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Breast Screening Guidelines Update

Michael Policar, MD, MPH
Professor Emeritus of Ob, Gyn, and Repro Sciences
UCSF School of Medicine
michael.policar@ucsf.edu
Objectives

• Name 3 hormonal and 3 non-hormonal risk factors for breast cancer
• Describe two advantages and two disadvantages of clinical breast exam in asymptomatic women
• Compare the screening mammography guidelines of the USPSTF, ACOG, and the ACS
• Describe the BI-RADS categories for each of breast imaging (with mammography, DBT and breast ultrasound) and the four BI-RADS categories of breast density.
• There are no relevant financial relationships with any commercial interests to disclose
Breast Cancer Diagnostic Algorithms for Primary Care Providers, June 2011 (4th Ed.)

The Breast Cancer Diagnostic Algorithms for Primary Care Providers was developed to aid primary care clinicians with the work-up of breast abnormalities and to promote the practice of routine risk assessment. Originally published in 1997, the 4th edition incorporates the latest research and guideline updates into a brief, user-friendly format.

Health care providers are encouraged to use the algorithms as an adjunct to clinical decision-making, they are not intended to replace clinical judgment with regard to individual cases.

Contents

1. Risk Assessment Table
2. New Palpable Mass
3. Abnormal Screening Mammogram
4. Spontaneous Unilateral Nipple Discharge
5. Breast Skin Changes/Nipple Retraction
6. Breast Pain in a Non-Lactating Woman
7. Breast Biopsy
Breast Cancer Epidemiology

• Lifetime risk of breast cancer if woman lives to
  – 50 years old 1/50 women
  – 60 years old 1/24 women
  – 80 years old 1/10 women
  – 104 years old 1/8 women

• 5.6% of all women 50-70 yo diagnosed with breast cancer

• Lifetime risk of breast cancer death is 3.2% (1/34)

• 5 year breast cancer survival: 90%
  – Stage 1: 100%
  – Stage 2: 93%
  – Stage 3: 72%
  – Stage 4: 22%
Breast Cancer: Effect of Age

Incidence of breast cancer increases with age
• Median age at diagnosis: 62 years old
  – Black women: 59 years old
  – White women: 63 years old
• Median age of death: 68 years old

Women under 50 yrs old
• Less common
• More likely genetic ass^n
• Rates: Afr Am > white
• 5 year survival: 79%

Women older than 50 yrs old
• More common
• Less likely genetic
• Rates: white > Afr Am
• 5 year survival: 87%
Not All Breast Cancer Risk Factors are the Same

• RR= 1.3
  – >25g alcohol/day
  – Combined hormone therapy (not estrogen alone)
  – Nullparity or age first birth > 30 years of age
  – Body mass index >30 kg/m²
  – First-degree relative with breast cancer
  – History of breast biopsy
• RR= 2.0
  – Two first-degree relatives with breast cancer
  – History of proliferative disease without atypia
• RR= 4.0
  – LCIS or ADH (atypical ductal hyperplasia)

Hereditary Breast and Ovarian Cancer Syndrome (HBOCS)

- Gene mutations explain 5-6% of breast cancer cases
- 4.5% cases of breast cancer due to BRCA- 1 or -2 mutations
  - BRCA are “tumor suppressor” genes; two normal genes prevent DNA transcription errors
  - Mutated gene may be transmitted from mother or father
  - Two hit hypothesis: one mutated BRCA gene is inherited, the 2nd mutation is acquired
  - More likely aggressive, triple-negative (E, P, HER2/neu)

ACOG Practice Bulletin 182. HBOCS. Obstet Gynecol 2017; e110-126
HBOC: Epidemiology

• Overall prevalence
  – 1/300 -1/800 U.S. women have a BRCA-1 or -2 mutation
  – 1/30 Jewish Ashkenazi women (founder mutation)

• Prevalence in women with breast cancer
  – 1/3 of breast cancer cases 20-29 years old
  – Of women with breast cancer <50 years old and one close relative with breast cancer <50 years old, mutation is present in 18%
HBOC: Epidemiology

• Of families with early breast cancer clusters
  – 45% have BRCA-1
  – 35% have BRCA-2
  – 20% have other mutations

• If BRCA positive, lifetime cancer risks
  – Breast cancer by age 50 50%
  – Breast cancer by age 70 87%
  – Ovarian cancer by age 70
  • BRCA 1 43% (39-46%)
  • BRCA 2 15% (10-27%)
### Who Should Have HBOC Counseling and Testing?

