Identification, Screening and Management of Women at High Risk of Breast Cancer

Helen Cappuccino, MD, FACS
Department of Surgery
Activity Overview
The goal of this activity is to discuss the high risk for Breast Cancer; why, how to screen, and how to decrease.

Target Audience
This activity is intended for primary care physicians, gynecologist, and general surgeons.

Instructions to Receive Credit
To receive credit, read the introductory CME material, watch the webcast, and complete the evaluation, attestation, and post-test, answering at least 70% of the post-test questions correctly.
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Helen Cappuccino, MD, FACS
Associated Professor of Oncology
Department of Breast Surgery
Roswell Park Comprehensive Cancer Center
Institution Roswell Park Comprehensive Cancer Center
Buffalo, NY
Activity Planners

Ashley Snowden
Director, Physician and Corporate Relations
Roswell Park Comprehensive Cancer Center
Elm & Carlton Streets
Buffalo, NY

Danielle M. Fleischmann, CPC
Physician Relations Liaison
Roswell Park Cancer Institute
Elm & Carlton Streets
Buffalo, NY

Samantha Gordon, MS
Accreditation Manager
Med-IQ
Baltimore, MD

Amy Sison
Director of CME
Med-IQ
Baltimore, MD
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Helen Cappuccino, MD, FACS, has indicated no real or apparent conflicts.

The peer reviewers and activity planners have no financial relationships to disclose.
Learning Objectives

Upon completion, participants should be able to:

• Understand and apply clinically the use of risk factors in various cases
• Understand various risk models and their use
• Understand modifiable lifestyles practices to decrease breast cancer risk
Identification, Screening and Management of Women at High Risk of Breast Cancer
Who is at increased risk for Breast Cancer

- Family History
- Genetic Predisposition (10% of breast CA is hereditary)
  - BRCA 1, BRCA 2 (up to 85% increased risk)
  - Ashkenazi Jewish Heritage
  - TP-53 Li-Fraumeni Syndrome
  - PTEN (Cowden Syndrome)
  - CHD1
Who is at increased risk for Breast Cancer

• Women with a history of prior breast biopsies showing:
  – Atypia
  – LCIS
  – Radial Scar

• Women with prolonged history of unopposed estrogen stimulation (early menarche, late menopause, late first birth, nulliparity)

• Women with a history of radiation to the chest
• Women with dense breast tissue
Minor Risk Factors

- Height (tall)
- High Socioeconomic status
- DES exposure
- Late age at first pregnancy (>30 years)
- Late Menopause (>55 yrs)
- Personal History of endometrial or ovarian CA
- Breast Density
Potentially Modifiable Risk Factors for Breast Cancer

- Alcohol consumption
- Obesity
- Diet
- Recent and/or long term use of post-menopausal hormone replacement therapy
- Nulliparity, first child later in life
- Never having breast fed

These are considered minor risk factors with increased risk in the range of 1.1-2.0 times
May Decrease Risk of Breast Cancer or Recurrence

• Regular exercise
• Eliminate hormone replacement therapy
• Limited alcohol intake (less than 1 drink per day)
• Maintenance of Ideal Body Weight
• Healthful Diet
  – fewer processed foods
  – more plant based especially cruciferous vegetables (Broccoli), fruits
  – Mediterranean Diet- more fish, fewer red meats; extra virgin olive oil, nuts, healthy fats, whole grains, legumes
NO EVIDENCE OF INCREASED BREAST CANCER RISK

- Hair Dye
- Hair relaxers
- Deodorant
- Anti-Perspirant
- Pesticides
- Underwires
- Abortions
- Breast Implants

- Cell Phones
- Trauma
- Migraines
- Left-handedness
- Utility Wires
- Microwaves
- Electric Blankets
- Sugar
Calculating Risk of Breast Cancer - Various Models

- **Gail Model** (uses age, menarche, first birth, # 1st degree relatives with breast CA, # breast biopsies, atypia), gives 5 yr. and lifetime risk; Disadvantage - valid only for women ages 35-85, doesn’t take more distant relatives into consideration, can’t use in presence of DCIS, LCIS [click here](#)
- **Claus Model** (uses age, and age at first diagnosis of first and second degree relatives with breast and ovarian cancers) [click here](#)
- **BRCAPRO** - helps calculate risk of carrying BRCA gene [click here](#)
- **Tyrer-Cuzick** (uses age, BMI, menarche, OB History, age at menopause, HRT, history of ovarian CA, Family history, history of other breast conditions i.e. atypia). Gives risk of breast CA and of carrying BRCA gene. Tends to OVERESTIMATE risk. [Click here](#)
- **Hughes Risk App** - combines several models and shows a range of calculated risk for breast and other cancers, risk of carrying BRCA genes [click here](#) (requires account)
If risk is calculated in ANY model to be greater than 20%, consider:

• **Enhance Screening**
  – add annual MRI to annual mammo
  – Recommend that they are staggered by 6 months so breasts are visualized every 6 months

• **Chemoprevention**
  – Tamoxifen 20 mg p.o. QD
  – Aromatase Inhibitor daily
  – Evidence suggests as little as half doses QOD may still provide some preventative benefit
Screening and Therapeutic interventions Based on Risk

• For patients with substantially increased risk, prophylactic surgery (bilateral mastectomy) can be considered.
• This will be a personal decision for each patient. For some women, a risk of 20% is something with which they cannot live, whereas for others (with BRCA gene and risk in excess of 80%) they may opt for enhanced screening only.
• There is no evidence of a survival advantage with preventative surgery, although it does decrease the risk of breast cancer by > 90%
• If bilateral mastectomy is chosen, patients should be offered reconstructive surgery
## Screening Recommendations in Average Risk Patients

<table>
<thead>
<tr>
<th></th>
<th>American Cancer Society</th>
<th>National Comprehensive Cancer Network</th>
<th>US Preventative Services Task Force</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAMMOGRAPHY</strong></td>
<td></td>
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</tr>
<tr>
<td>Age 40-44 - Informed decision-making with a health care provider</td>
<td>Every year starting at age 40, for as long as a woman is in good health</td>
<td>Age 40-49 Informed decision-making with a health care provider</td>
<td></td>
</tr>
<tr>
<td>Age 45-54 - Every year</td>
<td></td>
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<td>Age 50-74 Every 2 years</td>
</tr>
<tr>
<td>Age 55+ - Every 2 years (or every year if a woman chooses to do so) for as long as a woman is in good health</td>
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<tr>
<td><strong>CLINICAL BREAST EXAM</strong></td>
<td></td>
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<tr>
<td>Not recommended</td>
<td>Age 25-39 - Every 1-3 years</td>
<td>Not enough evidence to recommend for or against</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age 40+ - Annual</td>
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</tbody>
</table>
Imaging Screening Recommendations in High Risk Patients

- For women with genetics-based increased risk or with a calculated lifetime risk of 20% or more, DM, with or without DBT, should be performed annually beginning at age 30.
- For women with history of chest radiation therapy before the age of 30, DM, with or without DBT, should be performed annually beginning at age 25 or 8 years after radiation therapy, whichever is later.
- For women with genetics-based increased risk, history of chest radiation (cumulative dose of greater than or equal to 10 Gy before age 30), or a calculated lifetime risk of 20% or more, breast MRI should be performed annually beginning at age 25 to 30.
- For women with personal histories of breast cancer and dense breast tissue, or those diagnosed before age 50, annual surveillance with breast MRI is recommended.
- For women with personal histories not included in the above, or with ADH, atypical lobular hyperplasia, or LCIS, MRI should be considered, especially if other risk factors are present.
- All women, especially black women and those of Ashkenazi Jewish descent, should be evaluated for breast cancer risk no later than age 30, so that those at higher risk can be identified and can benefit from supplemental screening.

DM= digital mammography           DBT Digital breast tomosynthesis
## NCCN Screening Recommendations in Specific High Risk Patients

