Breast Cancer Screening: Current Issues
Julietta Patnick
Montréal 2006

Cumulative mortality by study group.
ASP = active study population,
PSP = passive study population

Tabar et al, Radiol Clin N America, 1992
Long-term effects of mammography screening: updated overview of the Swedish randomised trials

“There is sufficient evidence from randomized trials that inviting women aged 50-69 years of age to screening with mammography reduces mortality from breast cancer; the best current estimate of the average reduction is 25%. There is only limited evidence for this effect in women 40-49 years of age, in whom the reduction, if real, is estimated at 19% but could be less…….”
Clinical Breast Examination

Outcome of screening by clinical examination of the breast in a trial in the Philippines.

- The test sensitivity for CBE repeated annually was 53.2%.
- The actual sensitivity of the programme was 25.6%.
- Positive predictive value 1%.
- Screen-detected cases were non-significantly less advanced than the others.

www.cancerscreening.nhs.uk
Most UK Screening is on Mobile Units

International Comparison and Shared Learning

http://appliedresearch.cancer.gov/ibsn/
So where are we?

- We know what we should be doing
- How do we know if we are doing it?
- We must evaluate our programs
- But no control groups in population screening programs
Age standardised (European) mortality rate, breast cancer, England and Wales, 1950-2001

Breast cancer incidence and mortality among British women aged over 50, 1975-2003
Mortality from breast cancer by year of death for selected age groups, England and Wales, 1971-99

Blanks et al, BMJ 2000

Mortality from breast cancer by year of birth for selected age groups, England and Wales, 1971-99

Blanks et al, BMJ 2000
Annual rates of excess mortality from breast cancer 1990-95 for screened (S) versus control (C) counties, stratified according to age at diagnosis into 50-69 years. Bars indicate 95% confidence intervals.

Lenner & Jonsson, 1997

Annual rates of excess mortality from breast cancer 1990-95 for screened (S) versus control (C) counties, stratified according to age at diagnosis into 40-49 years. Bars indicate 95% confidence intervals.

Lenner & Jonsson, 1997
Age standardised mortality rates, with and without screening, observed in the Netherlands and predicted by MISCAN, for the age groups 45-49, 50-59, 60-69 and 70-74. The expected mortality reduction for these age groups after 5, 10 and 15 years of screening is also shown.

van den Akker - van Marle et al, 1999

We are doing good
We are inevitably doing some harm
Does the good outweigh the harm?

Daily Telegraph October 18 2006
For every 2000 women who are invited to join a programme over 10 years, one will have her life prolonged.

10 women will have been diagnosed as having breast cancer and will receive treatment for it, even though they would have survived without the treatment.

A further 200 women will experience important psychological distress for many months because of false positive findings.

“Women invited to screening should be fully informed of both benefits and harms.

2000 women screened for 10 years

**Cochrane review**

- 1 life prolonged
- 10 women treated who would otherwise have lived out their lives without treatment
- 200 false positives
- Women invited to screening should be fully informed of both benefits and harms

**NHSBSP**

- 5-8 lives prolonged
- 5-8 women treated who would otherwise have lived out their lives without treatment
- 85 false positives
- Women invited to screening should be fully informed of both benefits and harms
Breast Screening Assessment: Rate and Yield

Comparison of Screening Mammography in the United States and the United Kingdom
Smith-Bindman et al. JAMA 2003; 290: 2129-2137

Informed Choice

To help you decide whether or not to come for breast screening, the main benefits and difficulties of screening for breast cancer are explained below

http://www.cancerscreening.nhs.uk/breastscreen/publications/ia-02.html
Benefits listed

• Most breast cancers are found at an early stage when there is a good chance of a successful recovery.
• Around half the cancers that are found at screening are still small enough to be removed from the breast. This means that the whole breast does not have to be removed.
• Breast screening saves an estimated 1,400 lives each year in this country.
• Breast screening reduces the risk of the women who attend dying from breast cancer.

Limitations listed

• We will call back some women for more investigations if we are not sure about their mammogram. After more tests, we will find that many of these women will not have cancer. If you are called back it can cause worry.
• Screening may miss some breast cancers.
• Not all breast cancers that are found at screening can be cured.
• Many women find mammography uncomfortable or painful, but normally just for a brief period of time.
SCREENING IS A QUESTION OF BALANCE

Advantages
Benefits
Sensitivity

Disadvantages
Costs
Specificity

The Daily Telegraph

Blunders in breast cancer testing

1900 women alerted after two patients die
I offer my sincere apologies to the women affected by this and the worry and distress caused.

Chris Harrison
GMSHA

January 2006

December 2002
Regional Structure of NHSBSP

NHSBSP Standards Include:

- Coverage
- Standardised Detection Ratio
- Cancer Detection Rate (invasive/in situ)
- Small Invasive Cancer Rate (<15 mm)
- Image Quality
- Radiation Dose
- Repeat Film Rate
- Assessment Rate
- Non-operative Diagnosis Rate
- Benign Biopsy Rate
- Interval Cancer Rate
Monitoring of Adherence to Standards
NHS Breast Screening Programme

- NHSBSP Standard Statistics
- External Quality Assessment
- Regular Quality Assurance Visits

National Analysis of Individual Unit Data:
Non-Operative Diagnosis 2003-04

[Graph showing data]
National Analysis of Individual Unit Data:
Non-Operative Diagnosis 2003-04

National Statistics Bulletin

Selected diagnostic and outcome statistics for women aged 50-64,
Prevalent round

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Challenges for the Future

- Digital mammography and PACS
- Family history screening and younger women
- MRI screening for women with genetic mutations?
- Demographic change

Digital Mammography and PACS
Family history screening and younger women

Daily Mail 29 April 2003

NHS Guidelines: Family History
Annual Mammography

• 40-49 “satisfying referral criteria to secondary or specialist care (at raised risk or greater)”
• Surveillance should only be undertaken after provision of information about its potential advantages and disadvantages for the early detection of breast cancer
• This should be of high quality (equivalent to NHS Breast Screening Programme standard) and audited

www.nice.org.uk
NHS Guidelines: Family History
Annual MRI

• *BRCA1* and *BRCA2* mutation carriers aged *30–49 years*
• *TP53* mutation carriers aged *20 years* or older
• **From 30–39 years:**
  - to women at a 10-year risk of greater than 8%
• **From 40–49 years:**
  - to women at a 10-year risk of greater than 20%, or
  - to women at a 10-year risk of greater than 12% where mammography has shown a dense breast pattern.

[www.nice.org.uk](http://www.nice.org.uk)

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Demographic change:
Projected population changes in women in England

![Graph showing projected population changes in females aged 50-70 in England from 2005 to 2025.](image-url)
Summary

- Breast Cancer remains a major problem
  - Death rates falling
  - Incidence rates rising in all age groups
- Breast Screening offers benefits and carries risks
  - Informed choice a key part of participation
- Breast Screening contains continuing challenges for those who work in the field
Cancer Screening Programmes

Thank you

www.cancerscreening.nhs.uk