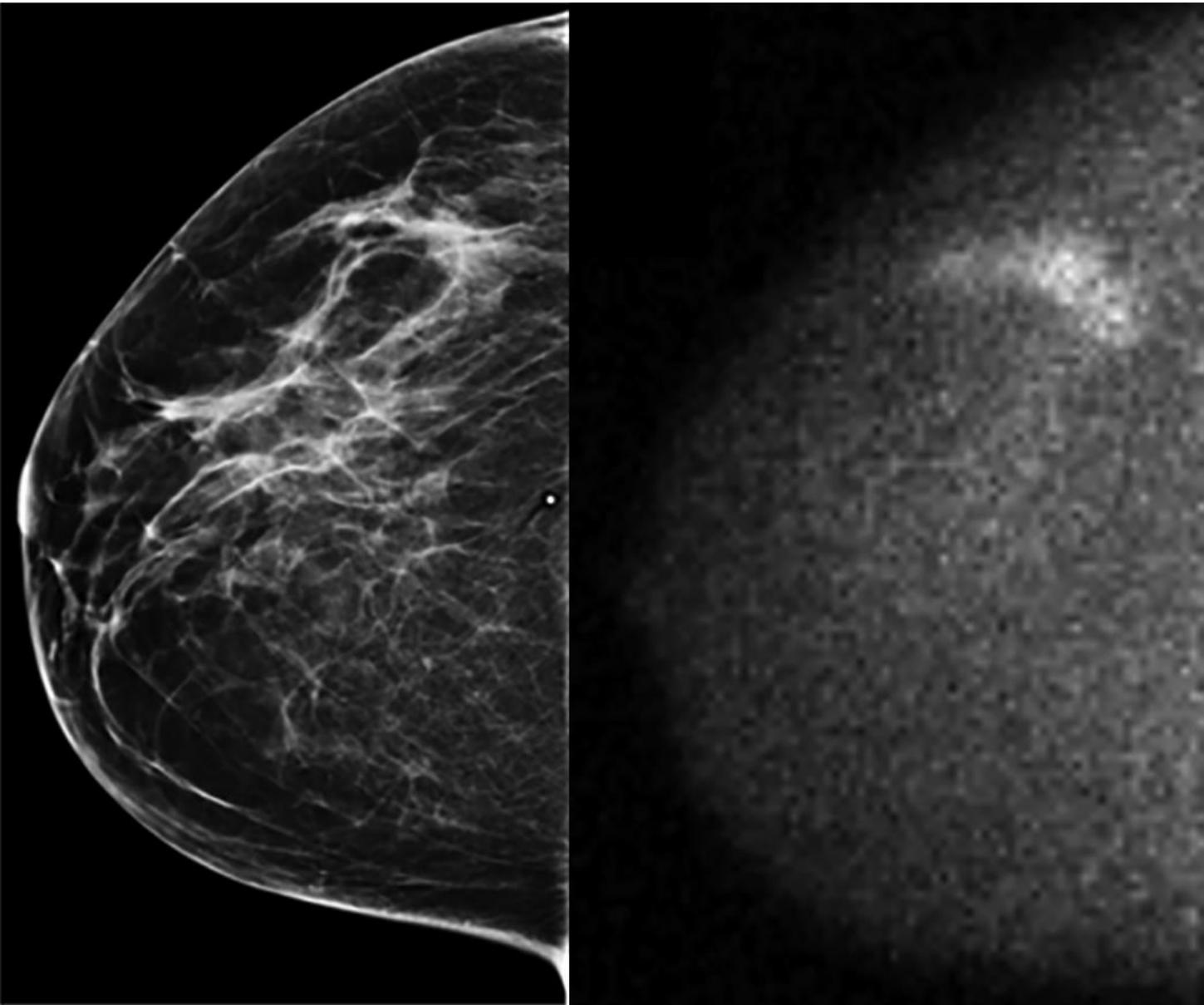


- Uses detectors similar to mammography.
- No compression. Breast is immobilized.
- Exam takes 40 minutes (10 minutes per view).
- Radiation is to all parts of body; not just breasts.
- Colon, lungs and bladder most sensitive organs.

MBI advantages

- Not impaired by breast density or presence of implants or free silicone.
- High sensitivity for breast cancer.
- Well tolerated.
- Higher recall rate than mammography but lower than ultrasound or MRI.
- Relatively less expensive (vs. MRI).

Molecular Breast Imaging at **Reduced** Radiation Dose for Supplemental Screening in Mammographically Dense Breasts



