

Pre-Webinar Question #1

What is your primary role in learning BI-RADS today?

- A. Mammography technologist
- B. Imaging or radiology supervisor/manager
- C. Personnel in QC/compliance

Pre-Webinar Question #2

Those of you who are mammography technologists in the audience.....how important or helpful is it for you to be familiar with BI-RADS ultrasound, BI-RADS MRI, BI-RADS CEM, and/or BI-RADS Audit?

- A. Not important
- B. Moderately important
- C. Very important

Pre-Webinar Question #3

When you converse with your radiologist about mammography cases, approximately what percentage of time do you use BI-RADS lexicon?

- A. Not at all
- B. Fifty-fifty
- C. Almost always

Pre-Webinar Question #4

How would you typically learn about the updates to BI-RADS?

- A. Attend CE **courses** (in-person or virtual)
- B. Read journal or web-based **articles** (in-print or online)
- C. Acquire knowledge at **workplace** from colleagues
- D. I would **not** typically learn about BI-RADS updates

BI-RADS History

- Breast Imaging Reporting and Data System BI-RADS spearheaded by American College of Radiology (ACR)
- Started in late 1980's when screening mammography was being widely implemented

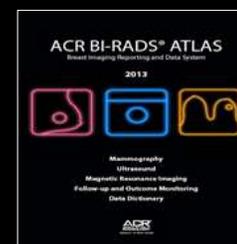
BI-RADS History

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- Started in late 1980's when screening mammography was being widely implemented
- First three editions: 1993, 1995, 1998

Breast Imaging Reporting and Data System (BI-RADS)

- 1993: first edition
- 1995: second edition
- 1998: third edition
- 2003: fourth edition
 - Additional sections: **Breast Ultrasound** and **Breast MRI**
- 2013: fifth edition
 - Supplements: **Digital Breast Tomosynthesis** and **Contrast-enhanced Mammography**

Breast Imaging Reporting and Data System BI-RADS → Large Sphere of Influence



5th Edition
2013

Translated from
English into 8
languages
**Spanish, French,
Portuguese, German,
Russian, Croatian,
Romanian, Chinese**



Breast Imaging Reporting and Data System BI-RADS → Large Sphere of Influence

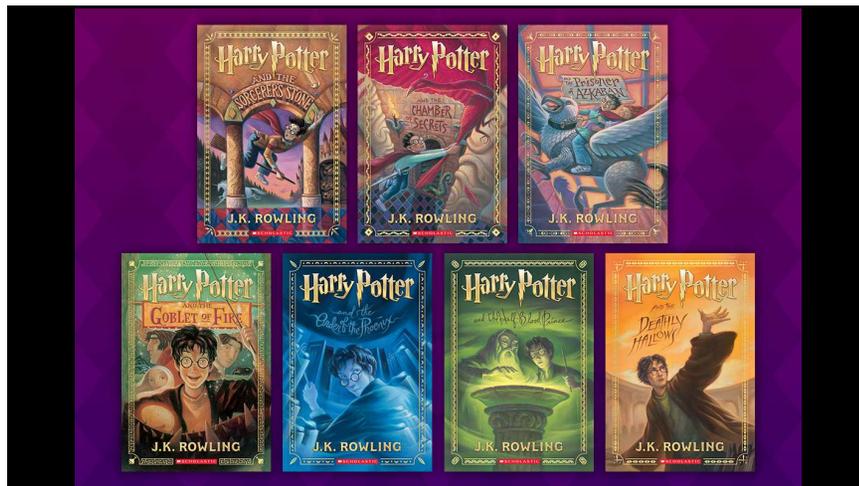
The image displays a grid of 11 RADS systems, each with a representative icon and a label: BI-RADS (Breast), CAD-RADS (Coronary Artery Disease), C-RADS (CT Colonography), LI-RADS (Liver), Lung-RADS, MSK-RADS (Musculoskeletal), NI-RADS (Head and Neck), O-RADS (Ovarian-Adnexal), PI-RADS (Prostate), and TI-RADS (Thyroid). The BI-RADS (Breast) system is highlighted with a larger icon and text.

Breast Imaging Reporting and Data System BI-RADS

When will BI-RADS 6th edition be available?

4th Edition
2003

5th Edition
2013



Breast Imaging Reporting and Data System BI-RADS

Organizational Changes

- No longer called 6th edition, but 2025 edition
- No longer called "lexicon and atlas", but "manual"
- **BI-RADS v2025 Manual**

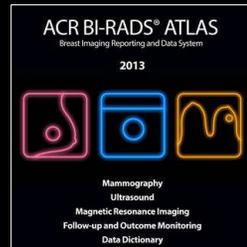
6th Edition
2025

5th Edition
2013

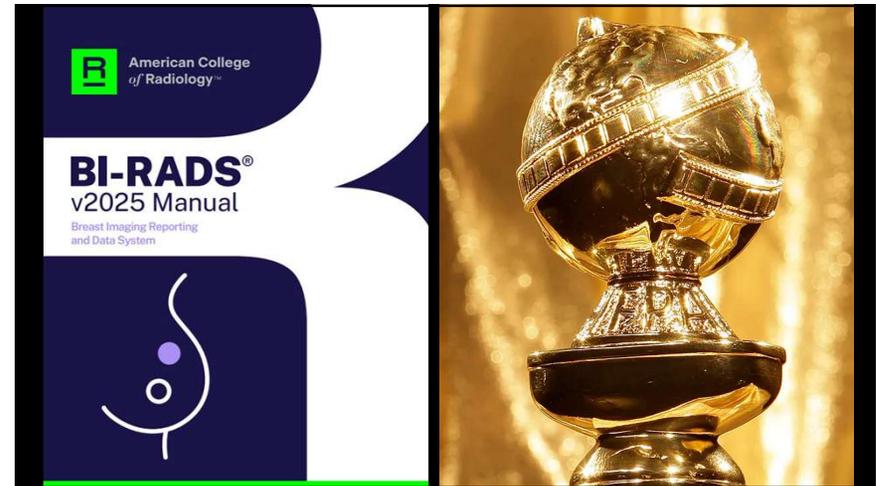
Breast Imaging Reporting and Data System BI-RADS

- **BI-RADS v2025 Manual**
- Mammography
- Ultrasound
- MRI
- **CEM** RSNA Dec 1, 2025
- Audit and Outcomes Monitoring

