



# ACR BI-RADS® Atlas Fifth Edition

## QUICK REFERENCE



### MAMMOGRAPHY

|                         |   |   |
|-------------------------|---|---|
| Breast composition      | <ul style="list-style-type: none"> <li>a. The breasts are almost entirely fatty</li> <li>b. There are scattered areas of fibroglandular density</li> <li>c. The breasts are heterogeneously dense, which may obscure small masses</li> <li>d. The breasts are extremely dense, which lowers the sensitivity of mammography</li> </ul> |   |
| Masses                  | Shape   | <ul style="list-style-type: none"> <li>Oval</li> <li>Round</li> <li>Irregular</li> </ul>  |
|                         | Margin  | <ul style="list-style-type: none"> <li>Circumscribed</li> <li>Obscured</li> <li>Microlobulated</li> <li>Indistinct</li> <li>Spiculated</li> </ul>   |
|                         | Density   | <ul style="list-style-type: none"> <li>High density</li> <li>Equal density</li> <li>Low density</li> <li>Fat-containing</li> </ul>  |
| Calcifications          | Typically benign  | <ul style="list-style-type: none"> <li>Skin</li> <li>Vascular</li> <li>Coarse or "popcorn-like"</li> <li>Large rod-like</li> <li>Round</li> <li>Rim</li> <li>Dystrophic</li> <li>Milk of calcium</li> <li>Suture</li> </ul> |
|                         | Suspicious morphology   | <ul style="list-style-type: none"> <li>Amorphous</li> <li>Coarse heterogeneous</li> <li>Fine pleomorphic</li> <li>Fine linear or fine-linear branching</li> </ul>   |
|                         | Distribution  | <ul style="list-style-type: none"> <li>Diffuse</li> <li>Regional</li> <li>Grouped</li> <li>Linear</li> <li>Segmental</li> </ul>   |
|                         | Architectural distortion  |   |
| Asymmetries             | Asymmetry   |   |
|                         | Global asymmetry  |   |
|                         | Focal asymmetry   |   |
|                         | Developing asymmetry  |   |
| Intramammary lymph node |   |   |
| Skin lesion             |   |   |
| Solitary dilated duct   |   |   |
| Associated features     | 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  |   |

### ULTRASOUND

|                                     |  |   |
|-------------------------------------|--|---|
| Tissue composition (screening only) | <ul style="list-style-type: none"> <li>a. Homogeneous background echotexture – fat</li> <li>b. Homogeneous background echotexture – fibroglandular</li> <li>c. Heterogeneous background echotexture</li> </ul> |   |
| Masses                              | Shape  | <ul style="list-style-type: none"> <li>Oval</li> <li>Round</li> <li>Irregular</li> </ul>  |
|                                     | Orientation  | <ul style="list-style-type: none"> <li>Parallel</li> <li>Not parallel</li> </ul>  |
|                                     | Margin   | <ul style="list-style-type: none"> <li>Circumscribed</li> <li>Not circumscribed</li> <li>- Indistinct</li> <li>- Angular</li> <li>- Microlobulated</li> <li>- Spiculated</li> </ul>   |
|                                     | Echo pattern   | <ul style="list-style-type: none"> <li>Anechoic</li> <li>Hyperechoic</li> <li>Complex cystic and solid</li> <li>Hypoechoic</li> <li>Isoechoic</li> <li>Heterogeneous</li> </ul>   |
| Posterior features                  | No posterior features  |   |
|                                     | Enhancement  | <ul style="list-style-type: none"> <li>Shadowing</li> <li>Combined pattern</li> </ul>   |
| Calcifications                      | Calcifications in a mass   |   |
|                                     | Calcifications outside of a mass   |   |
|                                     | Intraductal calcifications   |   |
|                                     | Associated features  | <ul style="list-style-type: none"> <li>Architectural distortion</li> <li>Duct changes</li> <li>Skin changes                             <ul style="list-style-type: none"> <li>Skin thickening</li> <li>Skin retraction</li> </ul> </li> <li>Edema</li> <li>Vascularity                             <ul style="list-style-type: none"> <li>Absent</li> <li>Internal vascularity</li> <li>Vessels in rim</li> </ul> </li> <li>Elasticity assessment                             <ul style="list-style-type: none"> <li>Soft</li> <li>Intermediate</li> <li>Hard</li> </ul> </li> </ul> |
| 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              | <ul style="list-style-type: none"> <li>AVMs (arteriovenous malformations/pseudoaneurysms)</li> <li>Mondor disease</li> </ul>   |   |
| Postsurgical fluid collection       |  |   |
| Fat necrosis                        |  |   |