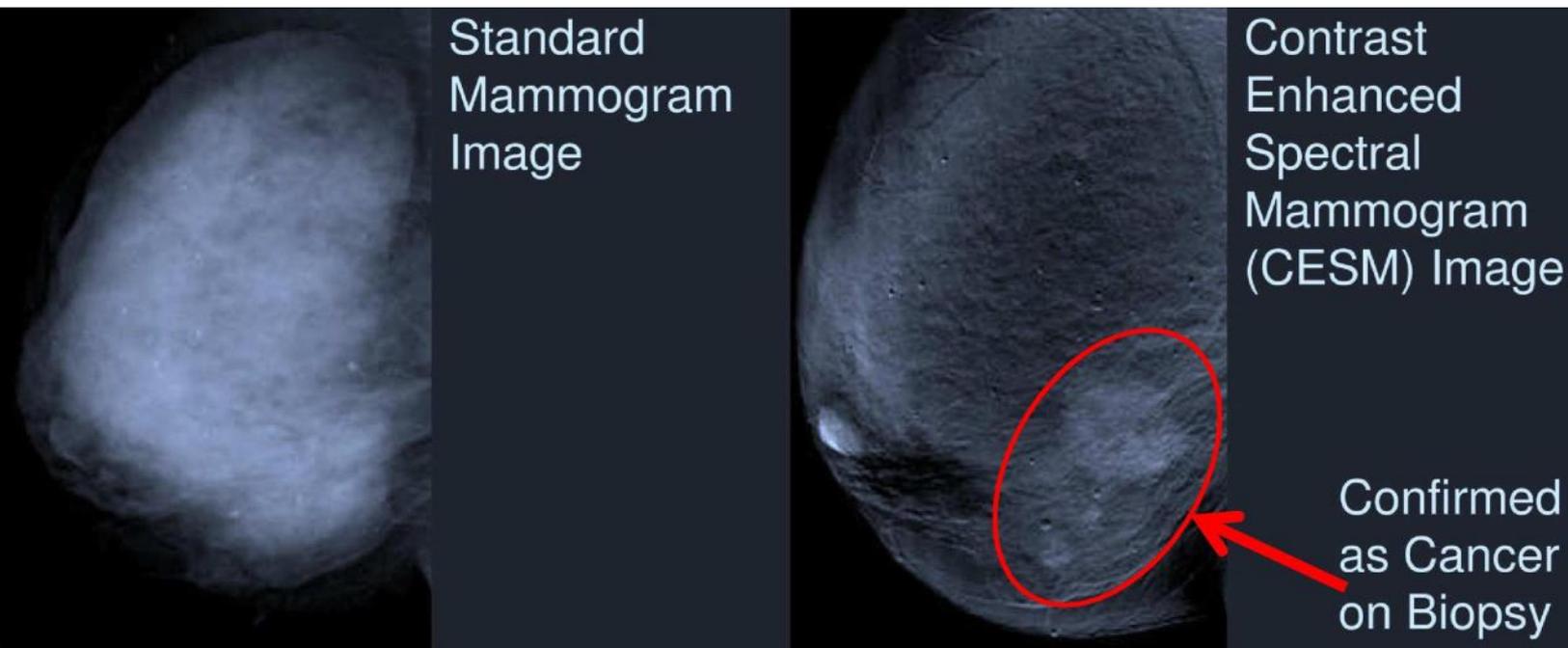
Cancer
detection rate:

- **3.2/1000
mammo.**
- **12/1000
MBI.**

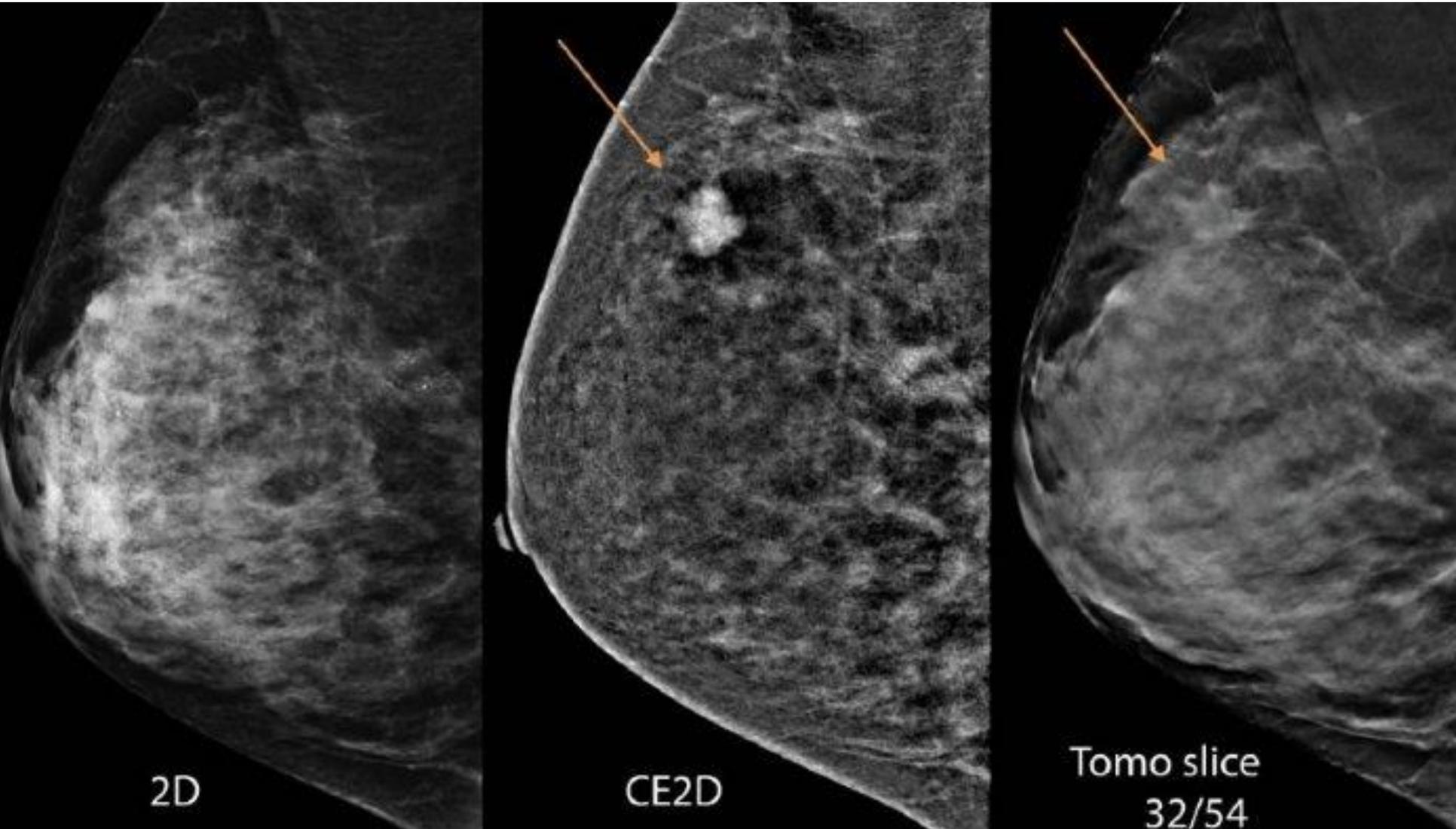
Rhodes et al, AJR 2015;
204:241

Contrast enhanced mammography

- Standard digital mammogram
- Intravenous iodine contrast: reactions are rare
- Images are subtracted
- Radiation similar to mammography



CESM





Availability of each technology is variable



Should women with dense breasts have additional testing?

