

# AMSER Case of the Month: September 2018

60-year-old woman with a left breast mass noted on  
screening mammography.



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# Patient Presentation

CC/HPI: 60-year-old asymptomatic female with a left breast mass noted on screening mammography. Denies any palpable lumps, nipple discharge, pain, skin changes, and unintended weight loss.

- Targeted physical exam: no dominant mass palpable in either breast; no skin changes or nipple discharge; no palpable axillary, cervical, or supraclavicular lymphadenopathy.
- Medical Hx: obesity, asthma, anxiety
- Surgical Hx: cholecystectomy, knee surgery (left), shoulder surgery (right)
- Medications: albuterol, alprazolam, bupropion, fluoxetine
- Family Hx: + breast cancer & cervical cancer (sister)

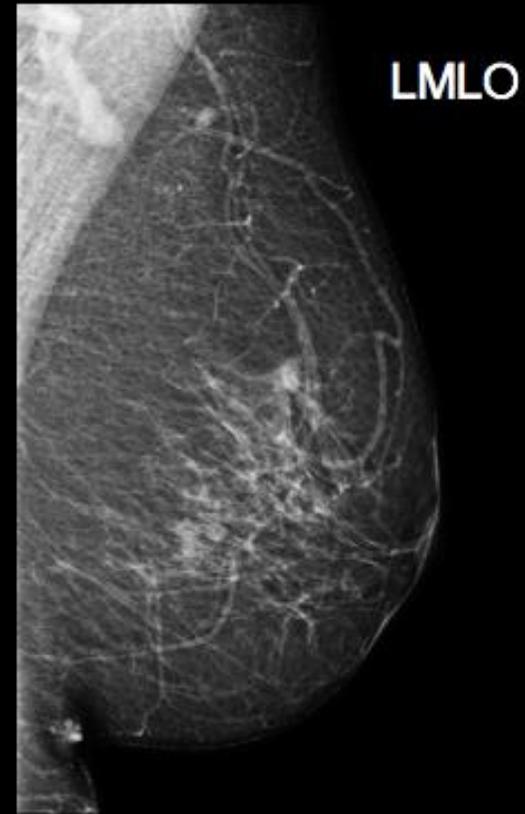
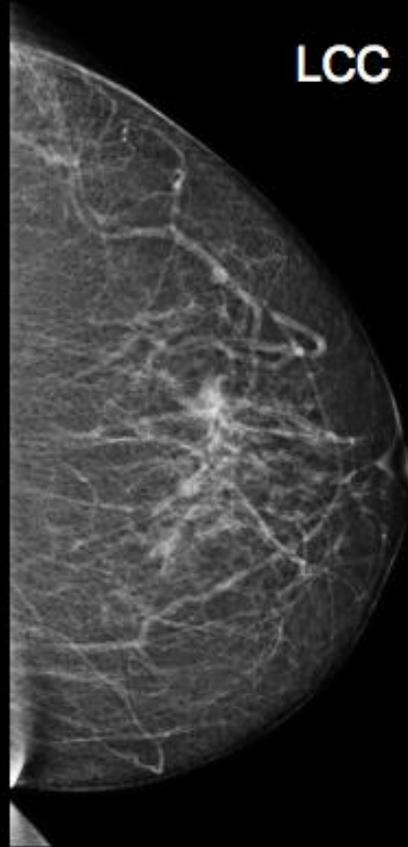
# ACR Appropriateness Criteria for Yearly Screening Mammogram