6th Edition
2025



5th Edition
2013



Assessment Categories

Category	Assessment	Recommendation
0	Incomplete	Recall for additional imaging
1	Negative	Routine screening
2	Benign	Routine screening
3	Probably benign	Short-term interval f/u or continued surveillance
4	Suspicious	Tissue diagnosis
5	Highly suggestive of malignancy	Tissue diagnosis
6	Known biopsy-proven malignancy	Clinical f/u with surgeon &/or oncologist, and definitive local therapy (usually surgery) when clinically appropriate

MAMMOGRAPHY

Overview: Mammography

- Breast density
- Masses
- Calcifications
- Architectural distortion
- Asymmetries

Overview: Mammography

- Breast density
- Masses
- Calcifications
- Architectural distortion
- Asymmetries

Overview: Mammography

- Lymph nodes
 - Intramammary: normal, abnormal
 - Axillary: normal, abnormal
- Skin lesions
- Dilated ducts
 - Multiple
 - Solitary

Overview: Mammography

- Associated features
 - Skin retraction
 - Nipple retraction
 - Skin thickening
 - Trabecular thickening
- Special cases
 - Gynecomastia
 - Implants and other forms of augmentation
 - Mastectomy

Breast Density

- Quartiles (4th Edition) ~ percentage of dense tissue
 - 1 = 25% or less of breast volume = dense
 - 2 = 26 to 50%
 - 3 = 51 to 75%
 - 4 = greater than 75%
- Masking (5th Edition) ~ likelihood that cancer is obscured by tissue (A, B, C, D)
- Masking (6th Edition) ~ no change from 5th edition

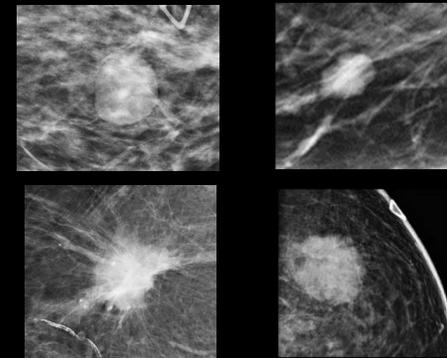
Breast Density

- Quartiles (4th Edition) ~ percentage of dense tissue
- Masking (5th Edition) ~ likelihood that cancer is obscured by tissue (A, B, C, D same in 6th Edition)
 - Assessment based on densest portion of either left or right breast
 - Updated with each mammogram to reflect current status, as breast density may fluctuate over time

Masses

- Shape
 - Oval, lobulated, round, irregular
- Margin
 - Circumscribed, obscured, indistinct, spiculated
- Density
 - Fat-containing, low density, equal density, high density

Masses: Shape & Margin



Calcifications

- Typically benign
 - Skin, vascular, coarse, large rod-like, round, rim, layering, suture
- Suspicious morphology
 - Amorphous, coarse heterogeneous, fine pleomorphic, fine linear or fine-linear branching
- Distribution
 - Diffuse, regional, grouped, linear, segmental

Calcifications: Morphology & Distribution

Milk-of-calcium → Layering

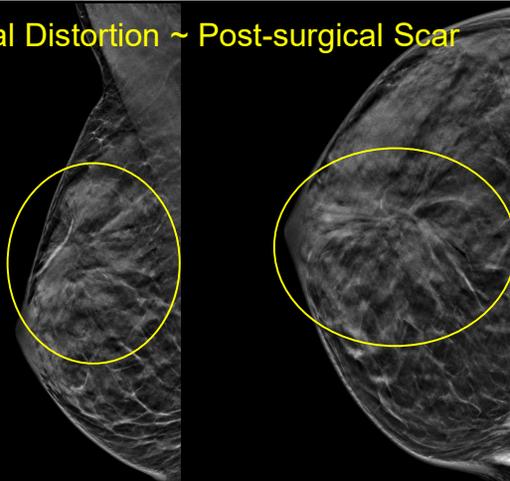


Lateral

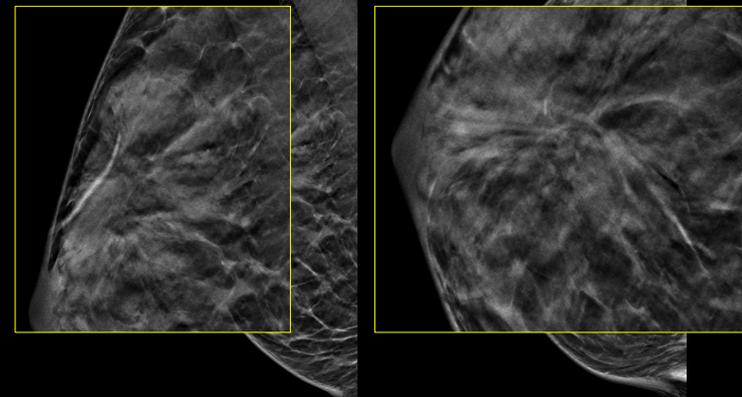


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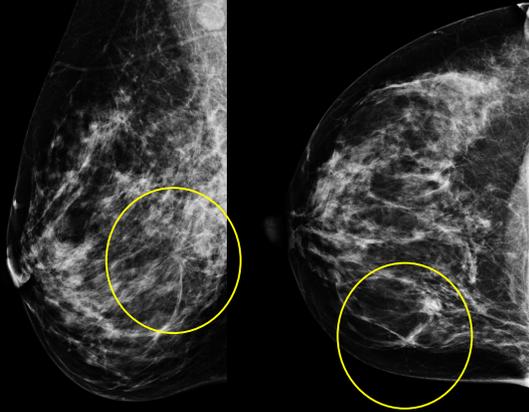
Architectural Distortion ~ Post-surgical Scar



Architectural Distortion ~ Post-surgical Scar



Architectural Distortion – Invasive Ductal Carcinoma



Asymmetries

- Global asymmetry
- Asymmetry
- Focal asymmetry

3 rd Edition (1998)	4 th Edition (2003)	5 th Edition (2013)
Density	Asymmetry	Asymmetry
Asymmetric breast tissue	Global asymmetry	Global asymmetry
Focal asymmetric density	Focal asymmetry	Focal asymmetry
None	None	Developing asymmetry

AJR
WOMEN'S
IMAGING

Jessica W. T. Leung¹
Edward A. Sickles

2007

Developing Asymmetry Identified on Mammography: Correlation with Imaging Outcome and Pathologic Findings