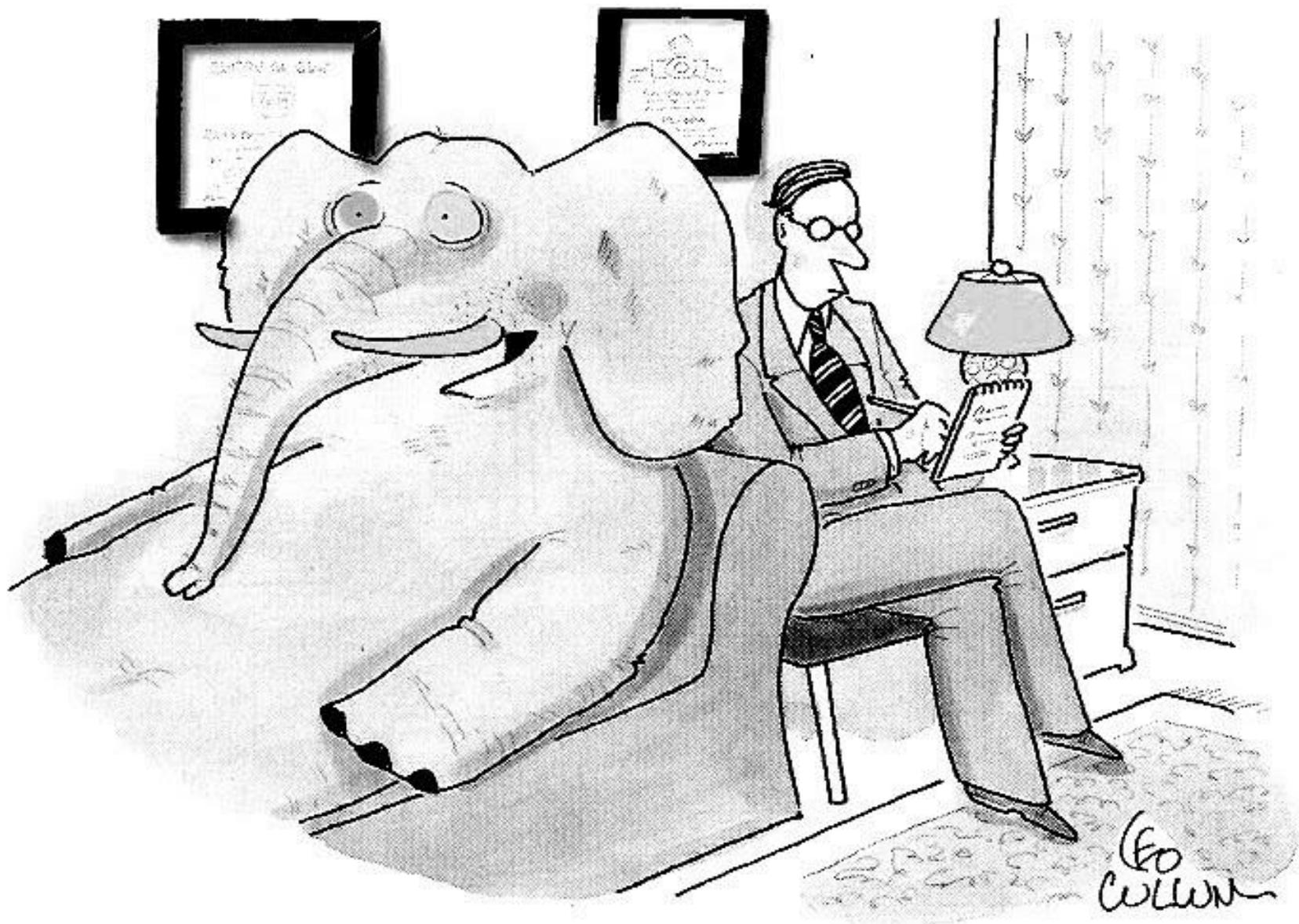
- There is no major medical society currently recommending additional screening.
- Additional screening is costly and has potential for increased false positives (except for DBT).
- The answer depends on personal goals and values!



Summary of cancer detection rates for common supplementary screening techniques

If 1,000 Women Are Screened With	Number of Women Found to Have Cancer	Type of Technology	Number of Women Called Back for More Testing
Regular 2D-mammogram alone	2-7 total	Ionizing Radiation	100
2D-mammogram plus 3D-mammogram (tomosynthesis)	Mammogram 2-7 + Tomosynthesis 1-2 = 3-9 total	Ionizing Radiation	70
Regular 2D-mammogram plus ultrasound (US)	Mammogram 2-7 + Ultrasound 2-4 = 4-11 total	Sound waves	170-230
Regular 2D-mammogram plus contrast-enhanced MRI	Mammogram 2-7 + MRI 10 or more = 12-17 or more total	Magnetic field and intravenous contrast	160-220

DenseBreast-info.org
 (c) 2015-2017 DenseBreast-info, Inc.



"I'm right there in the room, and no one even acknowledges me."

How can patients afford this? Will it be covered by insurance?

- NY (no deductible), CT, NJ, IL, IN, AR.
- MRI screening generally covered when meet ACS criteria (applies to deductible).
- Ultrasound screening generally covered (applies to deductible).
- Medicare covers 3D mammography in all states.
- Coverage of 3D by private insurance varies greatly.



Practical management tips:

The background features three thick, curved lines in shades of green. One line is a dark forest green, another is a medium olive green, and the third is a light sage green. They sweep across the bottom and right side of the slide, creating a sense of movement and depth.