**Variant 1:**

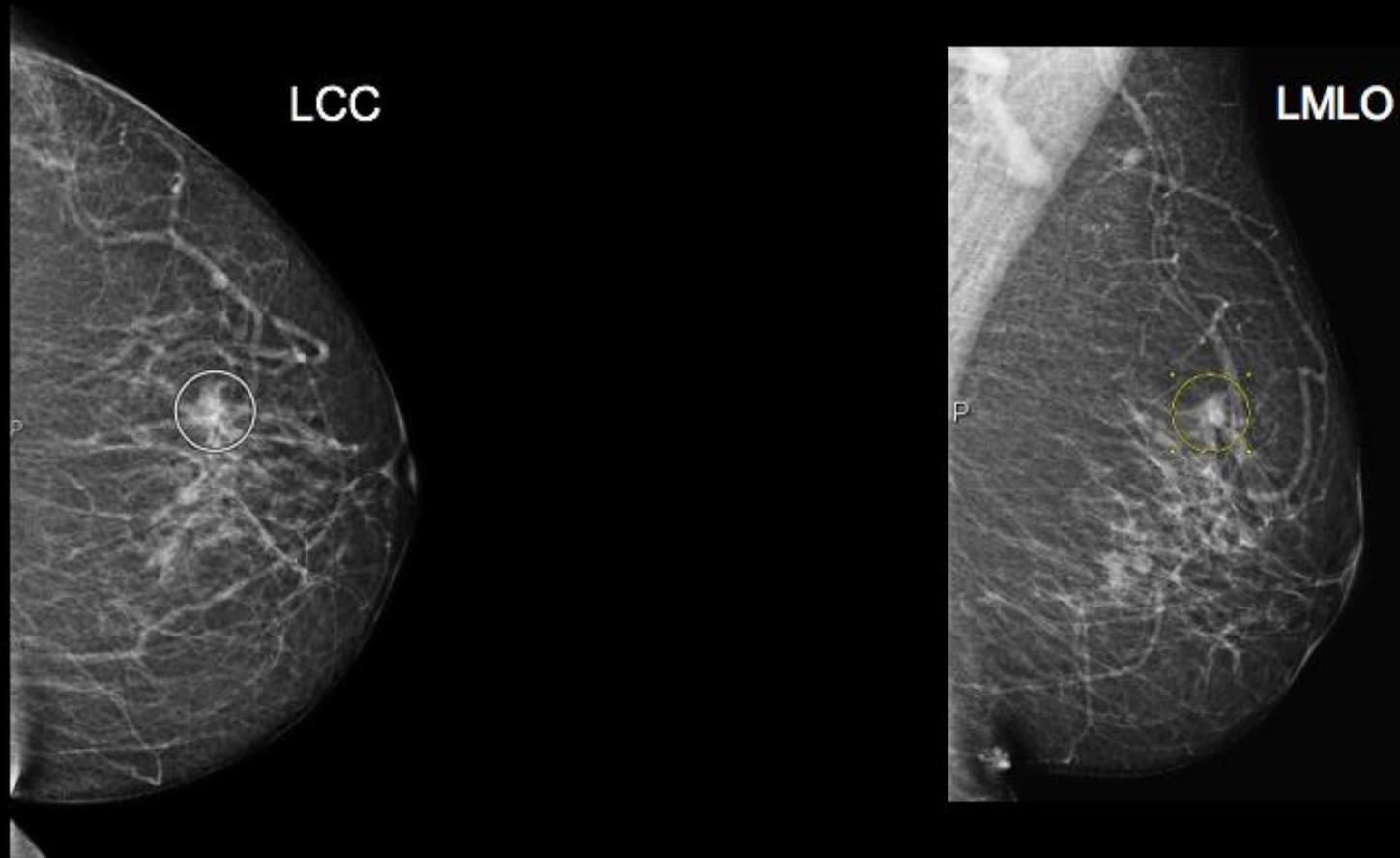
**Breast cancer screening. Average-risk women: women with <15% lifetime risk of breast cancer.**

| Procedure                               | Appropriateness Category | Relative Radiation Level |
|---|--------------------------|--------------------------|
| Mammography screening                   | Usually Appropriate      | ☼ ☼                      |
| Digital breast tomosynthesis screening  | Usually Appropriate      | ☼ ☼                      |
| US breast                               | May Be Appropriate       | ○                        |
| MRI breast without and with IV contrast | Usually Not Appropriate  | ○                        |
| MRI breast without IV contrast          | Usually Not Appropriate  | ○                        |
| FDG-PEM                                 | Usually Not Appropriate  | ☼ ☼ ☼ ☼                  |
| Tc-99m sestamibi MBI                    | Usually Not Appropriate  | ☼ ☼ ☼                    |

# Screening Mammography



# Screening Mammography



Indeterminate focal asymmetry of the left breast at the 1'o clock position with questionable associated architectural distortion. Diagnosed as BIRADS 0, recommended additional imaging.

What additional imaging, if any, should we order?