OBJECTIVE. Developing asymmetry on mammography is a focal asymmetric deposit that has appeared or increased in size or conspicuity since a previous examination. We exam-

BI-RADS 4 Suspicious – biopsy even in absence of sonographic correlate

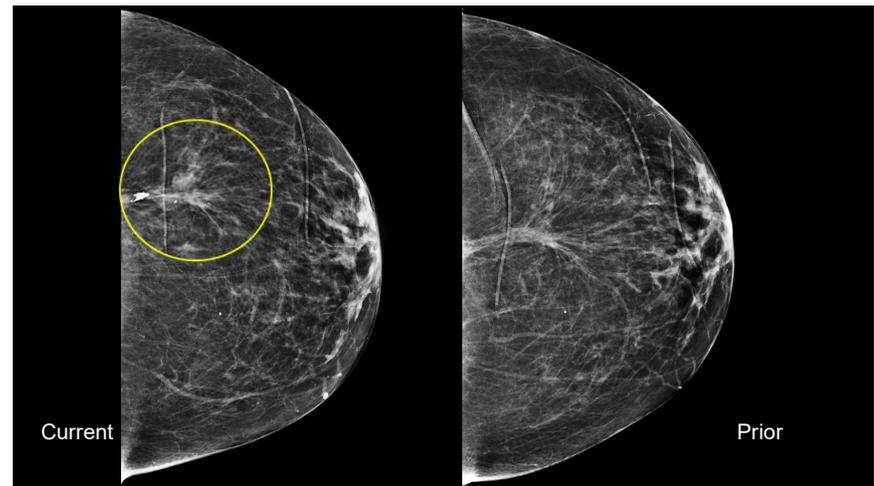
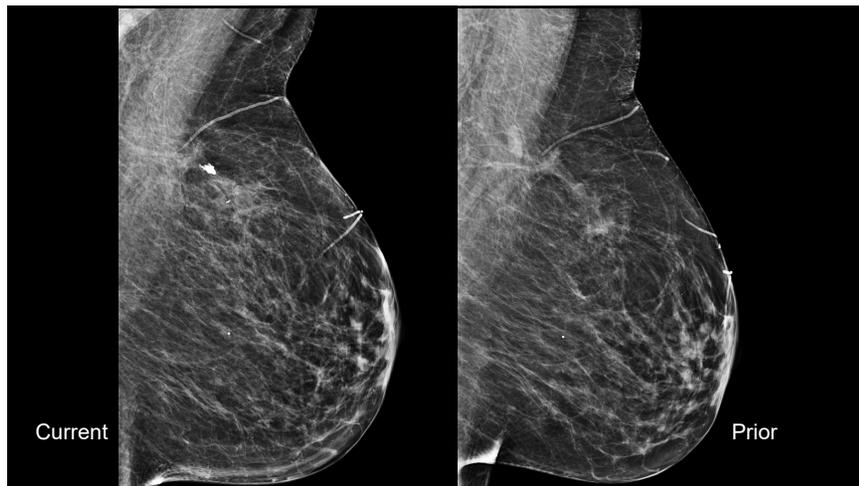
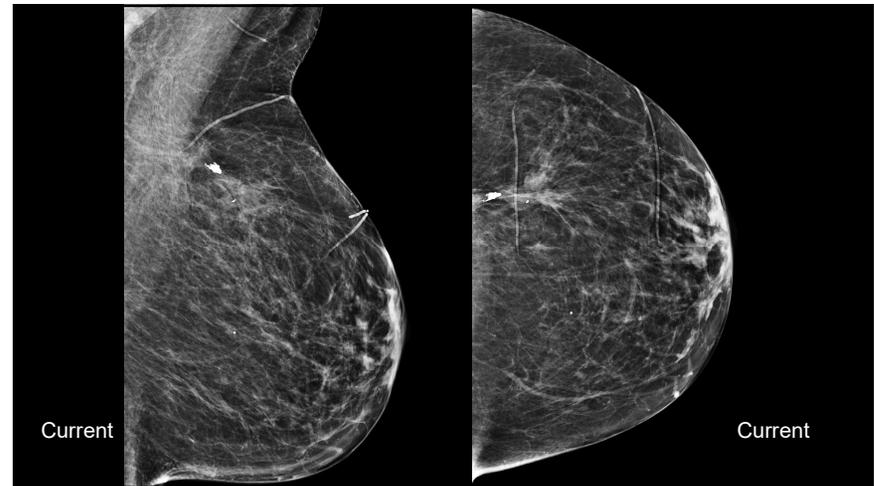
Retrospective cohort study

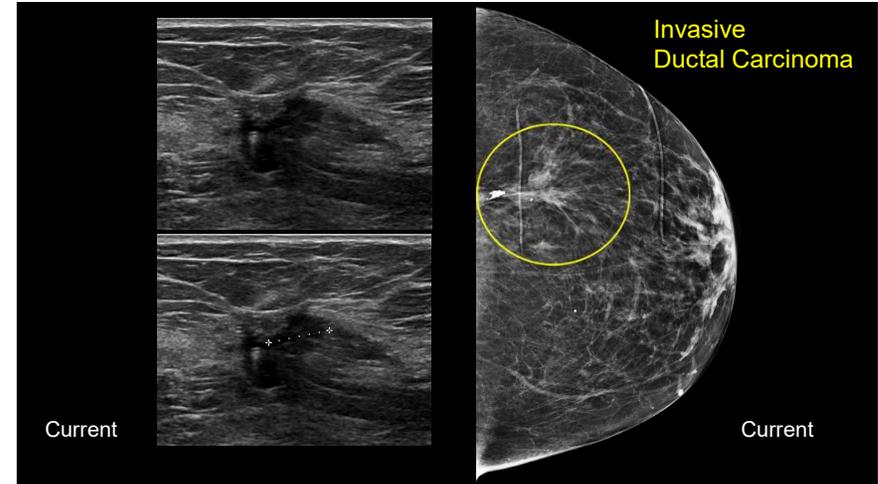
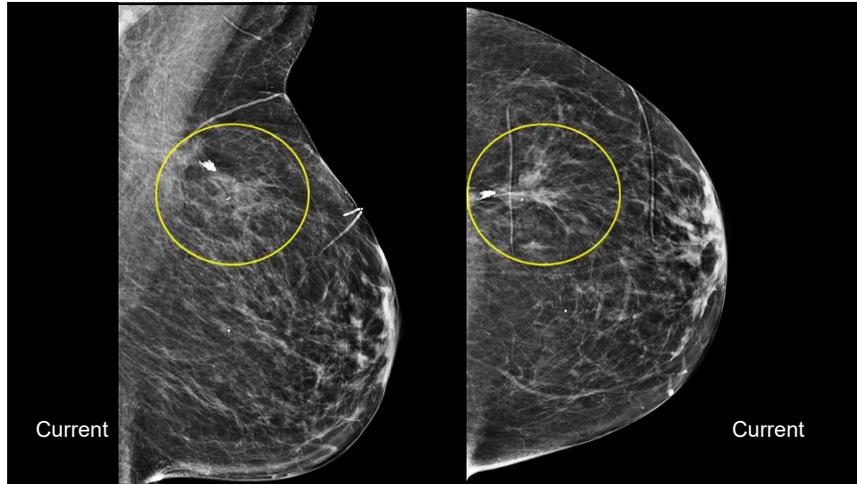
Consecutive mammography exams prospectively coded as “developing asymmetry”

