Breast Imaging: Screening Mammography, Guidelines & Controversies

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Women’s Imaging Radiologist
Learning Objectives

• Discuss history of mammography
• Describe the current recommendations for screening mammography at average-risk and high-risk women
• Identify the pitfalls and misinformation in regards to screening mammography
• Describe current governmental policies and future directions for breast imaging
Disclosure Information

• None
Breast Cancer Statistics

• Among women in the United States
  – The most common cancer diagnosed
  – The second most common cause of cancer death
  – A leading cause of premature death as measured by mean and total years of life lost

• ACS’s estimates for breast cancer in the US for 2020
  – About 279,100 new cases of breast cancer
  – About 42,690 women will die from breast cancer
# Breast Cancer Statistics

<table>
<thead>
<tr>
<th>Common Types of Cancer</th>
<th>Estimated New Cases 2019</th>
<th>Estimated Deaths 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Breast Cancer (Female)</td>
<td>268,600</td>
<td>41,760</td>
</tr>
<tr>
<td>2. Lung and Bronchus Cancer</td>
<td>228,150</td>
<td>142,670</td>
</tr>
<tr>
<td>3. Prostate Cancer</td>
<td>174,650</td>
<td>31,620</td>
</tr>
<tr>
<td>4. Colorectal Cancer</td>
<td>145,600</td>
<td>51,020</td>
</tr>
<tr>
<td>5. Melanoma of the Skin</td>
<td>96,480</td>
<td>7,230</td>
</tr>
<tr>
<td>6. Bladder Cancer</td>
<td>80,470</td>
<td>17,670</td>
</tr>
<tr>
<td>7. Non-Hodgkin Lymphoma</td>
<td>74,200</td>
<td>19,970</td>
</tr>
<tr>
<td>8. Kidney and Renal Pelvis Cancer</td>
<td>73,820</td>
<td>14,770</td>
</tr>
<tr>
<td>9. Uterine Cancer</td>
<td>61,880</td>
<td>12,160</td>
</tr>
<tr>
<td>10. Leukemia</td>
<td>61,780</td>
<td>22,840</td>
</tr>
</tbody>
</table>

Female breast cancer represents 15.2% of all new cancer cases in the U.S.
Trends in Breast Cancer Deaths

• The chance that a woman will die from breast cancer is about 1 in 38 (2.6%).
• Death rates from female breast cancer, unchanged before, dropped 39% from 1989 to 2015.
• Since 2007, breast cancer death rates have been steady in women younger than 50, but have continued to decrease in older women.
• These decreases are believed to be the result of finding breast cancer earlier through screening and increased awareness, as well as better treatments.
• Not male breast cancer death rates
Trends in incidence rates, 1975-2016
by sex, for breast (female)
Per 100,000, age adjusted to the 2000 US standard population.

Data Sources: Surveillance, Epidemiology, and End Results (SEER) 9 registries. National Cancer Institute, 2019
© 2020 American Cancer Society
Trends in death rates, 1930-2017
by sex, for breast (female)
Per 100,000, age adjusted to the 2000 US standard population.

Data Sources: National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention, 2019
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CancerStatisticsCenter.cancer.org
Trends in Breast Cancer Deaths

• Breast cancer is a treatable disease, especially when detected early.
• Because of screening mammography programs, the presentation of breast cancer has shifted from late-stage metastatic disease to early-stage localized disease.
• Randomized controlled trials consistently show a 15–30% reduction in breast cancer deaths among women 40–74 years old.
History of Screening Mammography
Wilhelm Röntgen – Nov. 8, 1895

• German physicist
• Detected X-Ray
• The first Nobel Prize in physics in 1901
• Innovation: driving force for progress
Wilhelm Conrad Röntgen x-ray machine and first x-ray picture

X-ray tube
Nobel Museum
Stockholm, Sweden

“We shall see what we shall see. We have the start now; The developments will follow in time.”
- Wilhelm Conrad Röntgen
Albert Salomon - 1913

- German surgeon
- Used radiography of mastectomy specimens to establish differences between cancerous and non-cancerous tumors, and spread of tumor to the axillary lymph nodes
Albert Salomon - 1913

A. Nipple
B. Carcinoma

Intracystic carcinoma with adjacent metastatic lymph nodes

- Radiograph of breast tissue specimens by Salomon
Stafford Warren - 1930

- Radiologist
- Rochester Memorial Hospital, NY
- 1946: The first dean of the UCLA School of Medicine
Stafford Warren - 1930