Knowledge of risk is important!

- Discussion of breast density is an opportunity to review your risk of getting breast cancer with your provider.
- Knowing your risk can help sort out:
 - How likely it is that you may be diagnosed with cancer in the future
 - Whether you are willing to pursue additional testing
 - What kind of additional testing may be right for you
 - If you are high risk, you may benefit from genetic testing and/or chemoprevention

Breast Cancer Risk Assessment Tool

An interactive tool to help estimate a woman's risk of developing breast cancer



Last modified date: 05/16/201

- [Get Started with the Risk Tool](#)
- [About the Tool](#)
- [Breast Cancer Risk Factors](#)
- [Download Source Code](#)

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 - [Current Clinical Trials: Breast Cancer Screening](#)
 - [Breast Cancer Risk in American Women](#)

Need Help?
 Contact us by phone, Web, and e-mail
 1-800-4-CANCER

The Breast Cancer Risk Assessment Tool is an interactive tool designed by scientists at the National Cancer Institute (NCI) and the [National Surgical Adjuvant Breast and Bowel Project \(NSABP\)](#) to estimate a woman's risk of developing [invasive breast cancer](#). See [About the Tool](#) for more information.

The Breast Cancer Risk Assessment Tool may be updated periodically as new data or research becomes available.

Risk Tool

(Click a question number for a brief explanation, or [read all explanations.](#))

1. Does the woman have a medical history of any breast cancer or of ductal carcinoma in situ (DCIS) or lobular carcinoma in situ (LCIS) or has she received previous radiation therapy to the chest for treatment of Hodgkin lymphoma? Select

2. Does the woman have a mutation in either the *BRCA1* or *BRCA2* gene, or a diagnosis of a genetic syndrome that may be associated with elevated risk of breast cancer? Select

3. What is the woman's age?
This tool only calculates risk for women 35 years of age or older. Select

4. What was the woman's age at the time of her first menstrual period? Select

5. What was the woman's age at the time of her first live birth of a child? Select

6. How many of the woman's first-degree relatives - mother, sisters, daughters - have had breast cancer? Select

7. Has the woman ever had a breast biopsy? Select

- 7a. How many breast biopsies (positive or negative) has the Select

<http://www.cancer.gov/bcrisktool>

Breast cancer is a common disease, affecting 1 in 8 American women at some point over their lifetime. As the two strongest risks for breast cancer are being female and getting older, screening is recommended for all women. The American Cancer Society and many other medical organizations recommend a woman consider screening beginning at age 40, and certainly by age 45, and continue for as long as she is in good health. Discuss when your mammography screening should begin with your care provider.

Though most breast cancer occurs in women with no known risk factors, there are some risk factors known to increase the chance of getting breast cancer. Not all risk factors carry the same level of risk and having a risk factor DOES NOT mean that you will definitely develop breast cancer.

Please print and complete the checklist, and bring with you to your next health checkup. This can help you and your doctor identify risks that may influence your breast cancer screening.

Factors that mildly increase risk:

- Do you drink more than 5 oz. of alcohol daily (about the size of a glass of wine)?
 Yes
 No
- Are you of Ashkenazi (Eastern European) Jewish heritage?
 Yes
 No
- Has your mammogram indicated your breasts are heterogeneously dense?
 Yes
 No
 I don't know my specific density category
- Did you begin getting your period at age 11 or younger?
 Yes
 No
- Did (do) you have any menstrual periods after age 54?
 Yes
 No
 Not applicable
- Were you over 30 years old for your first full-term pregnancy?
 Yes
 No
 Not applicable
- I have had at least one full-term pregnancy ("no" = a mild increased risk)
 Yes
 No

- Did you or your mother take diethylstilbestrol (DES) while pregnant?
 Yes
 No
- I have breastfed at least one child ("no" = mild increased risk)
 Yes
 No
- If postmenopausal, has your weight increased since menopause, or have you become overweight or obese?
 Yes, number of pounds gained _____
 No
 Not applicable
- Have you had a breast biopsy* with a benign/normal (e.g. fibroadenoma or fibrocystic change) or nonatypical result?
 Yes
 No

Factors that moderately increase risk:

- Have you already had breast cancer diagnosed at age 40 or over?
 Yes
 No
- Have you had a biopsy* with an atypical or precancerous result (e.g. atypical ductal hyperplasia (ADH), atypical lobular hyperplasia (ALH) or atypical papilloma)?
 Yes
 No
- Does your mammogram indicate your breasts are extremely dense?
 Yes
 No
 I don't know my specific density category

- Do you have one first-degree relative (mother, sister, or daughter) diagnosed with breast cancer before age 50? If yes, please bring details of which relative(s) and age(s) of diagnoses to your healthcare provider.
 Yes
 No
- Do you have a family history of ovarian cancer? If yes, please bring details of which relative(s) and age(s) of diagnoses to your healthcare provider.
 Yes
 No
- Are you post-menopausal and taking a combination of estrogen and progesterone hormonal therapy?
 Yes. Starting at what age _____ and for how many years? _____
 No
- Do you have any male relatives (father, brother, or son) diagnosed with breast cancer?
 Yes
 No

Factors that strongly increase risk:

- Are you a woman 60 years of age or older?
 Yes
 No
- Do you have any known disease-causing genetic mutations for breast cancer (e.g. BRCA1, BRCA2, or other)? If yes, please share the results with your healthcare provider.
 Yes
 No
 I don't know

- Do any family members have any known disease-causing genetic mutations for breast cancer (e.g. BRCA1, BRCA2, or other)? If yes, please share the results with your healthcare provider.
 Yes
 No
 I don't know
- Were you diagnosed with breast cancer before the age of 40?
 Yes
 No
- Do you have two or more first-degree relatives (mom, sister, or daughter) diagnosed with breast cancer before age 50? If yes, please bring details of what relative(s) and at what age diagnosed to your healthcare provider.
 Yes
 No
- Have you had high-dose radiation treatment to chest before the age of 30 (e.g. for treatment for Hodgkin lymphoma)?
 Yes. How many years ago? _____
 No

- Do you have a personal history of ovarian cancer?
 Yes
 No
- Do you have a personal history of lobular carcinoma in situ (LCIS)?
 Yes
 No

*If you have had a biopsy and do not know actual biopsy results, ASK.