- 180,801 screening exams
- 27,330 diagnostic exams

AJR American Journal of Roentgenology March 2007; 188:667-675

3 rd Edition (1998)	4 th Edition (2003)	5 th Edition (2013)
Density	Asymmetry	Asymmetry
Asymmetric breast tissue	Global asymmetry	Global asymmetry
Focal asymmetric density	Focal asymmetry	Focal asymmetry
None	None	Developing asymmetry



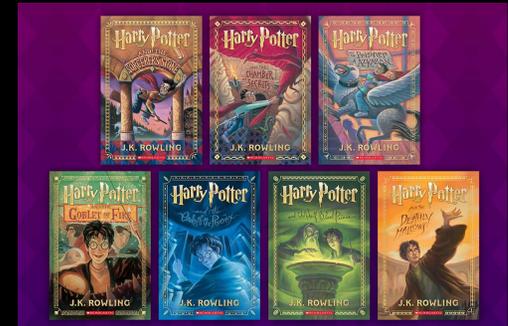


Question

How many books are there in the original Harry Potter series?

Answer

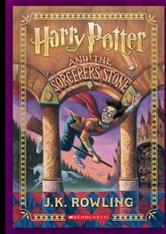
How many books are there in the original Harry Potter series?



Bonus Question

Book #1 is titled “Harry Potter and the Sorcerer's Stone” in the United States.

What was the original title in the United Kingdom?

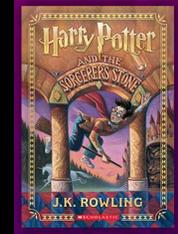


Bonus Answer

Book #1 is titled “Harry Potter and the Sorcerer's Stone” in the United States.

What was the original title in the United Kingdom?

Harry Potter and the Philosopher's Stone



Question #1

In BI-RADS v2025, there are only 3 types of asymmetries.
Which of the following has been removed from BI-RADS 5th edition?

- A. Asymmetry
- B. Global asymmetry
- C. Focal asymmetry
- D. Developing asymmetry

Answer #1

In BI-RADS v2025, there are only 3 types of asymmetries.
Which of the following has been removed from BI-RADS 5th edition?

- A. Asymmetry
- B. Global asymmetry
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ULTRASOUND

Overview: Ultrasound

- Tissue composition
- Masses
- Non-mass lesions
- Calcifications
- Associated features
- Special cases (including cysts)
- Lymph nodes

Overview: Ultrasound

- Tissue composition
- **Masses**
- **Non-mass lesions**
- Calcifications
- Associated features
- Special cases (including cysts)
- Lymph nodes

Masses

- Shape
- Orientation
- Margin
- Echo pattern
- Posterior features

Masses

- Shape
 - Oval
 - Lobulated
 - Round
 - Irregular
- Orientation
- Margin
- Echo pattern
- Posterior features

Masses

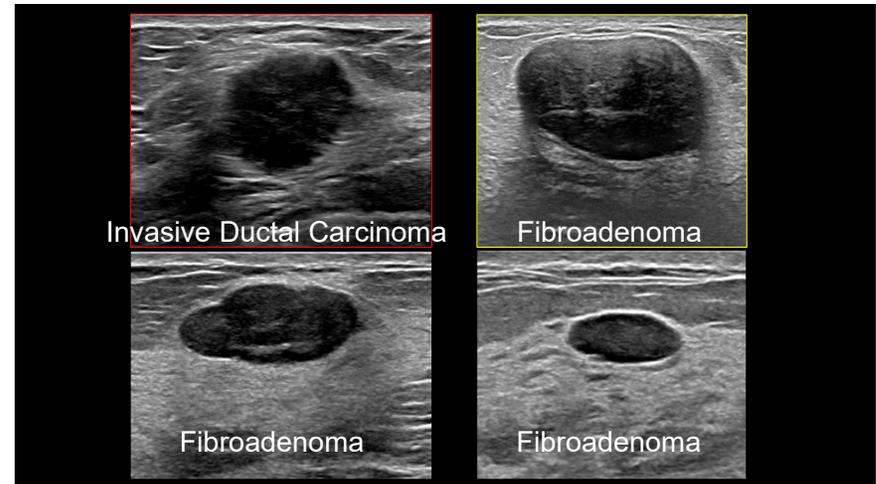
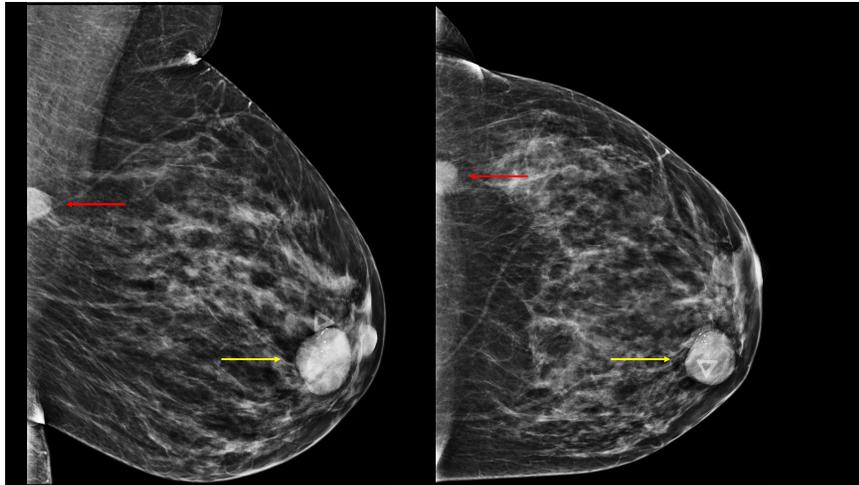
- Shape
- Orientation
 - Parallel
 - Non-parallel
- Margin
- Echo pattern
- Posterior features

