Breast Cancer Assessment and Risk-Based Screening

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Risk Assessment and Risk-Based Screening

Risk Varies, So Should Screening
Gail Model
Estimates 5-Yr & Lifetime Risk

- Prior Breast Biopsies
- Age
- 1st Degree Relatives
- Menstrual history
- Age at first childbirth
- Race & Ethnicity
- Does not include Paternal hx, OvCA

5-Yr and Lifetime Risk of BC
Hall Detailed Breast Cancer Risk Calculator
Includes Other Risk Modifiers

http://www.halls.md/breast/risk.htm
Hereditary Breast Cancer (e.g., BRCA1 or BRCA2)

**The Clues**

- Cancer in multiple generations
- >2 people with cancer in 1 generation
- Earlier than average ages of diagnosis (<50)
- Individuals with >1 diagnosis of cancer
- Cancers that run together
  - Example - Breast and ovarian
### Risk Assessment Tools
(Suspected Hereditary Breast CA)

<table>
<thead>
<tr>
<th>BRCAPRO</th>
<th>Myriad Risk Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Assesses risk of carrying a mutation or developing breast or ovarian cancer</td>
<td>• Assesses risk of BRCA1 or BRCA2 mutation</td>
</tr>
<tr>
<td>• Family history of breast &amp; ovarian CA; pedigree</td>
<td>• Family history of Breast and/or Ovarian Cancer</td>
</tr>
<tr>
<td>• <a href="http://www4.utsouthwestern.edu/breasthealth/cagene">www4.utsouthwestern.edu/breasthealth/cagene</a> (Google: BRCAPro)</td>
<td>• Breast Cancer &gt;50 not considered</td>
</tr>
<tr>
<td></td>
<td>• <a href="http://www.myriad.com">www.myriad.com</a></td>
</tr>
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</table>

Or Refer to Genetic Counselor
Understanding Level of Risk

Personal and Family History

Risk

- Average <15% Lifetime Risk
  - Follow Standard Screening guidelines
- Moderate 15-40% Lifetime Risk
  - Follow Personalized (Enhanced) Screening guidelines
- High/Genetic >40% Lifetime Risk
  - Follow Personalized (Enhanced) Screening guidelines and see a Genetic counselor for possible genetic testing
Average Level of Risk

- **Personal and Family History**
  - **Average**
    - <15% Lifetime Risk
      - Follow Standard Screening guidelines
  - **Moderate**
    - 15-40% Lifetime Risk
      - Follow Personalized (Enhanced) Screening guidelines
  - **High/Genetic**
    - >40% Lifetime Risk
      - Follow Personalized (Enhanced) Screening guidelines and see a Genetic counselor for possible genetic testing
Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement

U.S. Preventive Services Task Force*

Description: Update of the 2002 U.S. Preventive Services Task Force (USPSTF) recommendation statement on screening for breast cancer in the general population.

Methods: The USPSTF examined the evidence on the efficacy of 5 screening modalities in reducing mortality from breast cancer: film mammography, clinical breast examination, breast self-examination, digital mammography, and magnetic resonance imaging in order to update the 2002 recommendation. To accomplish this update, the USPSTF commissioned 2 studies: 1) a targeted systematic evidence review of 6 selected questions relating to benefits and harms of screening, and 2) a decision analysis that used population modeling techniques to compare the expected health outcomes and resource requirements of starting and ending mammography screening at different ages and using annual versus biennial screening intervals.

Recommendations: The USPSTF recommends against routine screening mammography in women aged 40 to 49 years. The decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take into account patient context, including the patient’s values regarding specific benefits and harms. (Grade C recommendation)

The USPSTF recommends biennial screening mammography for women between the ages of 50 and 74 years. (Grade B recommendation)

The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of screening mammography in women 75 years or older. (I statement)

The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of clinical breast examination beyond screening mammography in women 40 years or older. (I statement)

The USPSTF recommends against clinicians teaching women how to perform breast self-examination. (Grade D recommendation)

The USPSTF concludes that the current evidence is insufficient to assess additional benefits and harms of either digital mammography or magnetic resonance imaging instead of film mammography as screening modalities for breast cancer. (I statement)


For author affiliation, see end of text.