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Clinical Exam</th>
<th>Mammogram</th>
<th>Breast MRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCIS, Atypical Lobular Hyperplasia, Lifetime risk &gt;20%</td>
<td>Q 6-12 months</td>
<td>Annually starting at 30</td>
<td>Discuss with provider starting at age 25</td>
</tr>
<tr>
<td>Dense Breast Tissue</td>
<td>Every 1-3 years ages 25-39</td>
<td>Annual- start at 40</td>
<td>Discuss with your provider</td>
</tr>
<tr>
<td>Atypical Hyperplasia, but lifetime risk &lt;20%</td>
<td>Every 1-3 years ages 25-39</td>
<td>Annual start at 40</td>
<td>Discuss with your provider</td>
</tr>
<tr>
<td>First Degree Relative with BRCA1 or BRCA2 (pt not tested)</td>
<td>Q 6-12 months</td>
<td>Annual starting at 30</td>
<td>Discuss with provider (genetic testing and MRI screening)</td>
</tr>
<tr>
<td>Radiation treatment between ages 10-30. Pt age &lt;25 y.o.</td>
<td>Annual starting 10 years post RT</td>
<td>Not recommended</td>
<td>Not recommended</td>
</tr>
<tr>
<td>Radiation treatment between ages 10-30. Pt age 25-29</td>
<td>Every 6 months starting 10 years post RT</td>
<td>Not recommended</td>
<td>Not recommended</td>
</tr>
<tr>
<td>Radiation treatment between ages 10-30. Pt age 30-75</td>
<td>Every 6 months starting 10 years post RT</td>
<td>Annually starting 10 years post RT</td>
<td>Annually starting 10 years post RT</td>
</tr>
</tbody>
</table>
## NCCN Screening Recommendations in Specific Syndromes

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Clinical Exam</th>
<th>Mammogram</th>
<th>Breast MRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li Fraumeni, TP-53 Mutation &lt;br&gt;Ages 20-29</td>
<td>The earlier of: every 6-12 months starting at age 20 or at the age of the youngest breast cancer case in the family</td>
<td>Only if MRI not available</td>
<td>Annual</td>
</tr>
<tr>
<td>Li Fraumeni, TP-53 Mutation &lt;br&gt;Age 30+</td>
<td>Q 6-12 months</td>
<td>Annual</td>
<td>Annual</td>
</tr>
<tr>
<td>PTEN Mutation, Bannayan-Riley-Ruvalcaba or Cowden Syndrome</td>
<td>The earlier of: Q 6-12 months starting at age 25 or 5-10 yrs before the age of the youngest breast cancer case in the family</td>
<td>The earlier of: Every year starting at age 30-35, or 5-10 years before the age of the youngest breast cancer case in the family</td>
<td>The earlier of: Every year starting at age 30-35, or 5-10 years before the age of the youngest breast cancer case in the family</td>
</tr>
<tr>
<td>BRCA1 or BRCA2 mutation &lt;br&gt;Ages 25-29</td>
<td>Q 6-12 months</td>
<td>Only if MRI not available</td>
<td>Annual</td>
</tr>
<tr>
<td>BRCA1 or BRCA2 mutation Age 30+</td>
<td>Q 6-12 months</td>
<td>Annual</td>
<td>Annual</td>
</tr>
<tr>
<td>ATM, CHEK2, NBN, CDH1, NF1, PALB2, STK11 Mutations</td>
<td>Every 1-3 years ages 25-39 &lt;br&gt;Every year starting at age 40</td>
<td>Annual starting at age 30</td>
<td>Talk with your health care provider about breast MRI every year starting at age *</td>
</tr>
</tbody>
</table>

* ATM, CHEK2, NBN starting at age 40, CDH1 start at age 30, NF1 from ages 30-50, STK11 Not recommended, PALB2 starting at 30
Other screening recommendations do exist:

**American Cancer Society** - Routine Clinical exams are not recommended (as this is not evidenced base), and more discretion is given to the provider in particular scenarios

**US Preventative Services Task Force** - tends to be less intensive
Additional Considerations:

- MRI timing:
  - For premenopausal women, best timing for breast MRI is days 7-15 of the menstrual cycle
  - For postmenopausal women, breast MRI can be done at any time
  - For high-risk patients getting both mammography and breast MRI every year for screening, may stagger so breasts are imaged every 6 months

- Compared to mammography, screening with breast MRI has some drawbacks
  - MRI requires IV contrast - can accumulate or cause reaction
  - MRI has more false positives, results in more biopsies, some unnecessary
  - Some MRI centers don’t have the special magnets needed to do an MRI of the breast or don't have radiologists specially-trained to read breast MRIs
  - Breast MRI is expensive and isn't always covered by insurance.
Take home message-

While some patients may be at increased risk for breast cancer, we have genetic, diagnostic and risk-calculating tools to help determine which patients are at increased risk for breast cancer.

This added information is actionable- we have medications, non-medical interventions, and enhanced screening to optimize a patient’s care and hopefully decrease risk for breast cancer.
Instructions to Receive Credit

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Contact Information

Call (toll-free) 866 858 7434
Email info@med-iq.com

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