Masses

- Shape
- Orientation
- Margin
 - Circumscribed
 - Non-circumscribed
- Echo pattern
- Posterior features

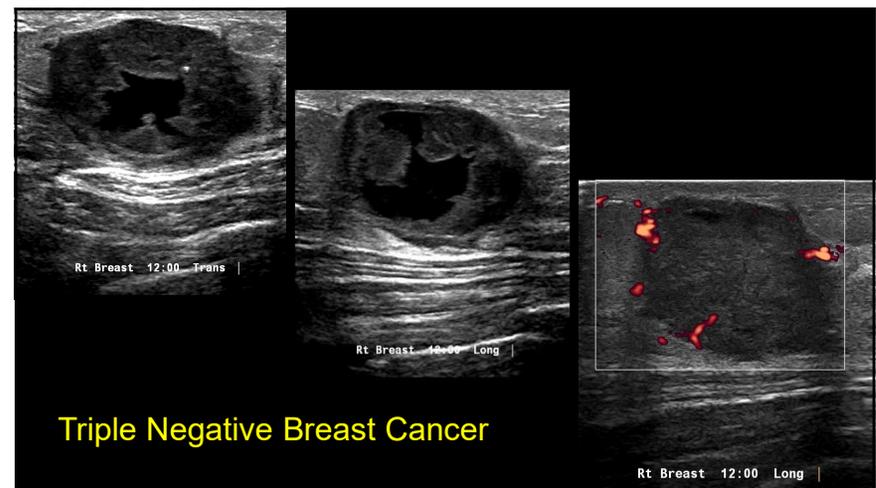
Masses

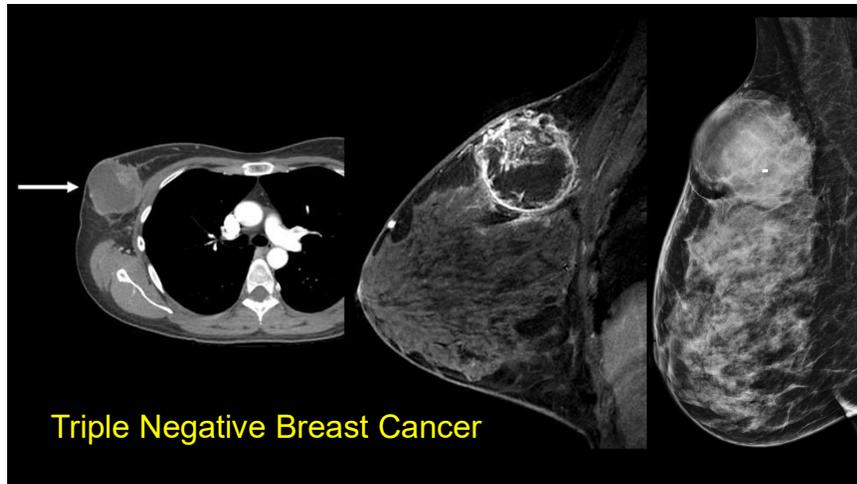
- Shape
- Orientation
- Margin
 - Circumscribed
 - Non-circumscribed
 - Indistinct, microlobulated, angular, spiculated
- Echo pattern
- Posterior features



Masses

- Shape
- Orientation
- Margin
- Echo pattern
 - Anechoic, hyperechoic, isoechoic, hypoechoic, heterogeneous, mixed solid and cystic
- Posterior features





Masses

- Shape
- Orientation
- Margin
- Echo pattern
- Posterior features (combined pattern removed)
 - No posterior features
 - Enhancement
 - Shadowing

Given the current advances in US equipment capabilities and knowledge of breast US, there is increasing awareness and identification of abnormalities at US that do *not* rise to the criteria of a mass.

Non-mass Lesions

- Mass = space-occupying finding seen in at least 2 different imaging planes
- Non-mass lesion = sonographic finding that is identified in at least 2 imaging planes, but lacking the 3-dimensionality or conspicuity of a mass, such as characterizable margin or shape



Non-mass lesion.....

Less like an apple (mass)