- Reported in vivo mammography performed in 119 patients who then underwent surgery
- Interpretive errors were made only in 8 of the 119 cases
Raul Leborgne - 1949

- From Uruguay
- Set the stage for screening mammography
- Reported radiographically visible microcalcifications in 30% of breast cancers
- Described the radiographic differences between benign and malignant calcifications
Raul Leborgne - 1949

- Recognized the importance of breast compression for improving image quality
Robert L. Egan - 1960

- Described an easily reproducible technique in 1000 patients
- Widespread use of mammography
- Accepted by surgeons and pathologists
Robert L. Egan - 1962

- Reported 53 cases of occult carcinoma detected in 2000 consecutive mammographic examinations

- M. D. Anderson Cancer Hospital
  - 1000 women
  - 245 biopsy-proven breast cancer
  - 238 were identified by mammo
American College of Radiology – 1960s

• ACR (founded in 1923) took the leading role in mammography training through its committee on mammography.

• Mammography emerged as a subspecialty within radiology.

• No more “if I can’t feel it on examination, it’s not there.”

• “Seeing is believing.”
Cancer Control Program of the US Public Health Service - 1963

• Presented the results of a nationwide mammography study at 24 institutions
• True positive rate for mammography: 79%
• Acceptable quality
• The technique could be learned by radiologists
• Mammogram could enable differentiation between benign and malignant lesions
• Mammography could be used to screen for cancer in asymptomatic women
Philip Strax – 1963 - 1966

• Health Insurance Plan (HIP) of New York
• Organized the first randomized controlled trial of mammography as a screening tool
• The 5-year follow-up: mortality was reduced by 1/3
• Confirmed through 18 years of follow up
• Provided the foundation and scientific basis for worldwide success of screening mammography
Philip Strax – Late 1960s

• The first person to develop and successfully operate a self-contained mobile unit for breast cancer screening with mammography
Breast Cancer Detection Demonstration Project - 1972

- President Richard Nixon signed the Cancer Control Act in December 1971.
- The act represented a major acceleration in America’s war on breast and other cancers.
- The ACS, working with the National Cancer Institute (NCI), inaugurated the Breast Cancer Detection Demonstration Project (BCDDP), which planned to screen over a quarter of a million American women for breast cancer.
Breast Cancer Detection Demonstration Project - 1974

- In October 1974, based on data from 42,000 women, the NCI reported that 77% of detected breast cancers contained no positive axillary lymph nodes.

- But it was other events in September and October 1974 that transformed the BCDDP: First Lady Betty Ford and Margareta (Happy) Rockefeller, the wife of Vice President-Designate Nelson Rockefeller, announced that they had been diagnosed with breast cancer.
Breast Cancer Detection Demonstration Project - 1974

- Screening mammography played into two important cultural attributes of Americans.
  - First, having a mammogram enabled women to take personal responsibility for their health, a duty that American public health campaigns had long encouraged.
  - Second, having a mammogram became seen as a way to improve one’s odds against breast cancer, and thus fit well with the risk-aversive response of Americans to the threat of disease.
- Within two years of the BCDDP’s inauguration, the media was trumpeting the apparent successes of the project.
John C. Bailar, III – 1976

- MD, PhD in statistics
- The individual most responsible for the heated debates over mammography
- In questioning the risk benefit assessment that had induced the ACS and the NCI to proceed with the BCDDP, Bailar inaugurated a line of critique that has continued to have a dramatic influence on the spread of mammography.
Detection of slow-growing lesions unlikely to become clinically significant breast cancers

Ionizing radiation can cause breast cancer

In response to these charges, ACS and NCI made a series of changes.
  - In August 1976, ACS and NCI decided to offer mammography only to those women under 50 who were at high risk.
USPSTF - 2009

• Harms of detection and early intervention
  – Psychological harms
  – Inconvenience due to false-positive screening results
  – Unnecessary imaging tests and biopsies in women without cancer
  – The harms associated with treatment of cancer that would not become clinically apparent during a woman's lifetime (overdiagnosis)
  – The harms of unnecessary earlier treatment of breast cancer that would have become clinically apparent but would not have shortened a woman's life
  – Radiation exposure
Summary of Current Breast Cancer Screening Recommendations
American College of Radiology - 2017

