Mammography in Women Age 40-50

Valuable

Grand Rounds Resident Debate
October 17th, 2011
Lisa Foley, MD
Objectives

- Background
- Existing debate
- Current Recommendations
- Supporting Evidence
- Summary
Breast Cancer

• Lifetime Risk in Women: 12.5%
• 1 in 8 Women afflicted
• 40,460 women die each year in US
• The main cause of death in women ages 45 to 55

Burden of Disease, 2008

Cancer occurrence
- Lung cancer, 14%
- Breast cancer, 26%
- Skin melanoma, 4%
- Non-Hodgkin lymphoma, 4%
- Thyroid cancer, 4%
- Kidney cancer, 3%
- Leukemia, 3%
- Ovarian cancer, 3%
- Other, 22%
- Endometrial cancer, 7%
- Colorectal cancer, 10%

Cancer mortality
- Lung cancer, 26%
- Breast cancer, 15%
- Colon cancer, 9%
- Pancreatic cancer, 6%
- Ovarian cancer, 6%
- Non-Hodgkin lymphoma, 3%
- Leukemia, 3%
- Uterine cancer, 3%
- Liver & intrahepatic bile duct, 2%
- Brain and other nervous system, 2%
- Other, 25%

Most Important Risk Factors

• Age

• Genetic Predisposition

• Hormone Exposure

Screening Modalities

- Imaging
  - Mammography
  - MRI
  - Thermography

- Breast Palpation
  - Self Breast Exam
  - Clinical Breast Exam
Debate

- Mammographic screening at age 50
  - shown to have 25% mortality benefit

- Women age 40-50 have less clear benefit

- 40-50, More problems with screening
  - Dense breast tissue
  - Higher false positive screening rate
  - Lower incidence of breast cancer

Current Recommendations
Current Recommendations

• American Cancer Society

“Yearly mammograms are recommended starting at age 40 and continuing for as long as a woman is in good health”

www.cancer.org
Current Recommendations

The American College of Surgeons strongly supports current guidelines that recommend women get a mammogram every year, starting at age 40.

http://www.facs.org/news/mammography1109.html
Evidence
Evidence

- Screening for Breast Cancer: USPSTF
  - Meta-Analysis; Annals of Internal Medicine, 2009

- Swedish Mammography Screening in Young Women (SCRY)
  - Cohort; Cancer 2011

- Age Trial
  - RCT; Lancet 2006
USPSTF, 2009

Screening for Breast Cancer: An Update for the U.S. Preventive Services Task Force

Heidi D. Nelson, MD, MPH; Kari Tyne, MD; Arpana Naik, MD; Christina Bougatsos, BS; Benjamin K. Chan, MS; and Linda Humphrey, MD, MPH
USPSTF, 2009

- Meta-Analysis
- Cochrane Central Register of Controlled Trials
- Cochrane Database of Systematic Reviews (through the fourth quarter of 2008)
- MEDLINE (1 January 2001 to 1 December 2008)
USPSTF, 2009

- Included RCTs & Meta-Analyses with mortality data
- Breast Cancer Mortality primary outcome
- Fair or Good RCTs included
USPSTF, 2009

- Identified 8 RCTs
- Data for 600,830 women age 40+
  - stratified by decade
- Routine Screening defined as 1 mammogram in 2 years
- Positive mammography defined by BI-RADS
USPSTF, 2009

Pooled RR for breast cancer mortality in screened pts:

- 39-49  0.85 (95% CI 0.75-0.96)
- 50-59  0.86 (0.75-0.99)
- 60-69  0.68 (0.54-0.87)
USPSTF, 2009

Figure. Pooled relative risk for breast cancer mortality from mammography screening trials compared with control for women aged 39 to 49 years.

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<th>Study/Author, Year (Reference)</th>
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CNBSS-1 = Canadian National Breast Screening Study-1; CrI = credible interval; HIP = Health Insurance Plan of Greater New York.
* Swedish Two-County trial.
**USPSTF, 2009**

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* Swedish Two-County trial.
USPSTF, 2009

Mammography screening reduces breast cancer mortality by 15% for women aged 39 to 49 years (relative risk, 0.85 [95% credible interval, 0.75 to 0.96]; 8 trials).
USPSTF

• Radiation exposure from mammography is low.

• Patient adverse experiences are common and transient and do not affect screening practices.

• Younger women have more false-positive mammography results and additional imaging but fewer biopsies than older women.
Effectiveness of Population-Based Service Screening With Mammography for Women Ages 40 to 49 Years

Evaluation of the Swedish Mammography Screening in Young Women (SCRY) Cohort

Barbro Numan Hellquist, MSc¹; Stephen W. Duffy, MSc²; Shahin Abdsaleh, MD, PhD³; Lena Björneld, RN⁴; Pál Bordás, MD⁵; László Tabár, MD, PhD⁶; Bedrich Viták, MD, PhD⁷; Sophia Zackrisson, MD, PhD⁸; Lennarth Nyström, PhD⁹; and Håkan Jonsson, PhD¹
Swedish Studies

- 1974 – Gavleborg starts screening
- 1976 and 1983, RCTs on mammography screening were initiated in the cities of Stockholm, Malmo, and Gothenburg (the WE trial)
- 1986 NBH issued their guidelines recommending that the county councils invite women ages 40 to 54 years to screening every 18 months and women ages 55 to 74 years every second year
Swedish Studies

- In 1987 - guidelines were modified
  - in case of a lack of resources, county councils should focus on the group ages 50 to 74 years.

- Consequently, 50% of the Swedish counties invited women aged 40 years, and the remaining counties invited women aged 50 years.
Swedish Studies

Figure 1. This is a simplified map of the areas that were included in the study group and the control group.
Swedish Studies

- Breast cancer death / person-years

- 40 to 44 years - RR estimates were 0.83 (95% CI, 0.70-1.00)

- 45 to 49 years, the RR estimates were 0.68 (95% CI, 0.59-0.78)
Figure 2. This chart illustrates the crude cumulative breast cancer mortality per 100,000 person-years. Solid line indicates the study group; dashed line, control group.
Effect of mammographic screening from age 40 years on breast cancer mortality at 10 years’ follow-up: a randomised controlled trial

Sue M Moss, Howard Cuckle, Andy Evans, Louise Johns, Michael Waller, Lynda Bobrow, for the Trial Management Group*
Age Trial

- Randomized Control Trial

- Effect on Mortality of Annual Screening at Age 40
Age Trial

• 160,921 women age 39-41 randomized; 1991-1997
• 23 Centers - England, Wales, Scotland
• Intention-to-treat principle
• 10 year follow-up
### Age Trial

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<td>53884</td>
<td>578390</td>
<td>960</td>
<td>1.66</td>
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<tr>
<td>Control</td>
<td>106956</td>
<td>1149380</td>
<td>1975</td>
<td>1.72</td>
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*Table 2: Mortality from all causes and from breast cancer in the intervention and control groups*
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*Table 2: Mortality from all causes and from breast cancer in the intervention and control groups*
Age Trial

Figure 2: Cumulative breast cancer mortality

(RR 0.83, 95% CI 0.66–1.04)
Summary
Summary

What should I recommend to my patients?
The introduction and widespread use of mammography for the early detection of breast cancer is one of the most important recent achievements in the control of cancer.

Robert A. Smith, PhD; ACS
Thank You