* For a list of the members of the USPSTF, see the Appendix (available at www.annals.org).
2009 US Preventive Task Force
Breast Cancer Screening
Recommendations

<table>
<thead>
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<th>Annual screening mammography in women age 40-49</th>
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<td>Annual screening mammography in women age 75 and older</td>
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<tr>
<td>AGAINST</td>
<td>Annual screening mammography in women age 50-74</td>
</tr>
<tr>
<td>FOR</td>
<td>Only screening ages 50-74 every other year</td>
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## 2009 US Preventive Task Force Breast Cancer Screening Recommendations-REVISED

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USPSTF: Ask Your Doctor?
USPSTF Position

• Rejected by
  – American Cancer Society
  – American Society of Breast Surgeons
  – American Society of Breast Diseases
  – American College of Obstetricians & Gynecologists
  – American College of Radiology
  – Healthcare Reform Bill
Standard Screening Guidelines
for the average risk woman

• **Age 20-39**
  – Discuss +/- BSE, technique
  – Prompt reporting of Symptoms
  – CBE Q 3 yrs

• **Age 40 and older**
  – Optional BSE
  – CBE Annually
  – MMG Annually

*American Cancer Society 2010*
BSE

• NO Level I Evidence Support Use of BSE

• BUT!

• Absence of Level I Evidence is not evidence of absence
Annual Breast Exams, Mammograms Still Key to Detecting Breast Cancer

Third of tumors were spotted in a breast exam by a doctor or a self-exam, study finds

- Presented at 2011 Breast Cancer Symposium
- 6000 Women in Michigan
- Overall, 2/3 MMG detected, 1/3 Palpation-Detected (90% by patient, 10% by HCP)
- Women under 50: 48% palp, 46% MMG
- Lumpectomy rate: 73% (MMG) vs 54% (palp)
Breast Cancer Mortality Reduction Depends on Screening Frequency

<table>
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<tr>
<th>Screening Frequency</th>
<th>Patient Ages (Yrs)</th>
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<tr>
<td></td>
<td>40-49</td>
<td>50-59</td>
</tr>
<tr>
<td>Biennial</td>
<td>24%</td>
<td>39%</td>
</tr>
<tr>
<td>Annual</td>
<td>35%</td>
<td>46%</td>
</tr>
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</table>

Breast Cancer Mortality Reduction Depends on Length of Follow-up

<table>
<thead>
<tr>
<th>Year</th>
<th>Follow-up Years</th>
<th>Mortality Reduction</th>
<th>R.R. (95% C.I.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>7-12</td>
<td>13%</td>
<td>0.87 (0.63-1.20)</td>
</tr>
<tr>
<td>1996</td>
<td>10-15</td>
<td>23%</td>
<td>0.77 (0.54-1.01)</td>
</tr>
<tr>
<td>1997</td>
<td>11.4-15.2</td>
<td>29%</td>
<td>0.71 (0.57-0.89)</td>
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Screening Mammograms
Standard 2-View

MLO Projection
Medio-Lateral Oblique

CC Projection
Cranial-Caudal
Moderate Level of Risk

Risk

Average
<15% Lifetime Risk

Screening Recommendation

Follow Standard Screening guidelines

Moderate
15-40% Lifetime Risk

Follow Personalized (Enhanced) Screening guidelines

Personal and Family History

High/Genetic
>40% Lifetime Risk

Follow Personalized (Enhanced) Screening guidelines and see a Genetic counselor for possible genetic testing
Enhanced Screening recommendations:

- Starting Age 18
  - Optional Monthly BSE

- Starting Age 25
  - Annual or semi-annual CBE

- Starting Age 35*
  - Mammograms yearly*
  - MRI Annually* (if 20% or higher lifetime risk)

- Chemoprevention

(* Or beginning 5-10 yrs prior to earliest age of breast cancer diagnosed in a 1st degree relative)
Screening Breast MRI For Early Detection
Screening Breast MRI Along With Mammography

- BRCA 1 or BRCA 2 Mutations
- 1st Degree Relative w/ BRCA 1 or 2 Mutation
- Lifetime risk of Breast Cancer >20-25%
- Chest XRT between age 10-30
- Cancer syndromes [e.g., Cowden Syndrome, PTEN]

Chemoprevention Drugs

Tamoxifen (Nolvadex)      Raloxifene (Evista)

Decrease Risk of Estrogen Sensitive Cancers by 50%
Taken by mouth daily for 5 years
High Level of Risk

**Personal and Family History**

- **Average**
  - <15% Lifetime Risk
  - Follow Standard Screening guidelines

- **Moderate**
  - 15-40% Lifetime Risk
  - Follow Personalized (Enhanced) Screening guidelines

- **High/Genetic**
  - >40% Lifetime Risk
  - Follow Personalized (Enhanced) Screening guidelines and see a Genetic counselor for possible genetic testing
Risk-Based Management
High Risk

- **Enhanced Screening recommendations:**
  - **Starting Age 18**
    - Optional Monthly BSE
  - **Starting Age 25**
    - Annual or semi-annual CBE
  - **Starting Age 30**
    - Annual Mammograms
    - Annual MRI

- **Risk-Reduction Therapy**
  - Chemoprevention
  - Prophylactic Mastectomy and Oophorectomy
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