If you are taking medication to decrease your risk of developing breast cancer, please list that medication here:

Any other issues/questions you would like to discuss with your provider:

This checklist is for informational purposes only and is not intended to be a substitute for medical advice from a physician. Please check with a physician if you need a diagnosis and/or for treatments as well as information regarding your specific condition. If you are experiencing urgent medical conditions, call 911 (in the U.S.).



1 in 8 women will develop breast cancer at some point in her lifetime. 1 in 75 will develop ovarian cancer.

Bright Pink created this tool to help you assess **your personal risk level** for breast and ovarian cancers. The more you know, the better prepared you are to take **actions** that can help reduce your risk.

Your body. Your life.
Don't leave it up to chance.

[ASSESS YOUR RISK](#)

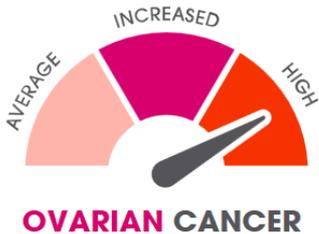
YOUR PERSONALIZED RESULTS

Baseline Risk for Breast Cancer



The answers you've provided in the quiz suggest that you have a high baseline risk for developing breast cancer — more than three times that of women in the general population. That means you have up to an 87% chance of developing breast cancer in your lifetime. That may sound scary, but remember, knowledge is power. You've already taken the first step toward managing your risk!

Baseline Risk for Ovarian Cancer

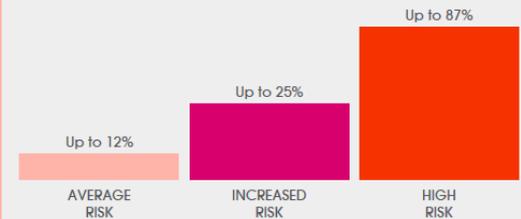


The answers you've provided in the quiz suggest that you have a high baseline risk for developing ovarian cancer — more than three times that of women in the general population. That means you have up to a 54% chance of developing ovarian cancer in your lifetime. That may sound scary, but, remember, knowledge is power. You've already taken the first step toward managing your risk!

What does this mean?

There are three categories of risk for breast and ovarian cancer, with different recommended screening and risk reduction measures for each. Just remember, no matter which category you fall into, there's always something you can do to be proactive and reduce your risk.

Lifetime Risk for Breast Cancer



Lifetime Risk for Ovarian Cancer

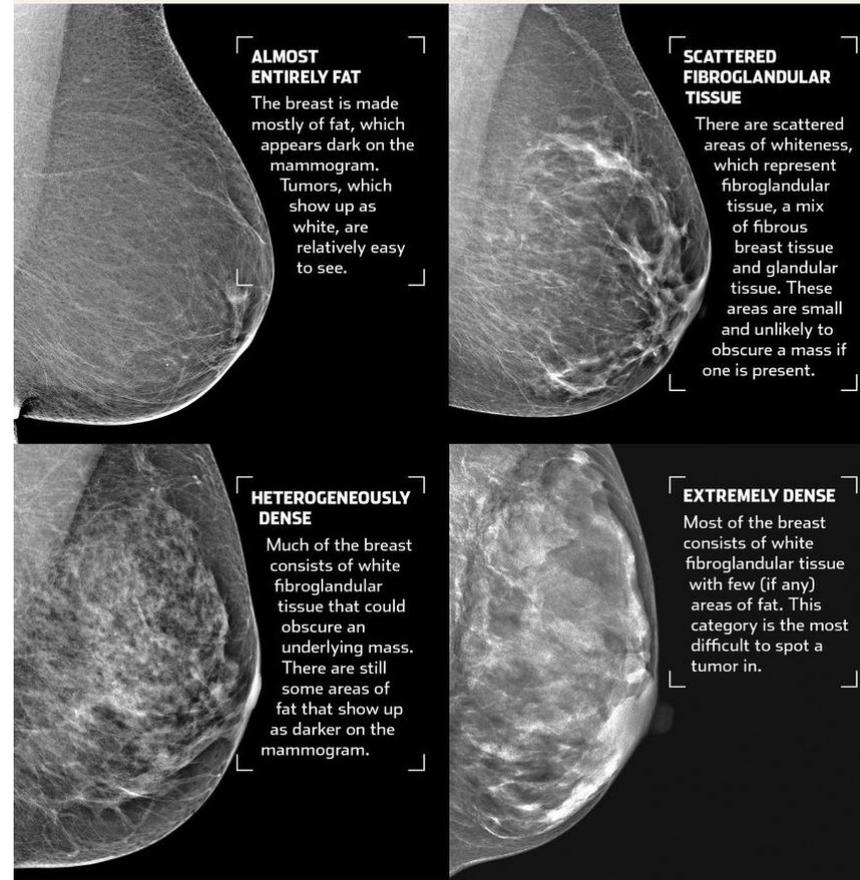


It's a choice..

- If you are extremely dense, you should strongly consider supplementing the mammogram, whether or not you have other risk factors.
- If you have heterogeneously dense breasts, it's a personal decision...
- But if you have other risk factors (family history or have had cancer personally before), you should consider additional screening.

Why It Matters

The four categories of breast density, from low to high, and how they might hinder mammograms



FAQ's

- If I decide to screen with ultrasound, do I need to do it every year?
- Do I need to have mammography and ultrasound at the same time or can I space them out?
- What if my insurance won't cover it?
- What if my mammogram report says I'm dense one year and not dense the next?