## ACR PRACTICE PARAMETER FOR THE PERFORMANCE OF A BREAST ULTRASOUND EXAMINATION

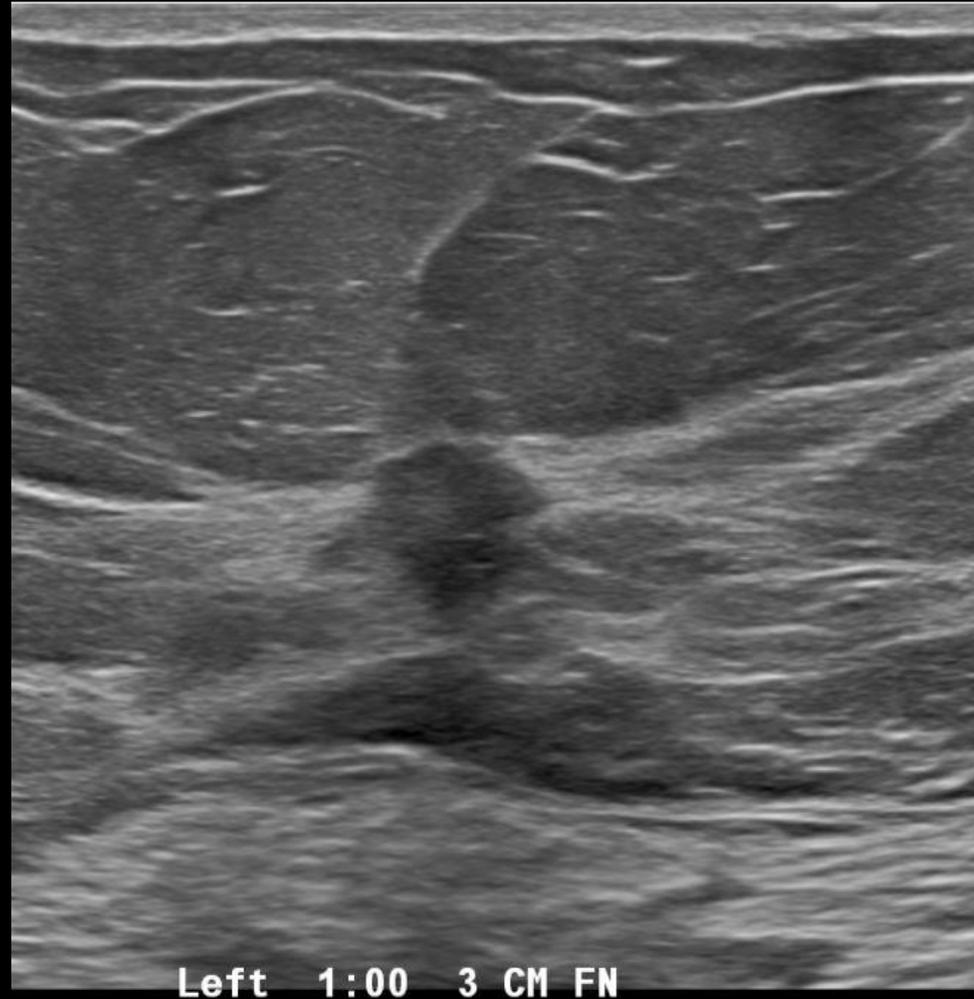
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### II. INDICATIONS

