Breast Density

Update 2018:
Implications for Clinical Practice

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Disclosures

• No commercial interests, financial relationships, conflicts of interest.
References


Breast Density – Relevance

• Dense breast tissue may mask abnormal tissue on a mammogram, making mammographic signs of breast cancer more difficult to detect.

• Dense breast tissue is an independent risk factor for development of breast cancer. (7)

• Patients, providers, advocacy groups, legislators – all are looking for information and guidance.
Definitions

• Breast density (composition).
  – Proportion of radio-dense tissue to radio-lucent fat on a mammogram.
    • No correlation between CBE and mammographic density. (2)
    • Roughly 50% of women in the screening population have “dense breasts” at mammography. (1)

• BI-RADS Methodology.
  – Subjective, visual, volumetric assessment of dense tissue relative to fat in the breast.
  – Four categories (“almost entirely fatty” > “extremely dense”).
  – Indicator of relative probability that a cancer could be obscured by normal tissue.
## Density Data Summary Table*

<table>
<thead>
<tr>
<th>BI-RADS Breast Composition Categories</th>
<th>% Population</th>
<th>Mammographic Sensitivity</th>
<th>RR Breast Cancer (compared to average density = 53%)</th>
<th>RR Breast cancer (compared to average-low only = 9%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The breasts are almost entirely fatty.”</td>
<td>9%</td>
<td>88</td>
<td>Average - low</td>
<td>Average - low</td>
</tr>
<tr>
<td>“There are scattered areas of fibroglandular density.”</td>
<td>44%</td>
<td>82</td>
<td>Average</td>
<td>--</td>
</tr>
<tr>
<td>“The breasts are heterogeneously dense, which may exclude small masses.”</td>
<td>38%</td>
<td>69</td>
<td>1.2</td>
<td>2.9</td>
</tr>
<tr>
<td>“The breasts are extremely dense, which lowers the sensitivity of mammography.”</td>
<td>9%</td>
<td>62</td>
<td>2.1</td>
<td>4.6</td>
</tr>
</tbody>
</table>

*References: (1), (7), (8), (9), (10)*
Breast Density – Variance

• Subjective intra- and inter-observer variation.
  – Quantitative methods exist; not used in routine clinical practice.
• Mammographic technique.
• Physiologic factors.
  – BMI
  – Age
  – Hormonal status/tamoxifen
• Potential for year-to-year variance > confusion.
  – Patients should be informed/educated.
Breast Density - Variance
Advocacy Rationale

- Breast density is the strongest predictor of the failure of mammography screening to detect cancer. (3)
- To withhold a woman’s breast density composition from her, which may affect her health care, is denying her the right to make an informed decision. (3)
- The doctrine of informed consent exists independent of a consensus to the challenges of detecting early invasive cancers in dense breasts. (3)
- Voluntary measures will not ensure that every woman receives this critical breast health information. (3)
Breast Density Legislation

Rhode Island

Relevant: All Patients Receive BI-RADS® Breast Tissue Classification/Patterns with Dense Breast Tissue Receive Additional Language

Effective: October 1, 2014

Notification Text: Your mammogram indicates that you have dense breast tissue. Dense breast tissue is relatively common, and is found in about forty percent of women. The presence of dense tissue can make it more difficult to detect cancers on the breast by mammography because it can hide small abnormalities and may be associated with an increased risk. Hence, you may benefit from supplementary screening tests, which may include a breast ultrasound screening, or a breast MRI examination, or both, depending on your individual risk factors. We are providing this information to raise your awareness of this important factor and to encourage you to discuss your dense breast tissue, as well as other breast cancer risk factors, with your health care provider. Together, you can decide which screening options are right for you. A report of your results was sent to your physician. You should contact your physician if you have any questions or concerns about this report.

Breast Density Reporting Law

If you are interested in learning more about BI-RADS® “Breast Density Reporting” legislative efforts in your state please visit the Contact Form.
Advocacy Work

References - Guide will be updated as new studies are published

2D Mammography

2D Tomosynthesis

Contrast Enhanced Spectral Mammography

Hand-held Ultrasonound

Automated Ultrasonound

Magnetic Resonance Imaging (MRI)

Dense Breast Tissue

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Patient Guide Page 2 10.17.17. (4)
# Guidance Summary Table – Average Risk

**Table 2: ICER Summary Estimates of the Effects of Supplemental Screening on Incremental Breast Cancer Detection Rates**

<table>
<thead>
<tr>
<th>Imaging Modality</th>
<th>Incremental Cancer Detection Rate (per 1000 Patients) beyond Mammography</th>
<th>PPV$_3$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital mammography</td>
<td>4.2*</td>
<td>24</td>
</tr>
<tr>
<td>DBT†</td>
<td>1–3</td>
<td>25</td>
</tr>
<tr>
<td>Whole-breast US</td>
<td>2–3</td>
<td>6–7</td>
</tr>
<tr>
<td>MR imaging</td>
<td>8</td>
<td>22–48</td>
</tr>
</tbody>
</table>

Source.—Reference 43.  
Note.—ICER = Institute for Clinical and Economic Review, PPV$_3$ = positive predictive value for malignancy of biopsied lesions detected at screening.  
*For digital mammography, this is the screening examination baseline cancer detection rate and not the incremental cancer detection rate.  
†The ICER review evaluated DBT as a supplemental screening modality rather than as a replacement for mammography. Because most sites that implement DBT for screening use it as a primary (not supplemental) screening modality, the true effect is unknown.

Guidance Summary Table – Average Risk

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<th>BI-RADS Breast Composition Categories</th>
<th>USPSTF*</th>
<th>NCCN (AC)*</th>
<th>ACR (AC)</th>
<th>ACS</th>
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<td>“The breasts are almost entirely fatty.”</td>
<td>MG, “BA” DBT, CBE SBE</td>
<td>CBEnc, MG, DBT, “BA”</td>
<td>MG, DBT MRI, MBI</td>
<td>MG/DBT, “BA” MRI, CBE*, SBE</td>
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*Update in progress.
Take home points

• Shared decision making is a high goal in medicine.

• Breast density is a complex issue: knowledge base is expanding/evolving.
  – The answer is not simply recommending another/better test.

• True shared decision making will require nuanced understanding by both providers and by patients.
  – Risk tolerance.
Thank you.

QUESTIONS?