Breast Imaging Protocol
Eastern Radiologists, Inc. Breast Imaging Network

Screening Mammography
Images: Routine CC and MLO views, XCCL if needed.
Implant Patients: CC and MLO in both routine and implant displaced views

Asymptomatic patients including patients who have had a benign biopsy after initial follow-up study; diffuse breast pain; positive family history of breast cancer

Screening Protocol:

- Women at average risk for breast cancer
  ★ Annual screening from age 40

- Women with ≥ 20% lifetime risk for breast cancer based on family history (both maternal and paternal)
  ★ Yearly starting at age 30 or 10 years earlier that the age of diagnosis of the youngest relative (but not before age 25), whichever is later

- Women with mothers or sisters with pre-menopausal breast cancer
  ★ Yearly starting at age 30 or 10 years earlier that the age of diagnosis of the youngest relative (but not before age 25), whichever is later

- Women with a greater than 20% lifetime risk for breast cancer. This would include women with certain BRCA1 and BRCA2 mutations or based on first degree relatives (mothers, sisters, daughters) who are proved to have BRCA mutations
  ★ Yearly screening MRI and mammogram starting at age 30 or 10 years earlier that the age of diagnosis of the youngest relative (but not before age 25), whichever is later

- Women with histories of mantle radiation (usually for Hodgkin’s disease) received between the ages of 10 and 30
  ★ Yearly starting 8 years after the radiation therapy, but not before age 25

- Breast cancer patients with lumpectomy.
  ★ Yearly after 5 years with no recurrence
Breast cancer patients with mastectomy

* Yearly of unaffected side starting after mastectomy

* Men are never done as screening.

**Diagnostic Mammography**
Images for all diagnostic:
Routine CC and MLO
90° true lateral with abnormality closest to the image receptor (lateral abnormality gets ML while medial abnormality gets LM)
For additional imaging, please refer to specific diagnosis/abnormality

*Mark any skin lesion with a round “mole marker”.
Mark any palpable area with a triangle marker.
Mark any focal pain with a BB marker.
Surgical scars should be marked with scar markers. (Excluding breast reduction scars.)

**Palpable abnormality** (identified by referring clinician, patient or technologist):
Mark abnormality with a triangular shaped marker
3 view diagnostic mammogram
2 compression views centered directly over palpable area
Directed breast ultrasound

**Breast Pain** (only diagnostic when pain is new onset and focal):
3 view diagnostic mammogram
2 compression views directly over site of focal pain
Directed breast ultrasound
*Diffuse breast pain- routine screening images.

**Lumpectomy patients:** Diagnostic mammogram of the lumpectomy site for 5 years after lumpectomy.
3 view diagnostic mammogram
MLO magnification view of the tumor bed
CC magnification view of the tumor bed
*Return to screening after 5 years with no recurrence.

**Mastectomy patients:** Routine screening images of remaining breast. CC and MLO
The mastectomy site is not routinely imaged, even in patients with tissue reconstruction.
A clinical abnormality may have a complete diagnostic work up of the site.
Mastectomy patients with implant reconstruction need not be studied on the mastectomy side unless there are specific questions regarding implant integrity or breast abnormality. Subcutaneous mastectomy patients may have sufficient tissue to warrant imaging if there is a clinical abnormality.

* **Men are never done as screening.**

**Nipple discharge:**  *Documentation of patient history is critical*  Diagnosis of discharge being unilateral, spontaneous, bloody or watery may get a recommendation of further evaluation.

Routine CC and MLO  
90° true lateral  
90° lateral magnification view behind nipple  
Retroareolar breast ultrasound.

Bilateral, milky, greenish, opaque, etc. is not necessarily an indication for diagnostic mammogram or further evaluation.

**Short term follow-up mammogram:**  
Repeat same images originally obtained.

**Post Biopsy 6 month follow-up**  
Routine CC and MLO and 90° true lateral

**6 month follow-up**  
Routine CC, MLO, and 90° true lateral. Repeat any spots or magnification views from prior study.

**Calcifications:**  
3 view diagnostic mammogram  
Magnification views of the calcifications in CC and 90° true lateral (ML/LM)

**Diagnostic patients under age 30:**  
Focal finding (lump; focal, non-cyclical pain) as described by clinician or patient, perform directed breast ultrasound first. Ask radiologist how to proceed after ultrasound.  
If findings are:  
- *Negative, Suspicious, Equivocal*  → Diagnostic Mammogram Protocol  
- *Characteristically benign ultrasound*  → May not need further imaging
**Pregnant Patients:** Only symptomatic patients
Directed breast ultrasound first:
*Negative, Suspicious, Equivocal* → Diagnostic Mammogram Protocol
*Characteristically benign ultrasound* → No further imaging

**Lactating Patients:**
Delay screening until at least 3 months after lactation.
Diagnostic patients should nurse or pump in the mammogram facility immediately before imaging.

