



Screening Mammograms in Women 40-50 Years Old: DANGEROUS!!

Stephen Sharp, MD
October 17th, 2011
PGY II



SCHOOL OF MEDICINE
Department of Surgery

UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

Overview



- Epidemiology
- Current Screening Recommendations
- Screening between 40-50 years of age
 - Why it is Ineffective
 - Why it is Dangerous
- Conclusions

Epidemiology



- Median age at diagnosis is 61 years.
- Per 100K women: Caucasian 127, African-American 120, Asian 94, American-Indian 78, Hispanic 78
- Most frequently diagnosed non-cutaneous cancer among women in the U.S.
- 2nd leading cause of cancer death among women in the U.S.
- 2008: 180,000 of invasive and 67,000 non-invasive cases of breast cancer
- 2008: 40,500 deaths
- Probability of developing in 40's: 1 in 69

Mammography Stats



- Sensitivity: 77%-95%
- Specificity: 94%-97%
- Rate of false positives: ~10%, and this is higher in younger women

5 year survival rates



■ Site	'74-'76	'83-'85	'95-'01
■ Breast	75	78	88

Assumptions of Screening Theory



- Increased detection of early cancer leading to fall in incidence of late cancer
- More in situ disease and less invasive disease
- Fewer node-positive cases and more node-negative cases lower mortality

Screening Biases



- Lead time bias-prolongs period of observation
- Length bias-screening good at detecting non-aggressive cancers
- Attendance bias-class effect

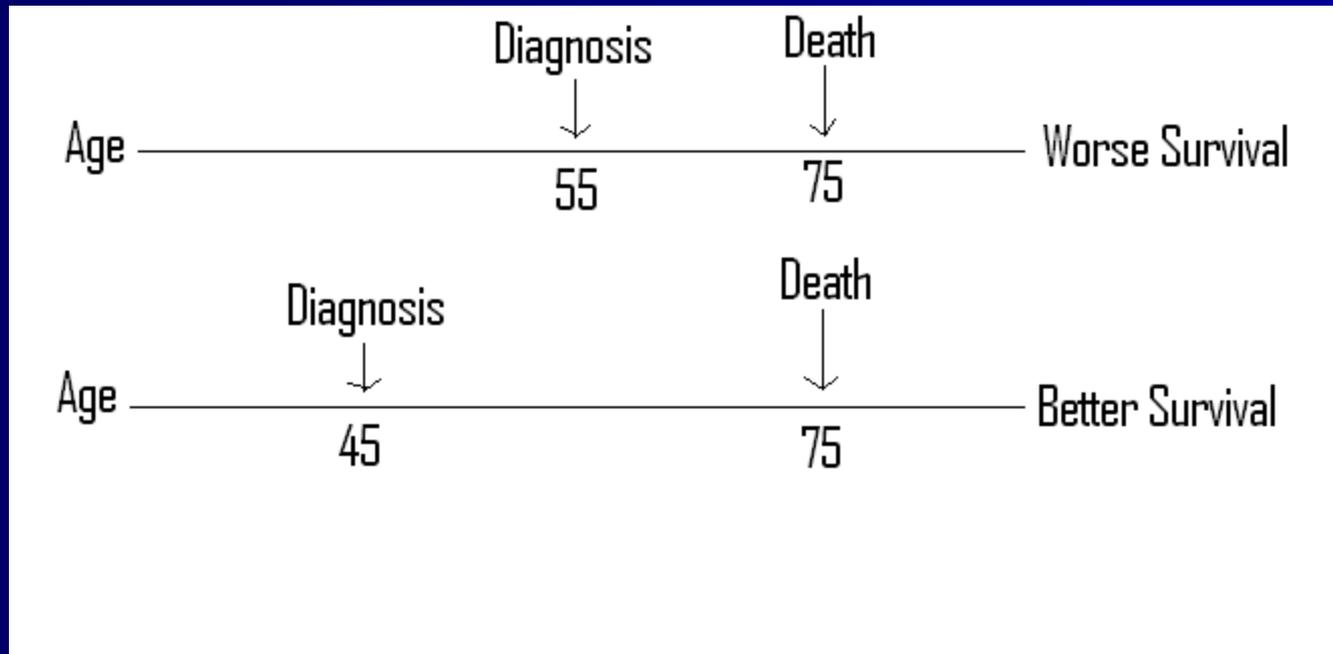
Data in 40-50 age range



- Age Trial
- 160,921 women, 39-41 from 1991-1997.
- Randomly assigned to annual screening vs. usual care (screening starting at age 50)
- Followed for 10 years
- Relative risk for breast cancer specific mortality 0.83
- **NO EFFECT ON ALL CAUSE MORTALITY**

Moss SM, Cuckle H, Evans A, Johns L, Waller M, Bobrow L, et al. Effect of mammographic screening from age 40 years on breast cancer mortality at 10 years' follow-up: a randomised controlled trial. *Lancet* 2006;368(9552):2053-60. [PubMed: 17161727]

Lead Time Bias



Framing the result



- 25% relative risk reduction in cause specific death
- Number needed to screen to prevent one cancer death: 2,500 over 10 years