• 65 references cited in the ACR Appropriateness Criteria® Breast Cancer Screening document
• Published from 2005 to 2017
• All categorized as diagnostic references
• 12 well-designed studies
• 12 good-quality studies
• 22 quality studies
• Annual screening mammography for women at average risk beginning at age 40
• Annual screening offers
  – greatest mortality reduction
  – most lives saved
  – most life years gained
• Saves 12,216 more women’s lives each year in the US than does the USPSTF recommendation of biennial screening starting at age 50
American College of Radiology - 2017

• Other benefits of annual screening
  – Less extensive treatments of cancers that are found
  – Decreased chance that disease is advanced at diagnosis
  – Detection and treatment of high-risk lesions
• No established age for women to stop screening
• The ACR recommends that women continue mammographic screening for breast cancer as long as they are healthy and desire to remain so.
• Screening mammography remaining appropriate when a woman’s life expectancy exceeds 5 to 7 years.
• This screening recommendation is supported by the Society of Breast Imaging, National Comprehensive Cancer Center Network, and the National Consortium of Breast Centers.
American College of Radiology - 2017

• ACR expresses how to maximize the benefits and to acknowledge and understand the risks and allows women to make their own informed decision about how to weigh these factors for themselves.

• Women who prefer to maximize life-extending benefits and seek improved treatment options for breast cancer should choose annual screening starting at age 40.
# ACR Appropriateness Criteria

**Variant 1:**  

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammography screening</td>
<td>Usually Appropriate</td>
<td>☀ ☀ ☀</td>
</tr>
<tr>
<td>Digital breast tomosynthesis screening</td>
<td>Usually Appropriate</td>
<td>☀ ☀ ☀</td>
</tr>
<tr>
<td>US breast</td>
<td>May Be Appropriate</td>
<td>O</td>
</tr>
<tr>
<td>MRI breast without and with IV contrast</td>
<td>Usually Not Appropriate</td>
<td>O</td>
</tr>
<tr>
<td>MRI breast without IV contrast</td>
<td>Usually Not Appropriate</td>
<td>O</td>
</tr>
<tr>
<td>FDG-PEM</td>
<td>Usually Not Appropriate</td>
<td>☀ ☀ ☀ ☀ ☀ ☀</td>
</tr>
<tr>
<td>Tc-99m sestamibi MBI</td>
<td>Usually Not Appropriate</td>
<td>☀ ☀ ☀ ☀ ☀ ☀</td>
</tr>
</tbody>
</table>
### ACR Appropriateness Criteria

**Variant 2:**

Breast cancer screening. Intermediate-risk women: women with personal history of breast cancer, lobular neoplasia, atypical ductal hyperplasia, or 15% to 20% lifetime risk of breast cancer.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Mammography screening</td>
<td>Usually Appropriate</td>
<td>🌟🌟</td>
</tr>
<tr>
<td>Digital breast tomosynthesis screening</td>
<td>Usually Appropriate</td>
<td>🌟🌟</td>
</tr>
<tr>
<td>MRI breast without and with IV contrast</td>
<td>May Be Appropriate</td>
<td>🌟</td>
</tr>
<tr>
<td>US breast</td>
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<td>🌟</td>
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<tr>
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<tr>
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<td>🌟🌟🌟</td>
</tr>
<tr>
<td>MRI breast without IV contrast</td>
<td>Usually Not Appropriate</td>
<td>🌟</td>
</tr>
</tbody>
</table>
ACR Appropriateness Criteria

**Variant 3:**

Breast cancer screening. High-risk women: women with a BRCA gene mutation and their untested first-degree relatives, women with a history of chest irradiation between 10 to 30 years of age, women with 20% or greater lifetime risk of breast cancer.

<table>
<thead>
<tr>
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<th>Appropriateness Category</th>
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</tr>
</thead>
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<td>Usually Appropriate</td>
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<td>Tc-99m sestamibi MBI</td>
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<tr>
<td>MRI breast without IV contrast</td>
<td>Usually Not Appropriate</td>
<td>☀</td>
</tr>
</tbody>
</table>
High-Risk Women

• BRCA or other known genetic predispositions (ATM, TP53, CHEK2, ...) in 5% to 10% of breast cancer cases
  - BRCA1 lifetime risk of 50% to 85%
  - BRCA2 lifetime risk of 45%
• A very strong family history placing them at more than a 20% lifetime risk of breast cancer
  - Even in the absence of known genetic mutations
• Prior mantle radiation therapy between 10 to 30 years of age
• Personal history of breast cancer
  - A 10-year recurrence rate of 19.3%
  - A 15-year cancer death rate of 21.4%
Does Race Matter?