**Male Patients:**
Bilateral diagnostic mammogram with spot compression views in the CC and MLO.
Directed breast ultrasound only if there is a discrete mass

**Specimen Radiography:**
Magnification images in 2 orthogonal projections with minimal compression

**Breast Ultrasound**

*Review Mammogram prior to Ultrasound when applicable*

Palpable lump, abnormal mammogram, new onset and focal breast pain (clearly document reason for exam in MRS)

Information should be entered into MRS. (Description of scan, not diagnosis)

**Scanned area:** Direct scan of area of abnormality
- Correlating lesion identified → lesion identified → no need to scan more
- No lesion is found → scan all area of interest
- Lesion seen in only 1 view → scan entire half of breast (ex. Lesion seen on medial cc only, scan entire medial half of breast)

**Description of finding:**
- **Size**
  - Anechoic lesions (simple cyst) → record at least greatest dimensions
  - Solid lesions → record all 3 dimensions
  - Multiple lesions → record largest and smallest
**Orientation:**  Scan and label as radial and anti-radial

**Location:**  Location in breast and probe orientation
- Alpha
  - ex. ARAD LEFT 4 o’clock 3 cm from nipple
  - ex. RADIAL RIGHT 2 o’clock Zone 1 A
- ZONES: 1, 2, 3, Subareolar, Axillary
  - Depth: A, B, C (optional)
- Graphical
  - Accurate placement of icon on breast, turned to indicate probe direction
  - Indicate correlation to area of concern

- Description of scanned abnormality should come directly from the ACR BI-RADS-US Lexicon Classification form. (See below)

*If you have called a radiologist to check images on a diagnostic patient, put the patient’s jacket label on a log sheet and write beside patient’s name (ex. Viewed by Dr. Griffin). These images will be dictated the same day. Having these labels on the log sheet with documentation allows for tracking of these cases.

If a patient is called back for technical reasons and has been dictated, this case will be held for the same radiologist to review. If patient is called back for technical reasons with no dictation, we will have any radiologist on site to dictate case to facilitate cases being dictated within 30 days under the MQSA guidelines.

*Please call radiologist with any questions if you are unsure of correct images to obtain.

When calling radiologist for diagnostic cases, please have information in MRS so the radiologist will have all pertinent history and will be able to dictate case as soon as it is reviewed.
When to Call

Diagnostic Mammo

1. Patient lives long distance, has transportation issues, or is mentally or physically handicapped.
2. Unsure of location to work up.
3. Not sure if asymmetry needs ultrasound.
4. Focal breast pain in patient under 30 years of age, call radiologist after directed breast ultrasound.
5. After directed ultrasound on a pregnant patient.

When not necessary to call

1. Palpable lump-work up according to mammo protocol.
2. Straight forward additional views.
3. Obvious finding- work up according to mammo protocol.

Revised 02/15
A. Masses: A mass occupies space and should be seen in two different projections.

**Shape (select one)**
- Oval
- Round
- Irregular

**Description**
Elliptical or egg-shaped (may include 2 or 3 undulations, i.e. "gently lobulated" or "macrolobulated")
Spherical, ball-shaped, circular, or globular
Neither round nor oval in shape

**Orientation (select one)**
- Parallel
- Not parallel

**Description**
Long axis of lesion parallels the skin line ("wider than tall" or horizontal)
Long axis, not oriented along the skin line ("taller than wide" or vertical, includes round)

**Margin (select one)**
- Circumscribed
- Not circumscribed

**Description**
A margin that is well defined or sharp, with an abrupt transition between the lesion and surrounding tissue
The mass has one or more of the following features: indistinct, angular, microlobulated or spiculated
No clear demarcation between a mass and its surrounding tissue
Some or all of the margin has sharp corners, often forming acute angles
Short cycle undulations impart a scalloped appearance to the margin of the mass
Margin is formed or characterized by sharp lines projecting from the mass