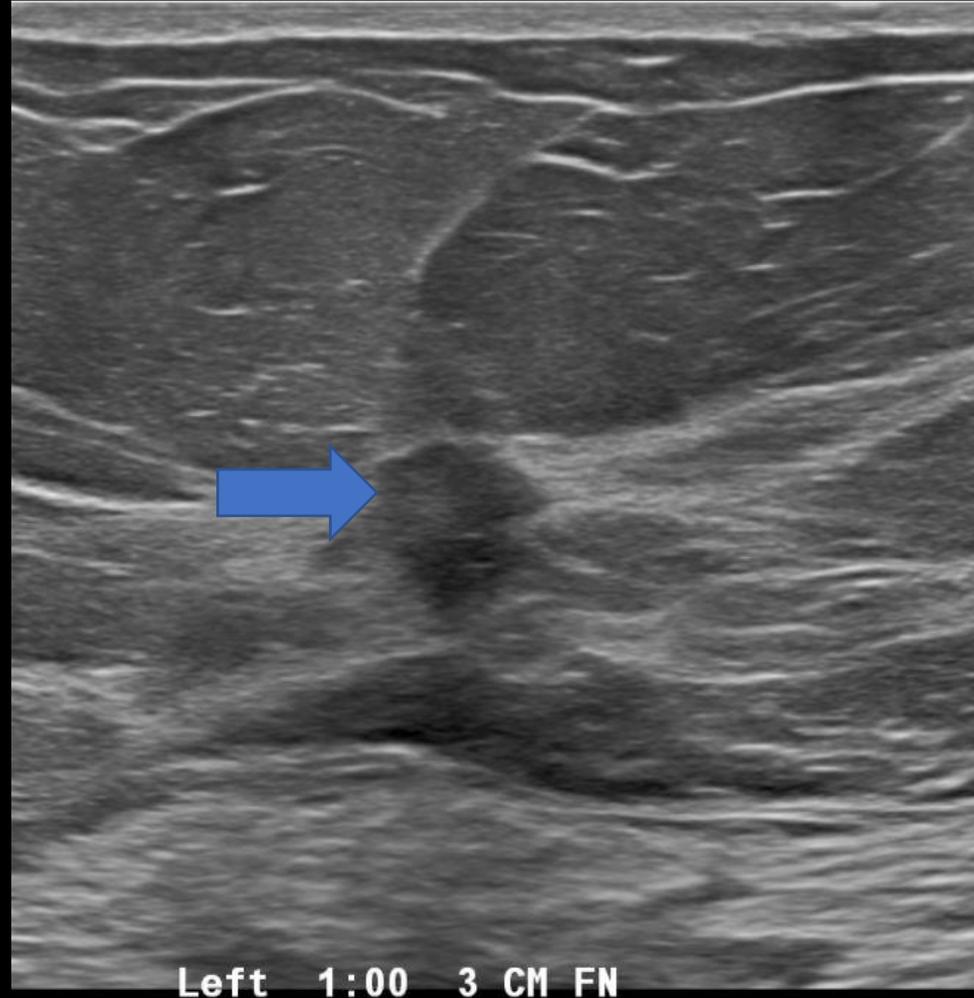
Appropriate indications for breast sonography include, but are not limited to:

1. Evaluation and characterization of palpable masses and other breast-related signs and/or symptoms [1-4]
2. Evaluation of suspected or apparent abnormalities detected on mammography (with or without digital breast tomosynthesis), breast magnetic resonance imaging (MRI), or other imaging modalities [5,6]
3. Initial imaging evaluation of palpable breast masses in patients under 30 years of age who are not at high risk for development of breast cancer and in lactating and pregnant women
4. Evaluation of problems associated with breast implants [7]
5. Guidance for breast biopsy and other interventional procedures [8]
6. Treatment planning for radiation therapy [7]
7. As a supplement to mammography, screening for occult cancers in certain populations, including of women with heterogeneously or extremely dense breasts who are determined to be at elevated risk of breast cancer or with newly suspected breast cancer, who are not candidates for MRI [9-13] or have no easy access to MRI
8. Identification of and biopsy guidance for abnormal axillary lymph node(s), for example, in patients with newly diagnosed or recurrent breast cancer [14-16] or with findings highly suggestive of malignancy or other significant pathology