“If my breasts are dense and I am choosing additional screening do I still need a mammogram?”

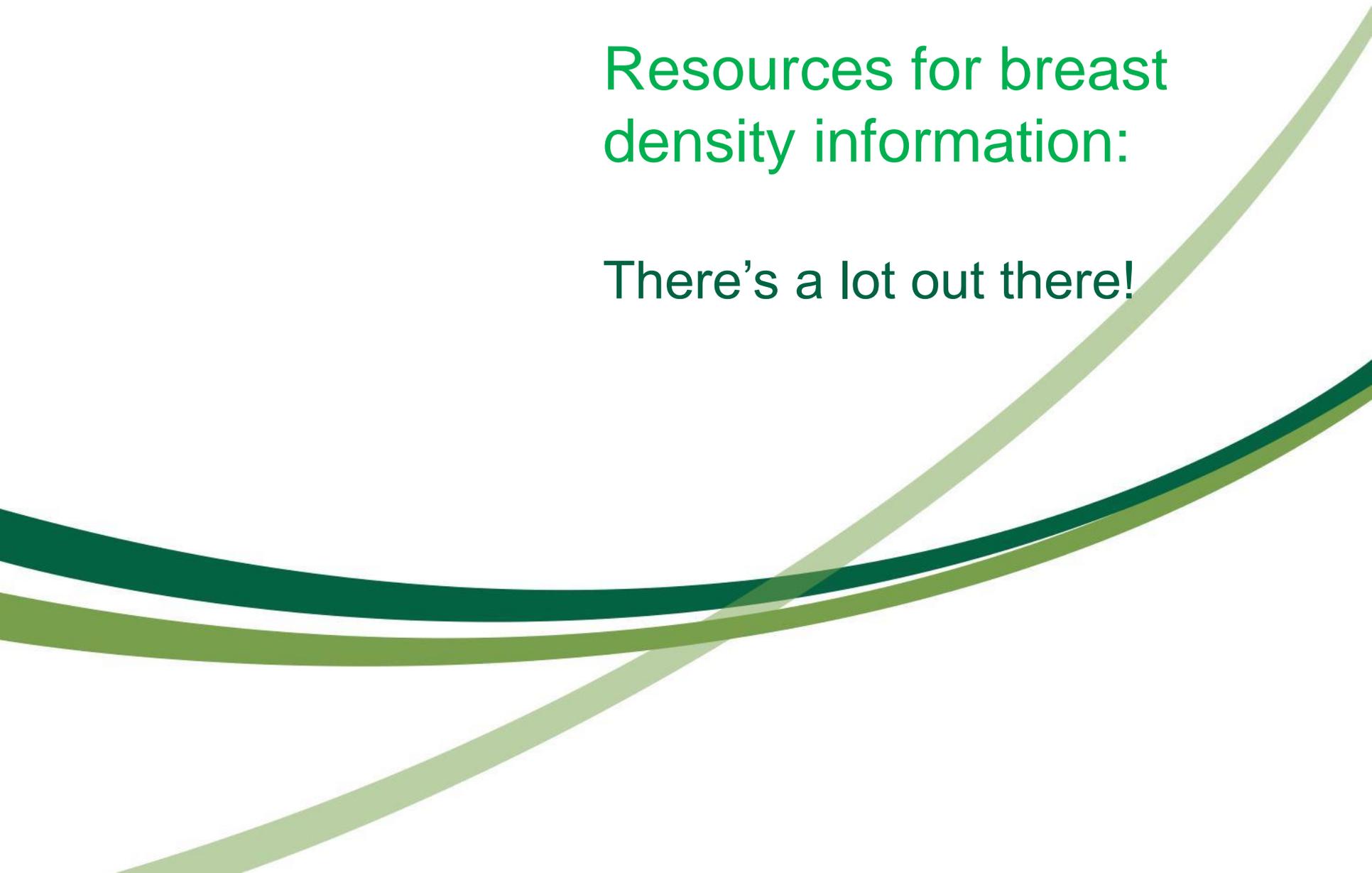
YES!: mammography still has a role in dense breasts

microcalcifications



Resources for breast density information:

There's a lot out there!

The slide features three thick, wavy green lines that sweep across the bottom and right sides of the page. One line is a dark forest green, another is a medium olive green, and the third is a light sage green. They overlap and curve upwards from left to right, creating a dynamic, organic feel.



Doctor Finder

Doctor Finder

Please enter your search criteria below to find a healthcare provider.



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NBC Channel 5: UVM Medical Center hits milestone in project intended to improve patient care.



UVM Health Network Urges Protection of Coverage as National Debate

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Swiss Chard Recipe: Mix Up a Tasty Side Dish With Raisins & Almonds



Swiss chard is a leafy green vegetable that is full of vitamins and nutrients. Chard can be eaten raw if the leaves are picked young or cooked. Try it as a colorful and

Feedback



At the University of Vermont Medical Center, our expert radiologists, technologists and sonographers provide all your breast imaging needs in a patient-centered environment.

Breast Density: What You Need to Know

Breast density refers to the relative amount of glandular and fibrous tissue that each woman has in her breasts compared with the amount of fatty tissue present. Each woman has a different breast density. You cannot know your breast density by a physical exam, it is only determined on a mammogram. Women with mostly fatty tissue do not have dense breasts and women with more fibrous or glandular tissue have dense breasts. Dense breasts are normal (not a disease) and are found in 40-50% of women.

Podcasts

» [What Women Should Know About Breast Density](#)

From Our Blog

 [Patient Story: Why Breast Density Matters When](#)

What Can You Do About Dense Breasts?

All women should have a discussion with their health care provider about their lifetime risk for breast cancer. If your lifetime risk for breast cancer is over 20%, you should have an MRI to supplement your annual mammogram, even if your breasts are not dense.