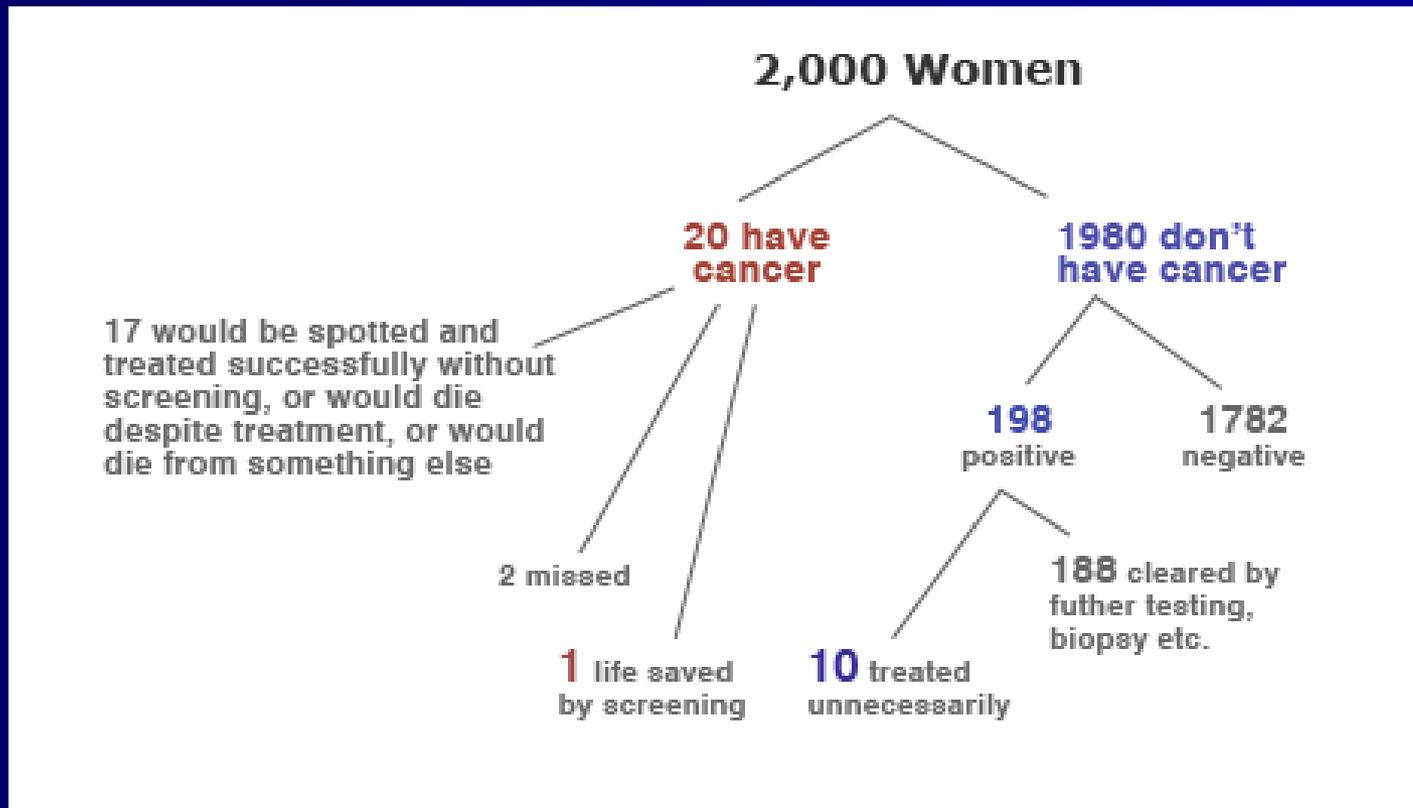
Moss SM, Cuckle H, Evans A, Johns L, Waller M, Bobrow L, et al. Effect of mammographic screening from age 40 years on breast cancer mortality at 10 years' follow-up: a randomised controlled trial. *Lancet* 2006;368(9552):2053–60. [PubMed: 17161727]

Risks of Screening



- "All screening programmes do harm; some can do good as well." –Muir Gray, director, UK Cancer Screening Programme
- False alarms
- Over-diagnosis
- Unnecessary surgery
- Increase in mastectomy rate

Costs of Screening



Costs of Screening



- 30 million women aged 40-50
- Over 10 years screening would save ~15,700 lives
- Average cost of mammogram (averaging insured and uninsured): \$100
- Cost of treating false positive: \$525
- False positives treated unnecessarily: ~ \$20,000

Chubak, et al. Cost of Breast Related Care in the year following false positive screening mammograms. Med. Care, 2010.

10 year cost of screening, brought to you by Mastercard



- Screening alone: \$30,000,000,000
- 3 million false positives: \$1,575,000,000
- 150,000 go on to receive further unnecessary treatment: \$3,000,000,000
- Total cost: \$3.4 BILLION PER YEAR!! NOT PRICELESS!!
- THIS IS UNSUSTAINABLE AND IS A DIRECT THREAT GOING TO OUR HEALTH CARE SYSTEM!

COST OF SAVING LIVES



- \$2.2 million dollars over 10 years to save one woman's life
- Can we sustain this? Shouldn't we be putting our money into better research?
- Newer and better treatments instead of more screening
- Smarter screening such as risk calculators, individualized provider-patient counseling

References



- American Cancer Society. Statistics. 2008 [June 2009]. Available at: http://www.cancer.org/docroot/stt/stt_0.asp.
- Moss SM, et al. Effect of mammographic screening from age 40 years on breast cancer mortality at 10 years' follow-up: a randomised controlled trial. *Lancet* 2006;368(9552):2053–60. [PubMed: 17161727]
- http://news.bbc.co.uk/2/hi/uk_news/magazine/7910011.stm
- Nelson, HD, et al. Screening for Breast Cancer: Systemic Evidence Review Update for the U. S. Preventative Services Task Force. *Ann Intern Med.* 2009 November 17; 151(10): 727–W242.
- <http://PharmacoEconomics.adisonline.com/pt/re/phe/pdfhandler.00019053-200927030-00003.pdf>