# Ultrasound of Left Breast



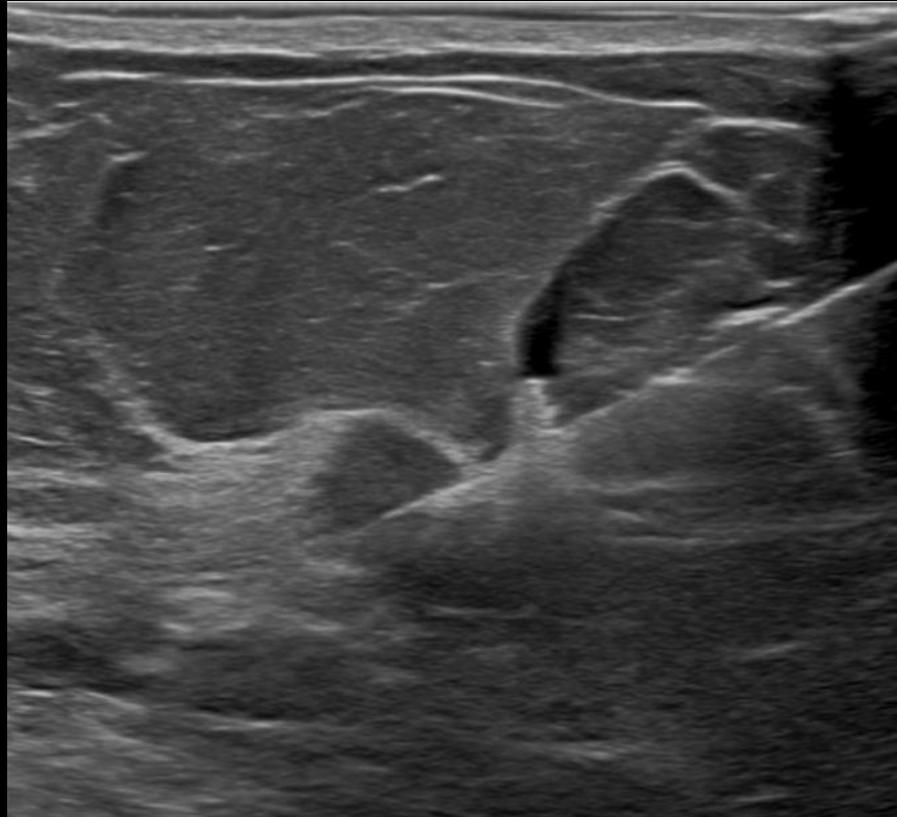
# Ultrasound of Left Breast



Deeply situated oval hypoechoic mass with irregular margins at the 1 o'clock position 3 cm from the nipple, measuring 1 x 0.9 x 0.9 cm. There is mild surrounding architectural distortion and mild posterior shadowing. Diagnosis: BIRADS-4 - Suspicious, recommend ultrasound guided core biopsy.

Sonography of the left axilla demonstrates multiple normal-appearing lymph nodes.

# Ultrasound Guided Biopsy



Left 1:00 3 CM FN BX

Invasive ductal carcinoma,  
Nottingham Score 3 (tubules 1,  
nuclear grade 1, mitotic activity 1).

Estrogen Receptor: positive  
Progesterone Receptor: positive  
HER2/neu: negative

Final Dx:

Invasive Ductal Carcinoma

# Invasive Ductal Carcinoma

Breast cancer is the most common cancer in women (besides skin cancer) and the second most common cause of cancer mortality in women (lung cancer is #1).

- Risk factors related to estrogen exposure:
  - Female sex, age (postmenopausal), early menarche/late menopause, obesity, atypical hyperplasia, first-degree relative with breast cancer
- Invasive (infiltrating) ductal carcinoma is the most common type of breast cancer (70-75% of all breast cancers).
  - May present as a mass on physical exam or on mammography.
    - Clinically detected masses are usually >2 cm while mammography can detect smaller masses.
  - Advanced tumors may have skin changes such as nipple retraction

# Invasive Ductal Carcinoma

- Ductal Carcinoma In Situ (DCIS) is a malignant proliferation of cells in ducts with no invasion of the basement membrane. It is stage 0 breast cancer (“pre-invasive”).
  - DCIS becomes invasive ductal carcinoma in ~ 30% of patients if left untreated.
- Radiographic features of invasive ductal carcinoma:
  - Spiculated, calcified, high density mass on mammography
  - Angular, hypoechogenic mass with posterior acoustic shadowing on U/S
- Breast cancer most commonly metastasizes to ipsilateral lymph nodes, bone (mixed osteolytic and osteoblastic lesions), and lung.

# Breast Imaging Reporting and Data System (BI-RADS)

Standard way of reporting breast imaging.

Every report has a BI-RADS category:

- 0** – need additional imaging and/or prior mammograms for comparison
- 1** - negative
- 2** - benign
- 3** – probably benign
- 4** - suspicious
- 5** – highly suggestive of malignancy
- 6** – known biopsy proven malignancy

# References:

- ACR Appropriateness Criteria Breast Cancer Screening. [asearch.acr.org](https://acsearch.acr.org). <https://acsearch.acr.org/docs/70910/Narrative/>. Published 2017. Accessed August 17, 2018.
- Barke LD, D'Orsi CJ, Paltiel HJ. ACR Practice Parameter for the Performance of a Breast Ultrasound Examination. American College of Radiology Practice Parameters. <https://www.acr.org/-/media/ACR/Files/Practice-Parameters/US-Breast.pdf>. Published 2016. Accessed August 17, 2018.
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- Sattar HA. *Fundamentals of Pathology: Medical Course and Step 1 Review*. Vol 1. Chicago, IL: Pathoma.com; 2017.
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