If your lifetime risk of breast cancer is less than 20%, you should know that 3D mammography improves cancer detection in all breast densities but especially for women with heterogeneously dense breasts. We recommend that all women consider having 3D mammography.

1 in 8 women will develop breast cancer over the course of their lifetime so the average women's lifetime risk of breast cancer is 12-13%.

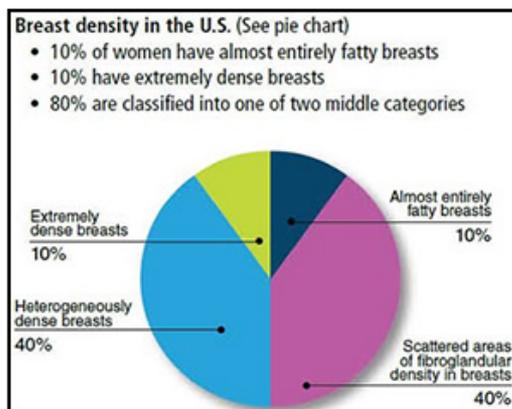
If you have dense breasts and other risk factors for breast cancer, discuss your risk and density with your doctor. This will help guide discussions about screening and which tests might be right for you. Screening decisions should take into account your values and philosophy.

There are no medical guidelines for additional screening for women with dense breasts but some women may prefer to add additional testing to help detect breast cancer. Each additional test may add additional cost, anxiety and chances to detect abnormalities that are not cancer (false positives). It is therefore a personal decision about how much you are willing to do for the chance that should you be diagnosed with breast cancer, that it will be detected as early as possible.

Please be aware that some supplementary screenings may not be covered by insurance. So talk with your doctor and check with your insurance company to help you make your decisions on screening. There are no straightforward answers for women with dense breasts.

Screenings could include:

- **Mammogram** – A **mammogram** uses low-level X-ray to detect changes in breast tissue. If you are a woman age 40 or older and in good health, the radiologists who are experts in interpreting breast imaging recommend you have a mammogram every year, as this regimen is proven to detect the most cancers at the earliest stage. Other physicians may recommend different screening regimens, based on a different value placed on the harms of false positives and additional testing. It is a personal decision, that only each woman can answer.
- **3D Mammography (Tomosynthesis)** – A **3D Mammogram** improves detection further – and has the added advantages of reducing false positive results. It is a good way to improve cancer detection whether or not your breasts are dense. There is no significant additional radiation, there are fewer false positives and most insurance now covers it.
- **Breast Ultrasound** – Whole **breast ultrasound** can be used to supplement mammography screening if you wish to pursue additional testing. Ultrasound detects more small invasive cancers than mammography, but it has a higher false positive



Helpful Resources and Websites

- There are many helpful resources and websites if you would like to learn more information about breast density. We recommend the following:
- [What new breast density notification law means for VT women - WCAX](#)
- [American College of Radiology](#) - A short brochure with basic information.
- [Dense Breast-Info](#) - The most comprehensive source of dense breast information for patients and providers.
- [Are you dense?](#) - Additional resources.
- [Breast Density and Supplemental Screening PDF](#)
- [The Mammo Press](#) - a patient's guide to breast imaging and radiology



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Get Smart About Being Dense

For Patients

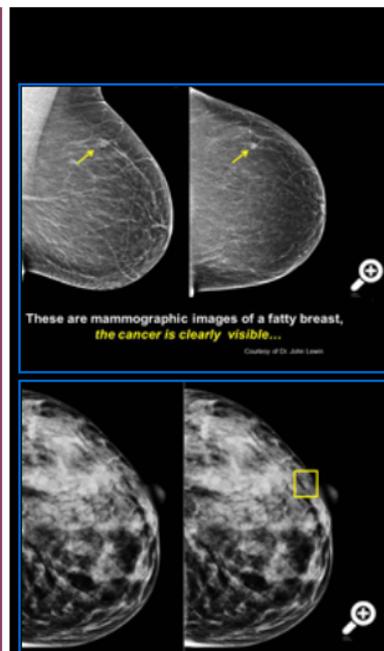
For Health Care Providers

Technology

Legislation

Dense Breast Fast Facts:

1. Breast density is determined through a woman's mammogram and described as one of [four categories](#).
2. 40% of women age 40 and over have dense breasts.
3. Cancer is 4-6 times more likely in women with extremely dense breasts than in women with fatty breasts.
4. Though mammograms find some cancers not seen on other screening tests, in dense breasts, mammograms will miss more than 50% of the cancers present.
5. Other screening tests, such as ultrasound or MRI, in addition to mammography substantially increase detection of early stage breast cancers in dense breasts.



Breast Density .Info

Who We Are

FAQ

For Health Care
Providers 

ACR Brochure For
Patients 

California Breast Density Information Group (CBDIG)

A working group of breast radiologists and breast cancer risk specialists, representing academic and community-based practices across California, formed to assist patients, referring doctors, and radiologists in responding to new legislation in California (**SB 1538**) that will mandate radiologists report breast density to patients.

Stanford University School of Medicine

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Bruce L. Daniel, MD
Allison Kurian, MD MSc

University of California, Davis

Karen K. Lindfors, MD

<http://www.areyoudense.org/>

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ADVOCACY

Are *You* DENSE?
exposing the best-kept secret®

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Early Matters

Stage of Tumor at Discovery
Influences Prognosis

KNOW YOUR BREAST DENSITY>>

PREVIOUS
WHAT DO I DO?

What is Dense Breast Tissue?

NEXT
HOW DO I KNOW?

Dense breast tissue is comprised of less fat and more connective tissue which appears white on a mammogram. Cancer also appears white thus tumors are often hidden or masked by the dense tissue. As a woman ages, her breasts usually become more fatty. However, 2/3 of pre-menopausal and 1/4 of post menopausal women (40%) have dense breast tissue.