<table>
<thead>
<tr>
<th>Women who have Family Members with Breast, Ovarian, Tubal, or Peritoneal Cancer</th>
<th>The USPSTF recommends that primary care providers screen women who have family members with breast, ovarian, tubal, or peritoneal cancer with 1 of several screening tools designed to identify a family history that may be associated with an increased risk for potentially harmful mutations in breast cancer susceptibility genes (<em>BRCA1</em> or <em>BRCA2</em>). Women with positive screening results should receive genetic counseling and, if indicated after counseling, <em>BRCA</em> testing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women Whose Family History is not Associated with an Increased Risk</td>
<td>The USPSTF recommends against routine genetic counseling or <em>BRCA</em> testing for women whose family history is not associated with an increased risk for potentially harmful mutations in the <em>BRCA1</em> or <em>BRCA2</em> genes.</td>
</tr>
</tbody>
</table>

- Tools show who *should receive counseling*, not testing
- ACA requires *no cost sharing* for counseling and testing for women who have not been diagnosed previously with a cancer.
B-RST™ is a screening tool that asks questions about family history to assess if you (or your patient) may be at risk for Hereditary Breast and Ovarian Cancer.

This tool is designed to quickly identify who should be referred for cancer genetic counseling to formally evaluate their family history and discuss the benefits and limitations of genetic testing for Hereditary Breast and Ovarian Cancer.
What?

Breast cancer risk screening tools

Some referred for

Genetics Counseling

Some will choose

BRCA Testing

Who?

WHC or Primary Care Provider

• Genetics counselor
• Medical or GYN Oncologist
• *Specially trained* GYN or APC

Reference lab
(single site, multi-site, comprehensive sequencing)
Non-familial Risk Factors

- Body weight and fat intake (RR= 1.2-1.5)
  - High fat diet
  - Obese women
  - Greater PMP weight gain
- Alcohol intake >3 drinks/week (RR= 1.3-1.6)
- Chest wall radiation (e.g., Hodgkin’s Disease)
- Geography
  - Urban > rural residence
  - Higher SES > lower SES
  - 2nd generation immigrant rates equal to natives
<table>
<thead>
<tr>
<th>Lesion Type</th>
<th>Lesion Subtype*</th>
<th>RR Future Breast Ca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonproliferative</td>
<td>Simple cysts</td>
<td>1.17 (0.94–1.47)</td>
</tr>
<tr>
<td></td>
<td>Mild hyperplasia (usual type)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Papillary apocrine change</td>
<td></td>
</tr>
<tr>
<td>Proliferative without atypia</td>
<td>Fibroadenoma</td>
<td>1.76 (1.58–1.95)</td>
</tr>
<tr>
<td></td>
<td>Giant fibroadenoma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intraductal papilloma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate/florid hyperplasia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sclerosing adenosis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radial scar</td>
<td></td>
</tr>
<tr>
<td>Atypical hyperplasia</td>
<td>Atypical ductal hyperplasia</td>
<td>3.93 (3.24–4.76)</td>
</tr>
<tr>
<td></td>
<td>Atypical lobular hyperplasia</td>
<td></td>
</tr>
<tr>
<td>Lobular CIS</td>
<td></td>
<td>6.9–11</td>
</tr>
</tbody>
</table>

ACOG Practice Bulletin #164, 2016
Breast Density and Breast Cancer Risk

- Women with dense breasts
  - Have a slightly increased breast cancer risk
  - Are more likely to have a cancer missed on mammography (reduced sensitivity)
  - Are more likely to develop breast cancer if the density score *increases* when it should be decreasing
- Effects are proportional to the degree of density
Factors Affecting Breast Density

• Breast density *decreases* with
  – Advancing age
  – Menopause
  – Heavier body weight
  – Earlier childbearing

• Breast density *increases*
  – In women using hormone therapy
### BI-RADS Breast Density Reporting Categories and Breast Cancer Risk