More like a pancake or a taco

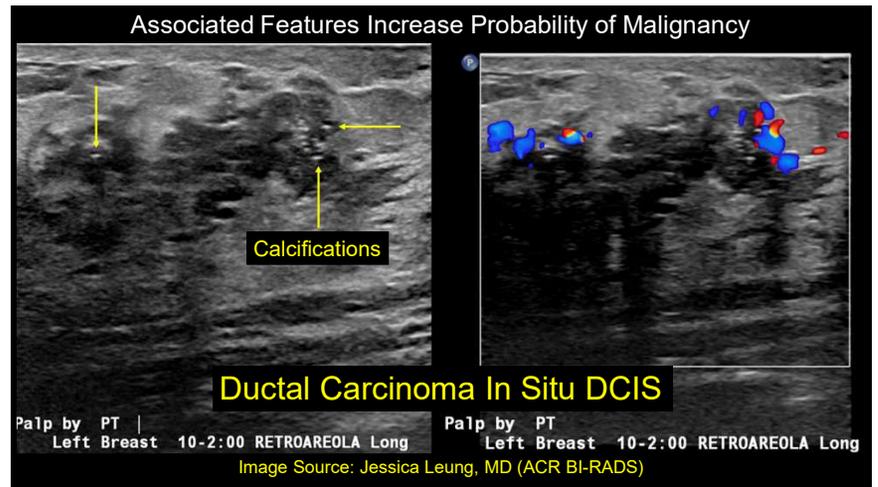
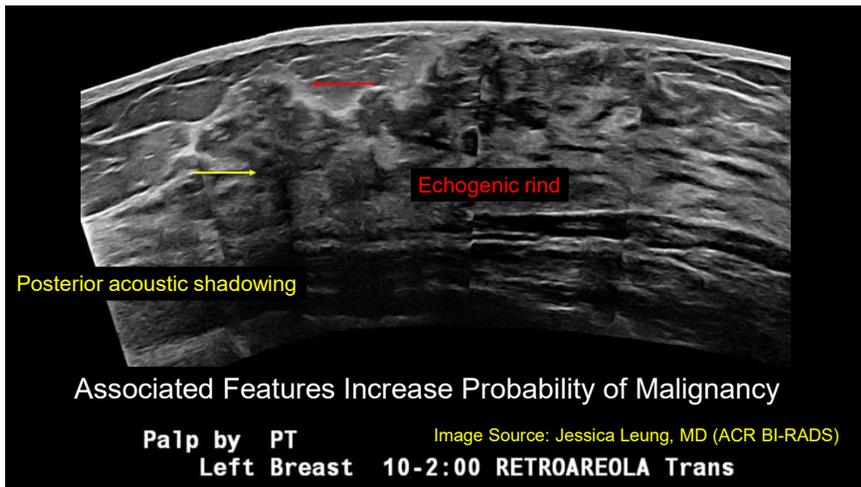
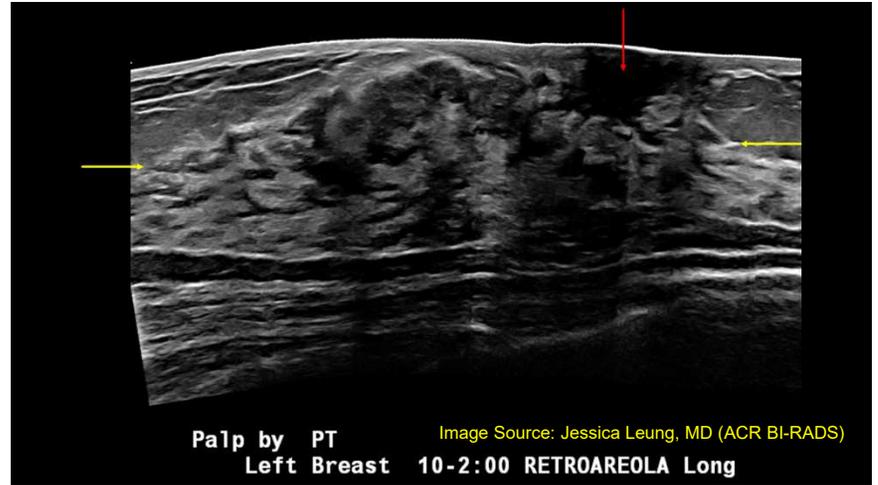
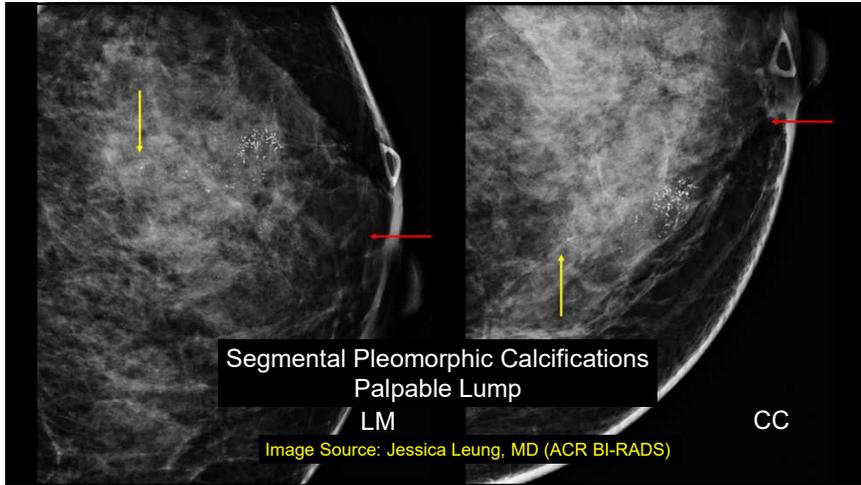


Non-mass Lesions

- Non-mass lesion = sonographic finding that is identified in at least 2 imaging planes, but lacking the 3-dimensionality or conspicuity of a mass, such as characterizable margin or shape
 - May be primarily visualized in 1 plane only
 - Often subtle & detected because of disruption of background tissue
 - Size determination may be difficult
 - Segmental distribution = predictive of malignancy
 - Invasive lobular carcinoma, DCIS disproportionately high

Non-mass Lesions

- **Distribution**
 - Regional
 - Focal
 - Linear
 - Segmental
- **Echo pattern**
 - Hyperechoic, heterogeneous, hypoechoic
- **Posterior features**
 - No posterior features, enhancement, shadowing



Question #2

Which 2 features are *not* used to describe a non-mass lesion at ultrasound?

- A. Distribution
- B. Echo pattern
- C. Shape
- D. Margin

Answer #2

Which 2 features are *not* used to describe a non-mass lesion at ultrasound?

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Calcifications

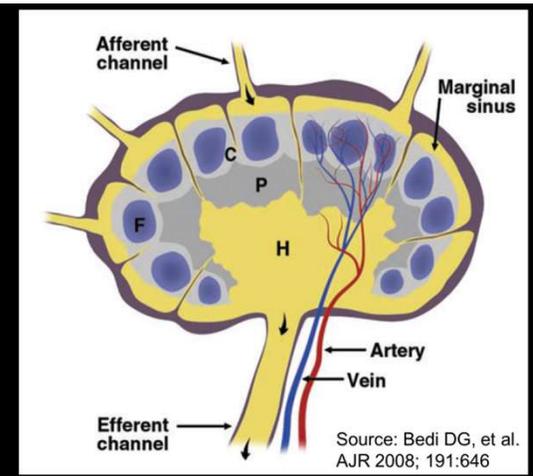
5th Edition

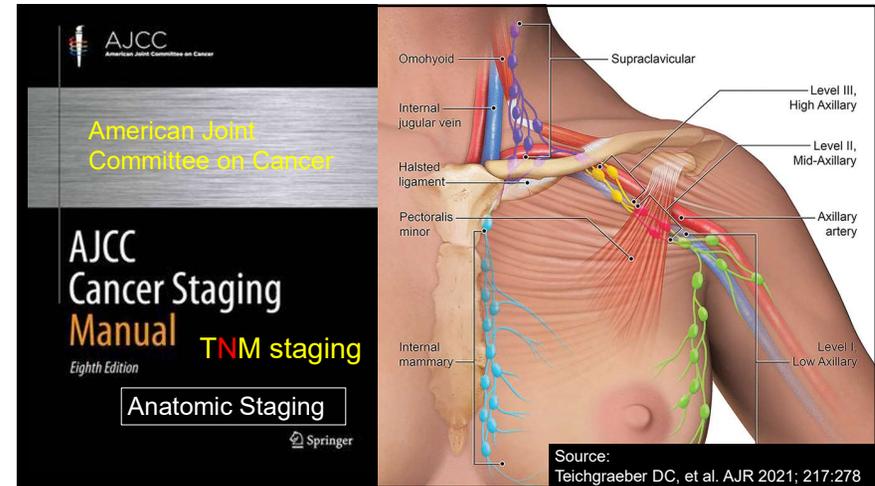
- Calcifications in a mass
- Calcifications outside of a mass
- Intraductal calcifications

v2025

- Microcalcifications
- Macrocalcifications
- Calcifications in a mass or non-mass lesion
- Calcifications outside of a mass or non-mass lesion
- Intraductal calcifications