• White and black women have the highest incidence rates of breast cancer of any group.
• Their occurrence rates are similar.
• African American women are 19% more likely to die of their disease.
• Women of Ashkenazi Jewish descent are at high risk for the BRCA and other genetic mutations.
• 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 benefit from supplemental screening.
Does Race Matter?

Number of New Cases per 100,000 Persons by Race/Ethnicity: Female Breast Cancer

- All Races: 127.5
- White: 130.5
- Black: 124.0
- Asian / Pacific Islander: 100.1
- American Indian / Alaska Native: 79.5
- Hispanic: 97.2
- Non-Hispanic: 132.6

Number of Deaths per 100,000 Persons by Race/Ethnicity: Female Breast Cancer

- All Races: 20.6
- White: 20.1
- Black: 28.1
- Asian / Pacific Islander: 11.2
- American Indian / Alaska Native: 14.3
- Hispanic: 14.2
- Non-Hispanic: 21.2
Screening High-Risk Women

• Annual mammography starting 8 years after radiation therapy but not before age 25
• Women with a genetic predisposition are recommended for annual screening beginning 10 years earlier than the affected relative at the time of diagnosis but not before age 30.
Screening High-Risk Women with MRI

- A higher sensitivity than mammography
- In a high-risk population, MRI and mammography combined have a higher sensitivity (92.7%) than US and mammography combined (52%).
- Women with BRCA gene mutations and their untested first-degree relatives
- Women with a lifetime risk of breast cancer of ~20% or greater.
- ACS, ACR & SBI
Risk Assessment Models

• Modified Gail
• BRCAPRO
• Tyrer-Cuzick or IBIS
• Claus

ACS recommends models that incorporate first- and second-degree family history

• Tyrer-Cuzick is the most consistently accurate
American Cancer Society - 2015

- Women at average risk be given the opportunity to begin annual screening at age 40–44 and should undergo regular screening mammography starting at age 45
- Women 40–54 years old should undergo annual screening.
American Cancer Society - 2015

• Women 55 years old and older could transition to biennial screening or continue annual screening.

• Women should continue screening mammography as long as they have a life expectancy of 10 years or longer.
American Cancer Society - 2015

• Supported by the American Society of Breast Surgeons
• Similar to the 2017 recommendation from the American College of Obstetricians and Gynecologists, which recommends that annual or biennial screening mammography be offered starting at age 40, begin by no later than age 50, and continue until at least age 75.
• Beyond age 75, the decision to stop screening should be based on a shared decision-making process informed by health status and longevity.
American Cancer Society Recommendations for the Early Detection of Breast Cancer
Guideline for women at average risk for breast cancer

Ages 40 – 44
Woman should have the choice to start annual breast cancer screening with mammograms if they wish to do so.

Ages 45 – 54
Woman should get mammograms every year.

Age 55 and older
Women can switch to mammograms every two years, or can 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.

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Biennial screening mammography for women ages 50–74

Individualized decision to begin screening before age 50

Women who place a higher value on the potential benefit than the potential risks may choose to begin biennial screening between the ages of 40 and 49 years.
The evidence was insufficient to determine the balance of benefits and risks among women 75 years old and older.

Supported by the American Academy of Family Physicians and the American College of Physicians.
# U. S. Preventive Services Task Force - 2019