<table>
<thead>
<tr>
<th>BI-RADS</th>
<th>Description</th>
<th>% of Pop</th>
<th>Sensitivity %</th>
<th>RR Breast CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Almost all fat</td>
<td>10</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Scattered fibroglandular densities</td>
<td>43</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Heterogeneously dense</td>
<td>39</td>
<td>69</td>
<td>1.2 (compared to average density)</td>
</tr>
<tr>
<td>4</td>
<td>Extremely dense</td>
<td>8</td>
<td>62</td>
<td>2.1 (compared to average density)</td>
</tr>
</tbody>
</table>
Mammographic Breast Density

Longitudinal Measurement of Clinical Mammographic Breast Density

• Less density is associated with lower breast cancer risk
• Increased density over time (average 3 years) is associated with increased breast cancer risk
  – Cat 1 → 2 (5.6x risk) compared to BI-RADS cat 1
  – Cat 1 → 3 (10x risk)
• Density changes should be factored into risk calculations

Kerlikowske K, JNCI 2007;99:386
Breast Cancer and *Endogenous* Hormones

- Reproductive history
  - First term pregnancy < 30 years old is protective
    - 3-fold increased risk if first term pregnancy at 35 years old compared to 18 years old
    - Increased risk with life-long nulliparity
  - Transient *increased* risk in 2-3 years after delivery
  - Greater protection with larger number of term pregnancies (increased parity)
  - Lactation: minimally positive or no effect
Breast Cancer and *Endogenous* Hormones

- Longer interval of endogenous estrogen production is a weak risk factor
  - Early menarche (< 12 years old)
  - Late menopause (> 55 years old)
- Oophorectomy at under 35 years old
  - 75% reduction in risk
- 1st trimester abortion
  - If recall bias avoided, no increased risk if abortion before first term pregnancy
Hormone Therapy & Breast Cancer

- **EPT** use >4-5 years increased breast cancer risk
  - Relative risk of breast cancer = 1.26
  - 4-6 additional cases/10,000/yr of EPT for ≥ 5 yrs
  - Increased absolute risk of EPT in WHI: “rare”

- **Estrogen only** regimens
  - WHI ET trial showed no increased risk after 7.1 yrs
    - 6 fewer cases/10,000 women/yr of ET use
  - Other studies showed that ET for < 5 yrs has little or no impact on breast cancer risk
Current Concepts...Based on WHI Re-Analyses

• Combined E+P use
  – Risk may be greater when started closer to menopause
  – Increased risk not limited to hormone receptor–positive tumors
  – Interferes with mammographic detection → cancers diagnosed at more advanced stage
  – Increased breast cancer mortality
  – No differences in breast cancer risk among progestin types

• Estrogen-alone use
  – E alone reduces breast cancer risk
  – E alone does not substantially interfere with breast cancer detection by mammography

The Breast Cancer Risk Assessment Tool is an interactive tool designed by scientists at the National Cancer Institute (NCI) and the National Surgical Adjuvant Breast and Bowel Project (NSABP) to estimate a woman's risk of developing invasive breast cancer. The tool has been updated for African American women based on the Contraceptive and Reproductive Experiences (CARE) Study. See About the Tool for more information.

Before using the tool, please note the following:

- The Breast Cancer Risk Assessment Tool was designed for use by health professionals. If you are not a health professional, you are encouraged to discuss the results and your personal risk of breast cancer with your doctor.
Detailed Breast Cancer Risk Calculator
Estimate your risk of breast cancer by answering these questions.

1. How many of your sisters, daughters or mother had breast cancer? 1 person

2. How many benign breast biopsies have you had? None

3. At what age did your menstrual cycles begin? 12-13 yrs

4. At what age did you give birth to your first child? 30 yrs or later

5. What is your age? 55 years

6. My Race is: White (Caucasian)

Your chance of being diagnosed with breast cancer is estimated to be: 16.2%
within lifetime (to age 90).

- 2.8% within 5 years,
- 11.1% within 20 years,
- 14.5% within 30 years.

Your true risk could be somewhere within a range around these estimates.

http://www.halls.md/breast/riskcom.htm
### Risk Calculator V2

**1.** Does the woman have a history of breast cancer or of ductal carcinoma in situ (DCIS), breast augmentation, or mastectomy?

**2.** What is the woman's age?

**3.** What is the woman's race/ethnicity?

**4.** Have any of the woman's first-degree relatives (mother, sister or daughter) been diagnosed with breast cancer?

**5.** Has the woman had prior breast biopsies (positive or negative)?

**6.** What is the woman's BI-RADS® breast density (radiologic assessment of the density of breast tissue by radiologists who interpret mammograms)?