Breast Cancer Screening and Dense Breasts: What Are My Options? A Decision tool

Breast Cancer Screening and Dense Breasts: What Are My Options?

You may want to have a say in this decision, or you may simply want to follow your doctor's recommendation. Either way, this information will help you understand what your choices are so that you can talk to your doctor about them.

The screenshot shows a web-based decision tool interface. At the top, there is a blue header with the title "Breast Cancer Screening and Dense Breasts: What Are My Options?". Below the header is a navigation bar with six numbered steps: 1. Get the Facts, 2. Compare Options, 3. Your Feelings, 4. Your Decision, 5. Quiz Yourself, and 6. Your Summary. The first step, "Get the Facts", is currently selected and highlighted. Below the navigation bar, the content area is titled "Get the facts" and contains two sections: "Your options" and "Key points to remember".

1
Get the Facts

2
Compare Options

3
Your Feelings

4
Your Decision

5
Quiz Yourself

6
Your Summary

Get the facts

Your options

- Have a mammogram to screen for breast cancer.
- Have an MRI or ultrasound with your mammogram.

Key points to remember

- The more dense your breast tissue is, the harder it is to see cancer on a [mammogram](#) image. That's because dense tissue looks white onscreen, just like cancer does.
- Having dense breasts may slightly increase your risk for breast cancer. But your risk depends on many things.
- When deciding about breast cancer screening, you'll need to think in terms of your **total** breast cancer risk. Ask your doctor to go over your breast cancer risk factors with you, so you can decide what screening is right for you.
- Screening tests for breast cancer include mammogram, [breast ultrasound](#), and [magnetic resonance imaging \(MRI\)](#). Each type of test shows breast tissue differently and finds things that the others don't. Depending on your risk level, insurance may pay only for a mammogram.
- Cancer screening comes with the risk of finding things that look like cancer, but aren't. This "[false-positive](#)" problem can lead to unnecessary tests, [biopsy](#), and sometimes treatment. When deciding about screening, weigh this risk against the

Source: Cigna

Compares various choices for supplemental screening

Provides tools to help patients weigh their different priorities and preferences when making a decision about screening



Remember...

- The great majority of women DO NOT get breast cancer!
- Potential for a lot of additional testing for every additional cancer found

Take home points:

- High risk should have **MRI** regardless of breast density.
- Breast density alone imparts some increased risk (1.5-2x RR).
- (Otherwise) low risk with **dense breasts** should have 3D mammogram if available.
- 3D may be enough for some who are not tolerant of potential for increased testing.
- For heterogeneously dense (**+/-** other risk factors) consider supplementary screening. It should be a patient choice based on values.
- **Extremely dense** at higher risk than heterogeneously dense.
- ***In my opinion***, **extremely dense** deserve additional screening beyond mammography.

We don't have all the answers

- Patient priorities (and risk) should drive decisions.
- Further research is needed.



Your breast density and family history are risk factors that you can't control. But here are some risk factors that you can control.

- Keep a healthy weight
- Get regular exercise
- Minimize alcohol consumption
- Don't smoke.



AVOIDABLE RISK FACTORS



SEDENTARY LIFESTYLE

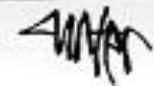
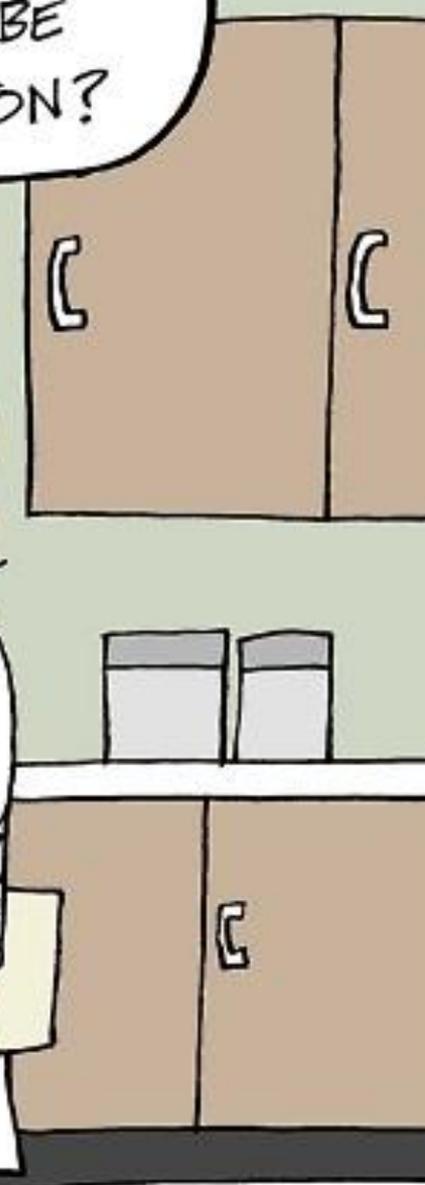
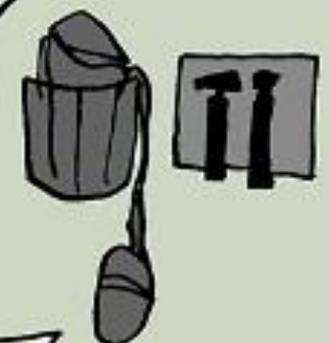


ALCOHOL CONSUMPTION

Density notification letters are not understood by many patients



DOCTOR, I THINK THEY SWITCHED MY RESULTS--
THIS LETTER I RECEIVED SAYS I HAVE DENSE
BREASTS, BUT WOULDN'T THAT MEAN THEY'D BE
PERKIER-- AT LEAST ABOVE MY BELLY BUTTON?





Density Consultation Clinic in Breast Imaging



Stay Tuned.
Coming Soon!

Annual screening mammography saves lives!

Please get screened whether or not your breasts are dense!

Just a reminder that mammogramming your boobs is more important than Instagramming them.



Thank you!

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