**Lesion Boundary (select one)**
- Abrupt interface
- Echogenic halo

**Description**
The sharp demarcation between the lesion and surrounding tissue can be imperceptible or a distinct well-defined echogenic rim of any thickness
No sharp demarcation between the mass and surrounding tissue, which is bridged by an echogenic transition zone

**Echo Pattern (select one)**
- Anechoic
- Hyperechoic
- Complex
- Hypoechoic
- Isoechoic

**Description**
Without internal echoes
Having increased echogenicity relative to fat or equal to fibroglandular tissue
Mass contains both anechoic and echogenic components
Defined relative to fat; masses are characterized by low-level echoes throughout (e.g. appearance of a complicated cyst or fibroadenoma)
Having the same echogenicity as fat (a complicated cyst or fibroadenoma may be isoechoic or hypoechoic)

**Posterior Acoustic Features (select one)**
- No posterior acoustic features
- Enhancement
- Shadowing
- Combined pattern

**Description**
No posterior shadowing or enhancement
Increased posterior echoes
Decreased posterior echoes; edge shadows are excluded
More than one pattern of posterior attenuation, both shadowing and enhancement

**Surrounding Tissue**
Identifiable effect (select all that apply)
- Duct changes
- Cooper's ligament changes
- Edema
- Architectural distortion
- Skin thickening
- Skin retraction/irregularity

**Description**
Abnormal caliber and/or arborization
Straightening or thickening of Cooper's ligaments
Increased echogenicity of surrounding tissue; reticulated pattern of angular, hypoechoic lines
Disruption of normal anatomic planes
Focal or diffuse skin thickening (Normal skin is 2 mm or less in thickness except in the periareolar area and lower breasts)
Skin surface is concave or ill-defined, and appears pulled in

*Note: Irregular is used as descriptor of shape rather than margin*
Calcifications: Calcifications are poorly characterized with ultrasound but can be recognized particularly in a mass.

Calcifications
If present (select all that apply)
- Macrocalcifications
- Microcalcifications out of mass
- Microcalcifications in mass

Description
- Greater than or equal to 0.5 mm in size
- Echogenic foci that do not occupy the entire acoustic beam and do not shadow. Less than 0.5 mm in diameter
- Embedded in a mass. Microcalcifications are well depicted. The punctate, hyperechoic foci will be conspicuous in a hypoechoic mass

Special Cases: Special cases are those with a unique diagnosis or finding.

Special Cases (select all that apply)
- Clustered microcysts
- Complicated cysts
- Mass in or on skin
- Foreign body
- Lymph nodes - intramammary
- Lymph nodes - axillary

Description
- A cluster of tiny anechoic foci each smaller than 2-3 mm in diameter with thin (less than 0.5 mm) intervening septations and no discrete solid components
- Most commonly characterized by homogeneous low-level internal echoes. Complicated cysts may also have fluid-fluid, or fluid-debris levels that may shift with changes in patient’s position
- These masses are clinically apparent and may include sebaceous or epidermal inclusion cysts, keloids, moles and neurofibromas
- May include marker clips, coil, wire, catheter sleeves, silicone, and metal or glass related to trauma
- Lymph nodes resemble small kidneys with an echogenic hilus and hypoechoic surrounding cortex. Found in the breast, including axilla
- Lymph nodes resemble small kidneys with an echogenic hilus and hypoechoic surrounding cortex. Found in the breast, including axilla

Vascularity

Vascularity (select one)
- Not Present or not assessed
- Present in lesion
- Present immediately adjacent to lesion
- Diffusely increased vascularity in surrounding tissue

Assessment Category (select one)

Assessment Category (select one)
- Category 0 - Incomplete
- Category 1 - Negative
- Category 2 - Benign finding
- Category 3 - Probably benign finding
- Category 4 - Suspicious abnormality
- Category 5 - Highly suggestive of malignancy
- Category 6 - Known cancer

Description
- Additional imaging evaluation needed before final assessment
- No lesion found (routine follow-up)
- No malignant features; e.g., cyst (routine follow-up for age, clinical management)
- Malignancy is highly unlikely, e.g. fibroadenoma (initial short interval follow-up)
- Low to moderate probability of cancer, biopsy should be considered
- Almost certainly cancer; appropriate action should be taken
- Biopsy proven malignancy, prior to institution of therapy

This US lexicon classification form is for data collection and does not constitute a written US report.