*You can click a question number for a brief explanation of the risk factor.*

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https://tools.bcsc-scc.org/bc5yearrisk/calculator.htm **Calculate Risk**
Natural History of Breast Cancer

Diameter (cm)

Years of Growth

Number Of Cells (size)

Number of Doublings (Time)

Pre-mammographic <1 mm

Preclinical <1 cm

1 2 3 4 5 6 7 8 9 10 11 12 13

1.0 0.5 1.0 2 4 8 16cm

Natural History of Breast Cancer
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breast Self Exam (BSE)</strong></td>
<td>[D]</td>
<td>Breast self-awareness</td>
<td>Not recommended</td>
</tr>
<tr>
<td><strong>Clinical Breast Exam (CBE)</strong></td>
<td>[I]</td>
<td>Shared decision (SD)</td>
<td>Not recommended</td>
</tr>
</tbody>
</table>
| **Mammogram**        | 40-49: [C] -optional every 2 yrs   | 40-49: offer and initiate every 1-2 yrs | • 40-44: optional  
                      | 50-74: [B] -every 2 yrs        | 50-74: recommend every 1-2 yrs          | • 45-54: every year  
                      | >75:   [I]                | >75: SD                  | • 55+: biennial  
                      |                           |                         | • Life expectancy >10 yrs: biennial |
Breast Self-Examination (BSE)

• Two very large RCTs (Shanghai, Russia)
  – Mortality, survival equal in treatment and controls
  – SBE no better than coincidental discovery of mass

• USPSTF 2009/16
  – Grade [D]: recommend against teaching BSE
  – If BSE chosen, provide instruction in use
  – Acceptable not to do BSE or to do irregularly
  – Goal of BSE is “increased breast awareness”
Breast Self-Awareness (BSA)

- BSA is defined as women’s awareness of the normal appearance and feel of their breasts.
- Endorsed by ACOG, ACS, PPFA, and the NCCN.
- The effect of BSA education has not been studied.

**Rationale**

- ½ of breast cancer cases ≥50 y.o. and 70% of cases in younger women detected incidentally by themselves.
- New cases can arise during screening intervals, and BSA may prompt women not to delay in reporting breast changes based on a recent negative screening result.

ACOG Practice Bulletin No. 179, 2017
Screening Clinical Breast Exam

The ACS does not recommend clinical breast examination for breast cancer screening among average-risk women at any age (Q)
Screening Clinical Breast Exam

- **No evidence of any benefit** of a CBE alone or in conjunction with screening mammography
  - No data on whether outcomes are improved
- Moderate-quality evidence that adding CBE to mammography increases the false-positive rate
- CBE detects a small number of additional breast cancers (2%-6%) missed by mammography alone
“Recognizing the time constraints in a typical clinic visit, clinicians should use this time instead for ascertaining family history and counseling women regarding the importance of being alert to breast changes and the potential benefits, limitations, and harms of screening mammography”
Screening clinical breast exam *may be offered*...

- To women in the context of shared decision making that recognizes the additional benefits and harms of CBE beyond screening mammography (Q)
  - To women ages 19–39 years every 1–3 years (Q)
  - Annually to women aged 40 years and older (Q)

Q: “Qualified” recommendations rely primarily on expert consensus
The USPSTF recommends

- **Biennial** mammography 50-74 years  [ B ]
- **Against** routine mammography 40-49 yrs  [ C ]

• Evidence is insufficient to assess benefits, harms of
  - Mammography in women >75 years old  [ I ]
  - Digital mammography or MRI (vs film)  [ I ]
• The USPSTF recommends against *routine* screening mammography in women aged 40 to 49 years [C]
  – The decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take patient context into account, including the patient's values regarding specific benefits and harms
  – Even with 15% mortality reduction, there is “moderate certainty that the net benefit is small”
# Relative Risk and Number Needed to be Screened to Prevent One Death for Breast Cancer by Age Group

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Relative Risk</th>
<th>Number Needed to be Screened to Prevent One Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>39-49</td>
<td>0.85</td>
<td>1904</td>
</tr>
<tr>
<td>50-59</td>
<td>0.86</td>
<td>1339</td>
</tr>
<tr>
<td>60-69</td>
<td>0.68</td>
<td>377</td>
</tr>
<tr>
<td>70-74</td>
<td>1.12</td>
<td>Not available</td>
</tr>
</tbody>
</table>

