## MAMMOGRAPHY

| Breast composition | 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 |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Masses             | **Shape**  
|                    | Oval  
|                    | Round  
|                    | Irregular  |
| **Orientation**    | Parallel  
|                    | Not parallel  |
| **Margin**         | Circumscribed  
|                    | Not circumscribed  
|                    | - Indistinct  
|                    | - Angular  
|                    | - Microlobulated  
|                    | - Spiculated  |
| **Density**        | High density  
|                    | Equal density  
|                    | Low density  
|                    | Fat-containing  |
| **Calcifications** | Typically benign  
|                    | Skin  
|                    | Vascular  
|                    | Coarse or "popcorn-like"  
|                    | Large rod-like  
|                    | Round  
|                    | Rim  |
| **Posterior features** | Enhancement  
|                    | Shadowing  
|                    | Combined pattern  |
| **Suspicious morphology** | Amorphous  
|                    | Coarse heterogeneous  
|                    | Fine pleomorphic  
|                    | Fine linear or fine-linear branching  |
| **Distribution**   | Diffuse  
|                    | Regional  
|                    | Grouped  
|                    | Linear  
|                    | Segmental  |

## ULTRASOUND

| Tissue composition (screening only) | a. Homogeneous background echotexture – fat  
b. Homogeneous background echotexture – fibroglandular  
c. Heterogeneous background echotexture |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Masses                             | **Shape**  
|                                    | Oval  
|                                    | Round  
|                                    | Irregular  |
| **Orientation**                    | Parallel  
|                                    | Not parallel  |
| **Margin**                         | Circumscribed  
|                                    | Not circumscribed  
|                                    | - Indistinct  
|                                    | - Angular  
|                                    | - Microlobulated  
|                                    | - Spiculated  |
| **Echo pattern**                   | Anechoic  
|                                    | Hyperechoic  
|                                    | Complex cystic and solid  
|                                    | Hypoechoic  
|                                    | Isoechoic  
|                                    | Heterogeneous  |
| **Posterior features**             | No posterior features  
|                                    | Enhancement  
|                                    | Shadowing  
|                                    | Combined pattern  |
| **Calcifications**                 | Calculations in a mass  
|                                    | Calculations outside of a mass  
|                                    | Intraductal calcifications  |
| **Associated features**            | Architectural distortion  
|                                    | Duct changes  
|                                    | Skin changes  
|                                    | Skin thickening  
|                                    | Skin retraction  |
| **Edema**                          | Absent  
|                                    | Internal vascularity  
|                                    | Vessels in rim  |
| **Vascularity**                    | Absent  
|                                    | Internal vascularity  
|                                    | Vessels in rim  |
| **Elasticity assessment**          | Soft  
|                                    | Intermediate  
|                                    | Hard  |
| **Special cases**                  | Simple cyst  
|                                    | Clustered microcysts  
|                                    | Complicated cyst  
|                                    | Mass in or on skin  
|                                    | Foreign body including implants  
|                                    | Lymph nodes – intramammary  
|                                    | Lymph nodes – axillary  
|                                    | Vascular abnormalities  
|                                    | AVMs (arteriovenous malformations/pseudoaneurysms)  
|                                    | Mondor disease  
|                                    | Postsurgical fluid collection  
|                                    | Fat necrosis  
| **Calcifications**                 | Typically benign  
|                                    | Skin  
|                                    | Vascular  
|                                    | Coarse or "popcorn-like"  
|                                    | Large rod-like  
|                                    | Round  
|                                    | Rim  |
| **Suspicious morphology**          | Amorphous  
|                                    | Coarse heterogeneous  
|                                    | Fine pleomorphic  
|                                    | Fine linear or fine-linear branching  |
| **Distribution**                   | Diffuse  
|                                    | Regional  
|                                    | Grouped  
|                                    | Linear  
|                                    | Segmental  |

## ARCHITECTURAL DISTORTION

| Asymmetries | Asymmetry  
|-------------|--------------------------------------------------|
|             | Global asymmetry  
|             | Focal asymmetry  
|             | Developing asymmetry  |

## INTRAMAMMARY LYMPH NODE

| Skin lesion | Solitary dilated duct  
|-------------|--------------------------------------------------|
|             | Skin retraction  
|             | Nipple retraction  
|             | Skin thickening  
|             | Trabecular thickening  
|             | Axillary adenopathy  
|             | Architectural distortion  
|             | Calcifications  |

## LOCATION OF LESION

| Laterality | Quadrant and clock face  
|------------|--------------------------------------------------|
|            | Depth  
|            | Distance from the nipple  |

For the complete Atlas, visit [acr.org/birads](http://acr.org/birads)
# Magnetic Resonance Imaging

## Amount of Fibroglandular Tissue (FGT)
- a. Almost entirely fat
- b. Scattered fibroglandular tissue
- c. Heterogeneous fibroglandular tissue
- d. Extreme fibroglandular tissue

## Associated Features
- Nipple retraction
- Nipple inversion
- Skin retraction
- Skin thickening
- Skin invasion
- Direct invasion
- Inflammatory cancer
- Axillary adenopathy
- Pectoralis muscle invasion
- Chest wall invasion
- Architectural distortion

## Background Parenchymal Enhancement (BPE)
- Level: Minimal, Mild, Moderate, Marked
- Symmetric or asymmetric: Symmetric, Asymmetric

## Focus
- Shape: Oval, Round, Irregular
- Margin: Circumscribed, Not circumscribed
  - Irregular
  - Spiculated
- Internal enhancement characteristics:
  - Homogeneous
  - Heterogeneous
  - Rim enhancement
  - Dark internal septations
  - Kinetic curve assessment: Initial phase, Delayed phase
    - Slow, Medium, Fast
    - Persistent, Plateau, Washout

## Non-mass Enhancement (NME)
- Distribution: Focal, Linear, Segmental, Regional, Multiple regions, Diffuse
- Internal enhancement patterns:
  - Homogeneous
  - Heterogeneous
  - Clumped
- Implants: Implant material and lumen type
  - Saline
  - Silicone
    - Intact
    - Ruptured
  - Other implant material
    - Lumen type
      - Single
      - Double
      - Other
- Implant location
  - Intracapsular silicone
    - Radial folds
    - Subcapsular line
    - Keyhole sign (teardrop, noose)
    - Liguine sign
    - Extracapsular silicone
      - Breast
    - Lymph nodes
- Water droplets
- Peri-implant fluid

## BI-RADS® Assessment Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 0:</td>
<td>Mammography: Incomplete – Need Additional Imaging Evaluation and/or Prior Mammograms for Comparison</td>
</tr>
<tr>
<td></td>
<td>Ultrasound &amp; MRI: Incomplete – Need Additional Imaging Evaluation</td>
</tr>
<tr>
<td>Category 1:</td>
<td>Negative</td>
</tr>
<tr>
<td>Category 2:</td>
<td>Benign</td>
</tr>
<tr>
<td>Category 3:</td>
<td>Probably Benign</td>
</tr>
<tr>
<td>Category 4:</td>
<td>Suspicious</td>
</tr>
<tr>
<td>Category 4A:</td>
<td>Low suspicion for malignancy</td>
</tr>
<tr>
<td>Category 4B:</td>
<td>Moderate suspicion for malignancy</td>
</tr>
<tr>
<td>Category 4C:</td>
<td>High suspicion for malignancy</td>
</tr>
<tr>
<td>Category 5:</td>
<td>Highly Suggestive of Malignancy</td>
</tr>
<tr>
<td>Category 6:</td>
<td>Known Biopsy-Proven Malignancy</td>
</tr>
</tbody>
</table>

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