Lymph Nodes





Lymph Nodes

- Expansion of discussion on lymph nodes
- Location
 - Intramammary node
 - Axillary node (levels I, II, III)
 - Internal mammary node
 - Supraclavicular node
- Morphology
 - Cortical-hilar relationship
 - 3-mm ~ cortical thickness

Rib Internal Mammary Node Rib

Supraclavicular Node

Axillary Node with Thickened Cortex and Compressed Hilum

1283

Imaging Updates to Breast Cancer Lymph Node Management

Hannah L. Chung, MD
Huong T. Le-Petross, MD
Jessica W.T. Leung, MD

Abbreviations: ACOSOG = American College of Surgeons Oncology Group, AJCC = American Joint Commission on Cancer, ALND = axillary lymph node dissection, FDG = fluorine 18 fluorodeoxyglucose, FNA = fine-needle aspiration, FNR = false-negative rate, IDC = invasive ductal carcinoma, NCCN = National Comprehensive Cancer Network, NST = neoadjuvant systemic therapy, SLNB = sentinel lymph node biopsy, TAD = targeted axillary dissection

RadioGraphics 2021; 41:1283-1299
<https://doi.org/10.1148/rg.2021120053>

Metastatic lymph node involvement in breast cancer is a key determinant of the overall stage of disease and prognosis. Historically, lymph node status was determined by surgery first, with adjuvant treatments determined based on the results of the final surgical pathologic analysis. While this sequence is still applicable in many cases, neoadjuvant systemic treatment (NST) is increasingly being administered as the initial treatment. In cases that demonstrate good therapeutic response to drug therapies, NST may permit the option to perform less radical surgeries subsequently. Current breast cancer treatment has become multidisciplinary, with overlapping roles from the different disciplines. As surgery may be postponed, imaging and image-guided lymph node interventions have gained importance as the primary means of lymph node as-

Radiographics Sep-Oct 2021

MAGNETIC RESONANCE IMAGING (MRI)

Lymph Nodes

- **Similar to ultrasound**
 - Intramammary node
 - Axillary node (levels I, II, III)
 - Internal mammary node
- **Different from ultrasound**
 - Not include supraclavicular node
 - Not rely on cortical thickness of 3 mm as cut-off for normal
 - Use symmetry instead to indicate normal

Question #3

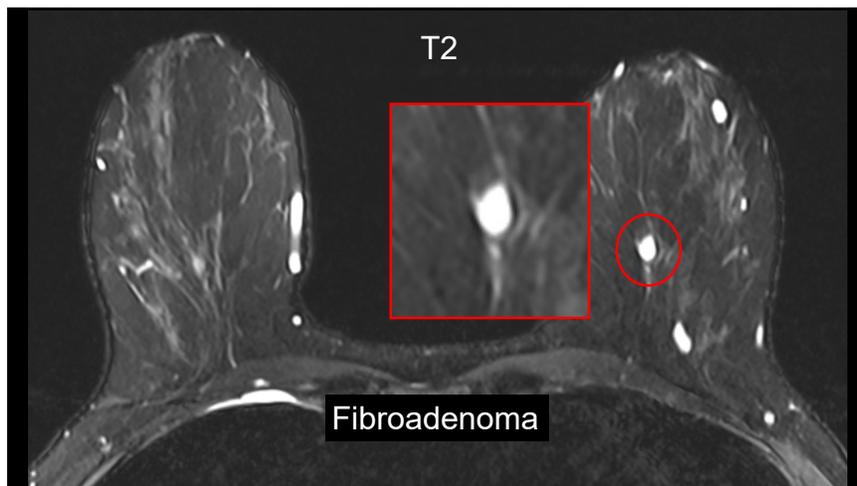
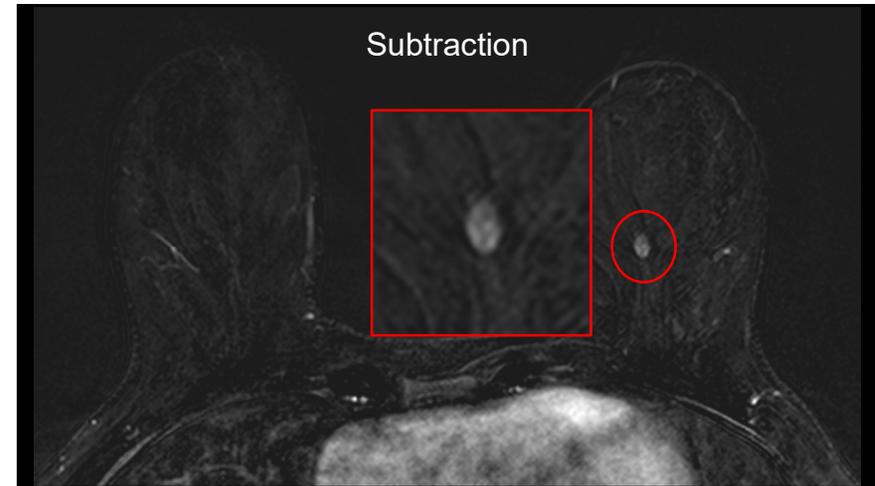
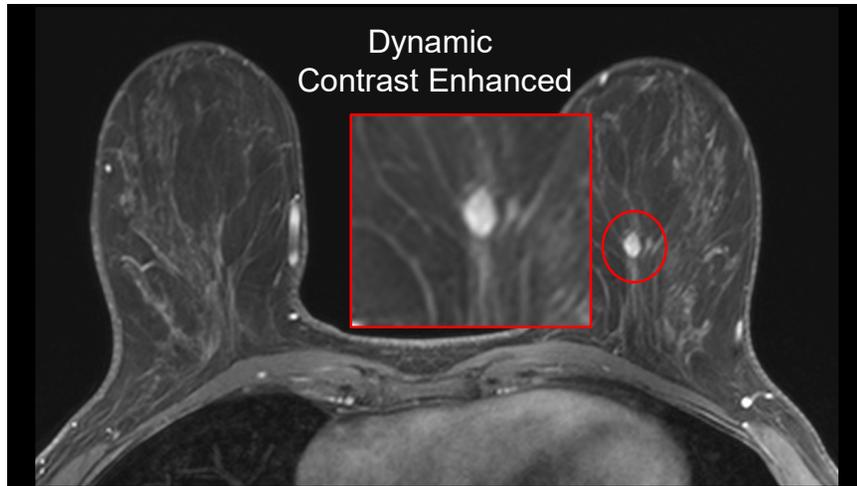
The 3 levels of the axilla are defined by which muscle?