*Meta-analysis of RCTs of screening mammography*

*Ann of Intern Med 2009; 151:716*
Screening Mammography: Harms

- Harms more likely in younger women
- Physical and psychological harms of *over-diagnosis*
  - Unnecessary diagnostic imaging tests
  - Biopsies in women without cancer
  - Inconvenience 2º to false-positive screening results
- Harms of *over-treatment* of a breast cancer that would
  - Not become apparent during a woman’s lifetime
  - Have become apparent, but wouldn’t have shortened life
- Radiation exposure (minor concern)
# Breast Cancer Screening

**USPSTF Rationale**

In women 40-49, equal benefit, but more potential harms

<table>
<thead>
<tr>
<th>Age</th>
<th>Relative reduction in Br Ca deaths</th>
<th>Number needed to invite</th>
<th>Relative Harms</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59</td>
<td>14%</td>
<td>1339</td>
<td>Less (fewer false positives)</td>
<td>B</td>
</tr>
<tr>
<td>40-49</td>
<td>15%</td>
<td>1904</td>
<td>More (more false positives)</td>
<td>C</td>
</tr>
<tr>
<td>Age (years)</td>
<td>Recommendation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-39</td>
<td>Screen if specified high risk factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>Discuss pros and cons of screening*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>Encourage screening*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-69</td>
<td>Strongly encourage screening*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-74</td>
<td>Discuss pros and cons of screening*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;75</td>
<td>Little data</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*When done, perform routine mammography biennially*
Annual Mammographic Screening By Age 40 or Earlier

- 10 years before the age of diagnosis of a first-degree relative with breast cancer, but not before the age of 30
- After the diagnosis of breast cancer
- Age 25–30 years if known or suspected BRCA2 carrier
- Age 20–25 years if known or suspected BRCA1 carrier
- 6–12 months after radiation therapy if breast tissue is conserved, then Q6–12 months for 1–2 years, then annually
- A breast biopsy shows LCIS or atypical ductal hyperplasia
- 8 years after radiation therapy to the chest and/or mediastinum, or by age 25 whichever occurs last.

Berg WA, AJR:2009;192:390-399
Supplemental Breast Cancer Screening Tests

- **Digital breast tomosynthesis (3D mammography)**
  - Multiple “cuts” to produce 3D image
  - Mitigates effect of overlapping tissue
  - Slightly better detection rate; highest specificity (low call-back)

- **Magnetic resonance imaging (MRI)**
  - Special “breast coil” is necessary
  - Highest sensitivity; poor specificity

- **Breast ultrasound (BUS)**
  - Best for women under 40 with dense breasts
  - Poorest specificity of all of the screening tests
Digital Breast Tomosynthesis

- Tissue superimposition *hides* pathologies in 2D
- Tissue superimposition *mimics* pathologies in 2D

Lesion Superimposed in 2D
3D Principle of Operation

- X-ray tube moves in an arc across the breast
- A series of low dose images are acquired from different angles
- Projection images are reconstructed into 1 mm slices
2D Mammogram

Tomosynthesis

Better Sensitivity
2D Mammogram

Tomosynthesis

Fewer Recalls
Breast Density BI-RADS Score 3 or 4
Vanderbilt Breast Center Recommendations

1. Not dense/ no additional risk factors
   – Annual screening mammography (SM)

2. Dense/ no additional risk factors
   – Discussion with provider re: risk factors
   – No desire for supplemental screening: annual SM
   – Supplemental screening desired: DBT + BUS

3. Dense/ with additional risk factors
   – More detailed risk assessment (multiple risk models)
     • 12-20% lifetime risk – as in #2
     • >20% lifetime risk – annual screening MRI + SM

https://www.vanderbilthealth.com/breastcenter/44616
<table>
<thead>
<tr>
<th>Assessment</th>
<th>% pts</th>
<th>Cancer risk</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>Further imaging</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Negative</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Benign finding</td>
<td></td>
</tr>
<tr>
<td>3*</td>
<td></td>
<td>Probably benign</td>
<td>6 month follow-up twice, then annually till stable for 2-3yrs</td>
</tr>
</tbody>
</table>