## Recommendation Summary

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women aged 50 to 74 years</td>
<td>The USPSTF recommends biennial screening mammography for women aged 50 to 74 years.</td>
<td>B</td>
</tr>
<tr>
<td>Women aged 40 to 49 years</td>
<td>The decision to start screening mammography in women prior to age 50 years should be an individual one. Women who place a higher value on the potential benefit than the potential harms may choose to begin biennial screening between the ages of 40 and 49 years.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• For women who are at average risk for breast cancer, most of the benefit of mammography results from biennial screening during ages 50 to 74 years. Of all of the age groups, women aged 60 to 69 years are most likely to avoid breast cancer death through mammography screening. While screening mammography in women aged 40 to 49 years may reduce the risk for breast cancer death, the number of deaths averted is smaller than that in older women and the number of false-positive results and unnecessary biopsies is larger. The balance of benefits and harms is likely to improve as women move from their early to late 40s.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• In addition to false-positive results and unnecessary biopsies, all women undergoing regular screening mammography are at risk for the diagnosis and treatment of non-invasive and invasive breast cancer that would otherwise not have become a threat to their health, or even apparent, during their lifetime (known as “overdiagnosis”). Beginning mammography screening at a younger age and screening more frequently may increase the risk for overdiagnosis and subsequent overtreatment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Women with a parent, sibling, or child with breast cancer are at higher risk for breast cancer and thus may benefit more than average-risk women from beginning screening in their 40s. Go to the Clinical Considerations section for information on implementation of the C recommendation.</td>
<td></td>
</tr>
<tr>
<td>Women aged 75 years or older</td>
<td>The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening mammography in women aged 75 years or older.</td>
<td>I</td>
</tr>
<tr>
<td>All women</td>
<td>The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of digital breast tomosynthesis (DBT) as a primary screening method for breast cancer.</td>
<td>I</td>
</tr>
<tr>
<td>Women with dense breasts</td>
<td>The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of adjunctive screening for breast cancer using breast ultrasonography, magnetic resonance imaging, DBT, or other methods in women identified to have dense breasts on an otherwise negative screening mammogram.</td>
<td>I</td>
</tr>
</tbody>
</table>
Tomosynthesis
Tomosynthesis
Breast Density
• Women at average risk of breast cancer should be offered screening mammography starting at age 40.
• They should begin screening mammography no later than age 50.
• The decision should be made through a shared decision-making process.
• Women at average risk of breast cancer should have screening mammography every one or two years based on an informed, shared decision-making process.
• Women at average risk of breast cancer should continue screening mammography until at least 75 years.
• Beyond age 75 years, the decision to discontinue screening mammography should be based on a shared decision-making process informed by the woman's health status and longevity.
# Recommendations for Breast Cancer Screening of Women at Average Risk

<table>
<thead>
<tr>
<th>Criterion</th>
<th>ACR, SBI, NCCN, NCBC</th>
<th>ACS, ASBS</th>
<th>USPSTF, AAFP, ACP</th>
<th>ACOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at initiation</td>
<td>Recommend at 40</td>
<td>Offer at 40–44; recommend at 45</td>
<td>Begin at 50; individualized decision at 40–49</td>
<td>Offer at 40; begin at 40–49 after counseling if patient desires; recommend no later than 50</td>
</tr>
<tr>
<td>Interval</td>
<td>Annual</td>
<td>Annual for 40–54; biennial or annual for age ≥ 55</td>
<td>Biennial</td>
<td>Annual or biennial</td>
</tr>
<tr>
<td>Age at cessation</td>
<td>Continue as long as patient is healthy and wants to be screened</td>
<td>Continue as long as life expectancy ≥ 10 y</td>
<td>Stop at 74; insufficient evidence for age ≥ 75</td>
<td>Continue until 75; beyond 75, based on shared decision-making process that includes discussion of health status and longevity</td>
</tr>
</tbody>
</table>

Differences Between the Guidelines: How They Were Developed

• Differences result from
  – which data each organization includes
  – the way the data are valued

• The age at which various organizations recommend beginning screening mammography and the frequency at which mammography is recommended in different age groups varies based upon the weight given to the perceived risks (false-positives and the possibility of overdiagnosis) and benefits of screening (mortality reduction and less invasive treatment options).
Differences Between the Guidelines: The Life Years Lost

- Both the ACS and USPSTF count only one benefit: mortality reduction.
- The ACR includes the other established benefits of screening: less aggressive surgery, less frequent and less toxic chemotherapy, and detection and treatment of high-risk lesions.
- The life years lost to breast cancer diagnosed at ages 40-44 are third highest among all nine age quintiles from ages 40-84.
- The ACR considers unacceptable the life years lost in waiting to start screening until age 45 or 50.
Differences Between the Guidelines

• The USPSTF selects a subset of the total randomized controlled trials to consider, which results in a smaller benefit (15% mortality reduction) than was achieved by consideration of randomized controlled trials overall (22% mortality reduction).