- A. Pectoralis major muscle
- B. Pectoralis minor muscle
- C. Serratus anterior muscle
- D. Teres minor muscle

Answer #3

The 3 levels of the axilla are defined by which muscle?

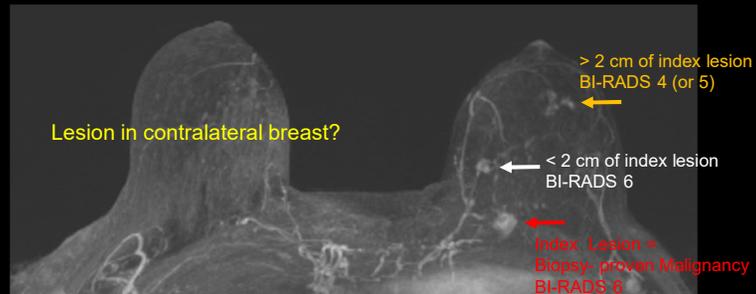
- A. Pectoralis major muscle
- B. **Pectoralis minor muscle**
- C. Serratus anterior muscle
- D. Teres minor muscle



MRI for Extent of Disease

- Additional lesion(s) identified in ipsilateral breast as biopsy-proven index cancer.....BI-RADS 6 or BI-RADS 4 or 5?
- Use BI-RADS 4 or 5 (instead of BI-RADS 6) if:
 - > 2 cm from known cancer
 - And/or increase extent of disease by > 2 cm
 - And/or significantly change clinical management

BI-RADS 4 or 5 and NOT BI-RADS 6



AUDIT and OUTCOMES MONITORING

Audit and Outcomes Monitoring

- New name: no longer “Follow-up and Outcomes Monitoring”
- Same goal
 - To guide practices and individuals to assess and improve performance for optimal patient care
- Take home message
 - Perform audit!
 - Separate audit by **screening** versus **diagnostic** indications because they should/will have very different outcomes (because they have different pre-test probabilities)

• Screening

- Asymptomatic
- No symptoms or signs of breast cancer
- **Lower** pre-test probability of breast cancer

• Diagnostic

- Presents with clinical or imaging findings
- Palpable lump
- Nipple discharge
- Recall from screening mammography
- **Higher** pre-test probability of breast cancer

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Assessment Categories

Category	Assessment	Recommendation
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3	Probably benign	Short-term interval f/u or continued surveillance
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5	Highly suggestive of malignancy	Tissue diagnosis
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No Audit of BI-RADS 6 Assessment Exams in 5th Edition

5	Highly suggestive of malignancy	Tissue diagnosis
6	Known biopsy-proven malignancy	Clinical f/u with surgeon &/or oncologist, and definitive local therapy (usually surgery) when clinically appropriate

Positive Predictive Value PPV1 (Screening)

$$PPV1 = \frac{\text{True positive screening examinations}}{\text{All positive screening examinations}} = \frac{TP}{TP + FP1}$$

Positive Predictive Value PPV2 (Diagnostic)

$$PPV2 = \frac{\text{True positives}}{\text{Number of examinations recommended for tissue dx}} = \frac{TP}{TP + FP2}$$

Positive Predictive Value PPV3 (Diagnostic)

$$PPV3 = \frac{\text{True positives}}{\text{Number of examinations that underwent biopsy}} = \frac{TP}{TP + FP3}$$

Extent of Disease (EOD) MRI Audit (includes BI-RADS 6 lesions!)

Radiology October 2025 ORIGINAL RESEARCH • BREAST IMAGING

Feasibility of Auditing Preoperative Breast MRI for Extent-of-Disease Evaluation Using the BI-RADS v2025 Manual

Ethan O. Cohen, MD¹ • Hilda H. Tso, DO¹ • Kyungmin Shin, MD¹ • Sarah R. Martindale, MD¹ • Ashley C. Bragg, MD¹ • Kanchan A. Phalak, MD¹ • Rachel E. Perry, MD¹ • Jia Sun, PhD² • Jessica W. T. Leung, MD¹

Author affiliations, funding, and conflicts of interest are listed at the end of this article.

Radiology 2025; 317(1):e243803 • <https://doi.org/10.1148/radiol.243803> • Content codes: **BR** **MR**

Background: The forthcoming Breast Imaging Reporting and Data System (BI-RADS) version 2025 (hereafter, v2025) manual recommends auditing breast MRI examinations performed to evaluate the extent of disease in women newly diagnosed with breast cancer.

Purpose: To investigate the feasibility of this recommended audit using preoperative breast MRI examinations performed over 2 years, report the calculated metrics, and identify any clinical or imaging characteristics associated with improved MRI performance metrics.

Radiology October 2025 ORIGINAL RESEARCH • BREAST IMAGING

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	AIR	PPV ₂	PPV ₃	ACDR
Ipsilateral	19.9% (17.9, 21.9)	25.8% (21.3, 30.3)	43.0% (36.5, 49.5)	62.0 (50.0, 74.1)
Contralateral	14.0% (12.2, 15.7)	22.4% (17.1, 27.7)	25.6% (19.7, 31.5)	35.2 (26.0, 44.4)
Overall	30.3% (28.0, 32.6)	22.8% (19.5, 26.1)	32.2% (27.8, 36.6)	90.7 (74.3, 107.1)

Mode of Detection (MOD)



**EARLY
DETECTION
SAVES
LIVES**

We make a difference in screening for breast cancer!

Thank you

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