**3*: The ACR advises against the use of BI-RADS category 3 for screening mammograms. Immediate evaluation with additional mammographic views *and* breast ultrasound is required to render Category 3.
# BIRADS: Breast Imaging Reporting and Data System
Mammogram, Ultrasonography, MRI

<table>
<thead>
<tr>
<th>Assessment</th>
<th>% pts</th>
<th>Cancer risk</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4       Suspicious</td>
<td>0.4</td>
<td>50%</td>
<td>Biopsy</td>
</tr>
<tr>
<td>4A      Low suspicion</td>
<td></td>
<td>2% to ≤10%</td>
<td></td>
</tr>
<tr>
<td>4B      Moderate suspicion</td>
<td></td>
<td>&gt;10% to ≤50%</td>
<td></td>
</tr>
<tr>
<td>4C      High suspicion</td>
<td></td>
<td>&gt;50% to &lt;95%</td>
<td></td>
</tr>
<tr>
<td>5       Highly suggestive</td>
<td>0.1</td>
<td>&gt;95%</td>
<td>Biopsy</td>
</tr>
<tr>
<td>6       Known biopsy-proven malignancy</td>
<td></td>
<td>N/A</td>
<td>Surgical excision</td>
</tr>
</tbody>
</table>
Summary: Breast Imaging

Breast history
- Symptoms
- Prior disease
- Implants

Personal risk factor review

Clinical breast examination

Screening
- Mammogram
  - 2D (DM)
  - 3D (DBT)

Diagnostic Breast Imaging
- Dx Mammogram
- Breast ultrasound
- Breast MRI

BI-RADS reports
- 0
- 1,2
- 3
- 4,5

Biopsy
- Benign

Follow-up
- Final result
Patients: Take Home Messages

- Pay attention to changes in your breasts...and report changes to your health care provider.
- Start **routine** mammograms starting at 50 years old, earlier by choice or based upon individual risk.
- If you are found to have a breast lump, a negative mammogram **does not** exclude cancer.
- If you are diagnosed with cancer, insist that your case is discussed at a “Breast Cancer Conference”
  - Radiation oncologist
  - General surgeon
  - Medical oncologist
  - Possibly: Plastic surgeon, clinical trial staff
Providers: Take Home Messages

• Clinical conclusions
  – Advise biennial mammograms for women 50-74
  – Discuss benefits and hazards with women 40-49; biennial screening if mammography done
  – Start at 40 years of age or earlier for women with increased breast cancer risk

• Policy conclusions
  – The benefit of mammograms in women 40-49 is small and expensive, but it can save lives
Providers: Take Home Messages

- Order mammograms at a high volume facility
- Consider CBE in women 50-69 who refuse mammogram
- Sufficient evidence not to recommend BSE
- Mutation carriers may benefit from MRI + mammography
- Ultrasound not recommended for breast cancer screening
Appendix
ACS: Breast Screening with MRI as an Adjunct to Mammography

Annual MRI Screening

- BRCA mutation
- First-degree relative of BRCA carrier, but untested
- Lifetime risk 20–25% or greater, as defined by BRCA-PRO
- Radiation to chest between age 10 and 30 years
- Li-Fraumeni and Cowden syndrome and first-degree relatives

Saslow D, CA Cancer J Clin 2007;57:75–89
ACS: Breast Screening with MRI as an Adjunct to Mammography

Insufficient evidence to recommend for or against

- Lifetime risk 15–20%, as defined by BRCA-PRO
- LCIS, atypical lobular hyperplasia (ALH), atypical ductal hyperplasia (ADH)
- Heterogeneously or extremely dense breasts
- Personal history of breast cancer, including DCIS

Recommend against MRI screening

- Women at < 15% lifetime risk
References

• ACOG Committee Opinion #625 Management of Women with Dense Breasts Diagnosed by Mammography. Obstet Gynecol 2015;125:750-1
Hereditary Breast Cancer Risk Assessment

Hereditary Breast Cancer Risk Calculators

• **BRCAPRO**
  - www4.utsouthwestern.edu/breasthealth/cagene/

• **Tyrer–Cuzick or IBIS**
  - www.ems-trials.org/riskevaluator/

• **BOADICEA**
  - www.srl.cam.ac.uk/genepi/boadicea/boadicea_home.html