Breast Cancer Screening

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R3 Talks
Objective

• 1. Understand risks and benefits of screening by reviewing current literature
• 2. Evaluate major society recommendations on breast cancer screening (USPSTF, ACOG, ACS)
• 3. Help patients make individualized decisions regarding breast cancer screening
A CRUCIAL CATCH
ANNUAL SCREENING SAVES LIVES
Screening

Looking for disease in asymptomatic population
Tenets of screening

- Safe
- Finding disease improves outcome
- Disease must be common
- Cost
Lead Time

- Detecting cancer earlier makes it appear that survival is improved
Length time

Slowly progressing tumors are more readily detectable by screening
Overdiagnosis

Diagnosis of cancers that would otherwise fail to be clinically significant

→ Treatment does not confer survival benefit

→ Possibly harmful
Harms of Overdiagnosis

- Physical
- Psychological
- Cost
Draw Backs/Limitations

• Bias
• Different screening recs/programs
• Ages
Overdiagnosis

• Major harm of breast cancer screening
• Impossible to directly measure

• US rate (including DCIS) of 31% (Loberg, et al)

• Based on meta-analysis: median of 12-18% (depends on screening strategy)
USPSTF

• 2016 guidelines
  – 8 RCTs
  – 200+ observational studies
  – Meta Analysis (experimental + observational)
No Trial found a reduction in ALL CAUSE MORTALITY

Combined RR (>600,000 women), all ages/trials: 0.99 (95% CI, 0.97-1.002)

39-49 y: RR 0.99 (0.94-1.05)
50-59 y: RR 1.02 (0.94-1.10)
60-69 y: RR 0.97 (0.90-1.04)
70-74 y: RR 0.98 (0.86-1.14)
Meta-Analysis: Breast Cancer Mortality

<table>
<thead>
<tr>
<th>Age, y</th>
<th>Breast Cancer Mortality Reduction: RR (95% CI)</th>
<th>Deaths Averted With Screening 10,000 Women Over 10 Years (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>39-49</td>
<td>0.92 (0.75-1.02)</td>
<td>3 (0-9)</td>
</tr>
<tr>
<td>50-59</td>
<td>0.86 (0.68-0.97)</td>
<td>8 (2-17)</td>
</tr>
<tr>
<td>60-69</td>
<td>0.67 (0.54-0.83)</td>
<td>21 (11-32)</td>
</tr>
<tr>
<td>70-74</td>
<td>0.80 (0.51-1.28)</td>
<td>13 (0-32)</td>
</tr>
<tr>
<td>75+</td>
<td>Not Reported</td>
<td>Unknown</td>
</tr>
<tr>
<td>50-69</td>
<td>0.78 (0.68-0.90)</td>
<td>13 (6-20)</td>
</tr>
</tbody>
</table>

No trials included women 75 years of age and older
Benefits: Does screening reduce breast cancer death?

• YES
• Effect size somewhere in range of 22-31% for women age 50-74
  – NNS of 1,339 over 10 years age 50-59

• Age 40-49 smaller ARR, data more mixed
  – NNS 1,904

More data?

• Dec advanced tumor stage (>50yrs)
• Increased mastectomy rates...
Breast Cancer Incidence and Mortality Per 100,000 Women (SEER Data)

CISNET Modeling

- What’s the optimal age to start screening? (Beginning at age 40 versus 50 years)

Out of 1,000 women followed today until their deaths:

- **25** women will die from breast cancer without screening.
- Screening women every two years between the ages of **50 to 74** years could reduce that number (25) to about **18**, with approximately **7** women avoiding a death from breast cancer.
- If we started at age **40** instead of age 50, we could potentially reduce the number (25) further to **17**, with **1** additional woman avoiding a breast cancer death.
Screening starting at 40 (compared to 50)

Benefits...
- Prevents 1 additional woman from dying from breast cancer

Harms...
- 2-3 additional overdiagnosed breast cancers
- 67 additional breast biopsies
- 576 additional false positive mammograms
USPSTF Jan 2016

Women age 50 to 74 years:
- Biennial screening
- GRADE B

Women 40-49 years
- Recommend individual, risk-based approach
- GRADE C recommendation
USPSTF, cont

• I (insufficient evidence) for:
  – Screening age >75
  – Digital mammography compared to standard
  – Ultrasound, MRI, etc

• D (Don’t Do it):
  – Self Breast Exam
ACOG

- Screening mammography every year for women aged 40-49 years
- Screening mammography every year for women aged 50 years or older
- Breast Self-Awareness has the potential to detect palpable breast cancer and can be recommended
- Clinical Breast Exam every year for women aged 19 or older
American Cancer Society

• Women ages 40 to 44 should have the choice to start annual breast cancer screening with mammograms if they wish to do so. The risks of screening as well as the potential benefits should be considered.

• Women age 45 to 54 should get mammograms every year.

• Women age 55 and older should switch to mammograms every 2 years, or have the choice to continue yearly screening.

• Screening should continue as long as a woman is in good health and is expected to live 10 more years or longer.

• All women should be familiar with the known benefits, limitations, and potential harms associated with breast cancer screening. They should also be familiar with how their breasts normally look and feel and report any changes to a health care provider right away.
Benefits vs. Harms of screening

Loberg, et al
No One-Size Fits all Rec

USPSTF:

“Women, starting at age 40, should consider the potential benefits and harms of mammography screening and make an informed decision for themselves, in consultation with a trusted clinician, based on their own values, preferences, and family and personal health history about when to begin screening”
‘Dispassionate’ Informed Consent

It’s an imperfect tool

BUT

We are stuck with it

Remain balanced and allow patient to make choice
Breast cancer risk calculator