### MAGNETIC RESONANCE IMAGING

|  |  |   |                        |   |       |
|--|--|---|------------------------|---|-------|
| Amount of fibroglandular tissue (FGT)        | <ul style="list-style-type: none"> <li>a. Almost entirely fat</li> <li>b. Scattered fibroglandular tissue</li> <li>c. Heterogeneous fibroglandular tissue</li> <li>d. Extreme fibroglandular tissue</li> </ul> |   | Associated features    | <ul style="list-style-type: none"> <li>Nipple retraction</li> <li>Nipple invasion</li> <li>Skin retraction</li> <li>Skin thickening</li> <li>Skin invasion                             <ul style="list-style-type: none"> <li>Direct invasion</li> <li>Inflammatory cancer</li> </ul> </li> <li>Axillary adenopathy</li> <li>Pectoralis muscle invasion</li> <li>Chest wall invasion</li> <li>Architectural distortion</li> </ul>   |       |
|  | Background parenchymal enhancement (BPE)   | <table border="1"> <tr> <td>Level</td> <td> <ul style="list-style-type: none"> <li>Minimal</li> <li>Mild</li> <li>Moderate</li> <li>Marked</li> </ul> </td> </tr> <tr> <td>Symmetric or asymmetric</td> <td> <ul style="list-style-type: none"> <li>Symmetric</li> <li>Asymmetric</li> </ul> </td> </tr> </table> |                        |   | Level |
| Level  | <ul style="list-style-type: none"> <li>Minimal</li> <li>Mild</li> <li>Moderate</li> <li>Marked</li> </ul>  |   |                        |   |       |
| Symmetric or asymmetric                      | <ul style="list-style-type: none"> <li>Symmetric</li> <li>Asymmetric</li> </ul>  |   |                        |   |       |
| Focus  |  |   | Fat containing lesions | <ul style="list-style-type: none"> <li>Lymph nodes                             <ul style="list-style-type: none"> <li>Normal</li> <li>Abnormal</li> </ul> </li> <li>Fat necrosis</li> <li>Hamartoma</li> <li>Postoperative seroma/hematoma with fat</li> </ul>  |       |
| Masses                                       | Shape  | <ul style="list-style-type: none"> <li>Oval</li> <li>Round</li> <li>Irregular</li> </ul>  |                        |   |       |
|  | Margin   | <ul style="list-style-type: none"> <li>Circumscribed</li> <li>Not circumscribed</li> <li>- Irregular</li> <li>- Spiculated</li> </ul>   |                        |   |       |
|  | Internal enhancement characteristics   | <ul style="list-style-type: none"> <li>Homogeneous</li> <li>Heterogeneous</li> <li>Rim enhancement</li> <li>Dark internal septations</li> </ul>   |                        |   |       |
| Non-mass enhancement (NME)                   | Distribution   | <ul style="list-style-type: none"> <li>Focal</li> <li>Linear</li> <li>Segmental</li> <li>Regional</li> <li>Multiple regions</li> <li>Diffuse</li> </ul>   | Implants               | <ul style="list-style-type: none"> <li>Implant material and lumen type                             <ul style="list-style-type: none"> <li>Saline</li> <li>Silicone                                     <ul style="list-style-type: none"> <li>- Intact</li> <li>- Ruptured</li> </ul> </li> <li>Other implant material                                     <ul style="list-style-type: none"> <li>Lumen type   <ul style="list-style-type: none"> <li>- Single</li> <li>- Double</li> <li>- Other</li> </ul> </li> </ul> </li> </ul> </li> <li>Implant location                             <ul style="list-style-type: none"> <li>Retroglandular</li> <li>Retropectoral</li> </ul> </li> <li>Abnormal implant contour                             <ul style="list-style-type: none"> <li>Focal bulge</li> </ul> </li> <li>Intracapsular silicone findings                             <ul style="list-style-type: none"> <li>Radial folds</li> <li>Subcapsular line</li> <li>Keyhole sign (teardrop, noose)</li> <li>Linguine sign</li> </ul> </li> <li>Extracapsular silicone                             <ul style="list-style-type: none"> <li>Breast</li> <li>Lymph nodes</li> </ul> </li> <li>Water droplets</li> <li>Peri-implant fluid</li> </ul> |       |
|  | Internal enhancement patterns  | <ul style="list-style-type: none"> <li>Homogeneous</li> <li>Heterogeneous</li> <li>Clumped</li> <li>Clustered ring</li> </ul>   |                        |   |       |
| Intramammary lymph node                      |  |   |                        |   |       |
| Skin lesion                                  |  |   |                        |   |       |
| Non-enhancing findings                       | Ductal precontrast high signal on T1W  |   |                        |   |       |
|  | Cyst   |   |                        |   |       |
|  | Postoperative collections (hematoma/seroma)  |   |                        |   |       |
|  | Post-therapy skin thickening and trabecular thickening   |   |                        |   |       |
|  | Non-enhancing mass   |   |                        |   |       |
| Architectural distortion                     |  |   |                        |   |       |
| Signal void from foreign bodies, clips, etc. |  |   |                        |   |       |

| BI-RADS® ASSESSMENT CATEGORIES  |   |
|---|---|
| <b>Category 0:</b> Mammography: Incomplete – Need Additional Imaging Evaluation and/or Prior Mammograms for Comparison<br>Ultrasound & MRI: Incomplete – Need Additional Imaging Evaluation |   |
| <b>Category 1:</b> Negative   |   |
| <b>Category 2:</b> Benign   |   |
| <b>Category 3:</b> Probably Benign  |   |
| <b>Category 4:</b> Suspicious   | <ul style="list-style-type: none"> <li>Mammography Category 4A: Low suspicion for malignancy</li> <li>&amp; Ultrasound: Category 4B: Moderate suspicion for malignancy</li> <li>Category 4C: High suspicion for malignancy</li> </ul> |
| <b>Category 5:</b> Highly Suggestive of Malignancy  |   |
| <b>Category 6:</b> Known Biopsy-Proven Malignancy   |   |