• Both the ACR and ACS emphasize more recent observational trial data, which better reflect current practice.
Differences Between the Guidelines: 

Overdiagnosis 

• Cannot be measured directly 
• Valued differently by the USPSTF than by the ACR or ACS 
• The USPSTF states that decreasing overdiagnosis is one of their reasons for recommending that mammography start at age 50 instead of 40 and for their recommendation for biennial mammography. 
• However, screen detected cancers, including all overdiagnosed cancers, do not disappear spontaneously without excision or treatment. 
• They remain visible and are detected at the next screening examination. 
• Therefore, delaying the onset of screening or increasing the screening interval to biennial would simply delay but not reduce the small amount of overdiagnosis that is suspected to exist. 
• Overdiagnosis should not be a factor in deciding when to start screening or how often to screen.
Response to USPSTF

• An analysis by Hendrick and Helvie published in the *American Journal of Roentgenology*, using the Task Force’s own methodology, showed that if USPSTF breast cancer screening guidelines were followed, approximately 6,500 additional women each year in the U.S. would die from breast cancer.
Response to USPSTF

• High Cholesterol
  – Invasive
  – Wait
  – Call-back
  – Anxiety: Do I have CAD?
  – Borderline values ~ ADH

• Cervical cancer: Pap smear has the same recall rate as screening mammography

• Most women who get a false positive, support screening mammography.

• No scientific basis for using age 50 as a threshold for screening
## Response to USPSTF

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Total Screening Mammograms</th>
<th>Recalls (%)</th>
<th>Biopsies Recommended (%)</th>
<th>Positive Biopsies (Cancers Detected per 1000 Screenings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-49</td>
<td>1584</td>
<td>171 (10.8%)</td>
<td>38 (2.4% of total screening mammograms &amp; 22.2% of recalls)</td>
<td>6 (3.8/1000)</td>
</tr>
<tr>
<td>50-59</td>
<td>1795</td>
<td>154 (8.6%)</td>
<td>39 (2.2% of total screening mammograms &amp; 25.3% of recalls)</td>
<td>7 (3.9/1000)</td>
</tr>
<tr>
<td>Total</td>
<td>3379</td>
<td>325 (9.6%)</td>
<td>77 (2.3% of total screening mammograms &amp; 23.7% of recalls)</td>
<td>13 (3.8/1000)</td>
</tr>
</tbody>
</table>

Brandon Behjatnia, DO, Michael Arsenault, DO, John Kish, PhD, Kathy Sajewicz, RT. Screening Mammography: Breast Cancer Detection Rate in Women 40-49 Years Old. Oakwood Southshore Medical Center - Michigan State University / Wayne State University. 2010.
Brandon Behjatnia, DO, Michael Arsenault, DO, John Kish, PhD, Kathy Sajewicz, RT. Screening Mammography: Breast Cancer Detection Rate in Women 40-49 Years Old. Oakwood Southshore Medical Center - Michigan State University / Wayne State University. 2010.
Surveillance, Epidemiology, & End Results (SEER) Program – 2012-2016

Percent of New Breast Cancer Cases by Age Group

- <20: 1.9%
- 20-34: 8.4%
- 35-44: 20.1%
- 45-54: 25.6%
- 55-64: 24.8%
- 65-74: 13.7%
- 75-84: 5.6%
- >84: 19.3%
- <20: 20.3%
Surveillance, Epidemiology, & End Results (SEER) Program – 2011-2016

Percent of Breast Cancer Deaths by Age Group
Similarities Between the Three Recommendations

• Each organization affirms the benefits of starting screening mammography beginning at age 40.
• This results in the most lives saved.
• All three organizations also support the principles that women should be able to choose to begin screening at age 40 and that the age to stop screening should be individualized.
• They all recommend that patients discuss the benefits and risks of undergoing screening mammography with their physicians.
Future of Screening Mammography

- For average-risk women, an ideally balanced mammography screening strategy has yet to be agreed on.
- In the United States, the trend is moving away from annual screening and toward mixed-interval screening with earlier stop ages.
- ACS and ACR guidelines outperform the USPSTF guideline in most scenarios.
- Follow ACR guidelines and inform patients and healthcare providers.
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• Gerald Ford Presidential Library
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• Yasmeen, S. et al. Screening Mammography Beliefs and Recommendations: A Web-Based Survey of Primary Care Physicians. BMC Health Services Research. 2012.
Thank You

• Information for patients and clinicians
  – https://www.mammographysaveslives.org
  – https://www.sbi-online.org/endtheconfusion
  – https://densebreast-info.org/