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Use of hormone replacement therapy and the sensitivity of screening mammography

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Some studies have suggested that use of hormone replacement therapy (HRT) reduces the sensitivity of screening mammography while others have failed to demonstrate this link. All studies have had limited statistical power. We examined the relationship between self-reported HRT use and the sensitivity of screening mammography in women attending for first round screening with BreastScreen Victoria in 1994. Women with a personal history of breast cancer and women who were not resident in the state of Victoria at the time of screening were excluded. Screening is biennial with two-view mammography and double reading. The screening program is specifically targeted to women aged between 50 and 74 years although women aged between 40 and 49 and women older than 75 can attend for screening.

The sensitivity of screening mammography is the number of screen-detected invasive breast cancers (true positives) divided by the sum of the screen-detected invasive cancers (true positives) and interval invasive cancers (false negatives). We compare the risk of a false negative screen according to whether a woman is taking HRT at the time of screening and adjust for the effects of possible confounding variables using logistic regression analysis.

In women taking HRT at the time of screen there were 132 screen-detected invasive cancers and 69 interval invasive cancers; in women not taking HRT there were 458 screen-detected invasive cancers and 130 interval invasive cancers. In HRT users the sensitivity was 65.7% (95% CI 63%–68%) and in the non-users it was 77.9% (75%–81%). Hormone users were nearly twice as likely to have a false negative screen (unadjusted odds ratio 1.84, 95% CI 1.3–2.6) an effect that remained after adjusting for age and self-reported family history of breast cancer (adjusted odds ratio 1.65, 95% CI 1.2–2.4).

The lower sensitivity of screening mammography in HRT users is probably due to the fact that high breast density is more common in HRT users and high breast density is associated with lower mammographic sensitivity.

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Mammography screening in Norway. Is it cost effective?

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Purpose: Mammography screening is a promising method for improving prognosis in breast cancer. However, the screening procedure involves substantial expenses for governments or health insurance organisations. This study was undertaken to document value for money in mammography screening in Norway.

Methods: The Norwegian Mammography Project (NMP) invited in 1996 60,147 women aged 50–69 years to a 2-yearly screening programme and achieved a compliance rate of 77%. Cost data (1996) from the NMP, the tariff of the National Health Administration (NHA) and the Norwegian Medical Association and survival data from Statistics Norway and the National Cancer Registry (NCR) were implemented in a model for cost-effectiveness analysis in mammography screening. A 5% discount rate was employed and £1 (BP) was calculated 11 N.O.K.

Results: The NMP cost for 1996 was £2,937,931 and the production loss was estimated £429,083. The cost of more breast conserving surgery (BCS) and the diagnosis pushed forward (2 years) in the screening situation was estimated £132,178. Stage I disease is more common in screening and money spent on adjuvant hormonal and/or chemotherapy can be saved. A total amount of £56,841 was calculated in this study. The follow up costs (10 years) and costs due to relapse (1% per year) in the preserved breast (in BCS) were calculated £50,493. A survival gain of 15 years per prevented breast cancer death indicated a cost per life year saved of £8,561.

Conclusion: Mammography screening in Norway is cost effective.

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Russia (St.-Petersburg)/WHO randomized prospective study of the role of BSE in reduction of breast cancer mortality

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The major objective of the study is to determine the effect of a breast self-examination (BSE) programme on mortality from breast cancer. A population of 122 000 women aged 40 to 64 has been defined in St.-Petersburg and randomized to study and control groups. 954 breast cancer (BC) patients (pts) were registered in the studied population during the period of January 1985–January 1994. 498 BC pts were registered in the BSE group, and 456 pts – in the control one. During the 10 years of follow-up 257 BC pts died; 122 of them in the main group and 135 in the control one. Median follow-up was 63 months. It was found out that overall 10 years survival rate in the BSE group made up 65%, and control one 54.8% ($P > 0.05$). There is no significant difference in mortality between BSE and control groups. The follow up is planned to last until year 2000.

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Östergötland mammographic screening programme: Compliance, referral rate, and risk of interval breast cancer after a negative screen

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Purpose: To investigate the attendance rate, referral rate, and the incidence risk of interval breast cancer in women participating in breast cancer screening.

Method: Retrospective study based on a mammographic screening programme for women aged 40–74 years carried out as a randomised cohort trial under 1978–1986 and as a regular screening under 1987–1995 in the county of Östergötland.

Results: The average attendance rates were 85.5% at the initial and 81.3% at subsequent screenings. There was no significant difference between women aged 40–49 years and 50–69 years. The mean referral rates were 1.51% for the whole period and 1.1% for the regular screening period (1987–1995). The average referral rates were at the initial screening 2.0% and 0.9%–1.1% at subsequent screenings. In the regular screening the average incidence of interval cancer was 1.42/1000 (no time limit for the interval between the latest screen and diagnosis). The risk of developing interval cancer was 0.46/1000 for tumours detected within 1 year of the latest screen and 1.2/1000 for tumours detected within 2 years. The incidence risk was roughly the same in all age groups.

Conclusions: At subsequent screenings a high attendance rate can be maintained by adjustments of the programme to local conditions. The study confirmed the lower referral rate at subsequent screenings. The risk of developing interval cancer increased with time after the latest screen. Neither the rate of referrals for further examination nor the age of the patients were correlated to the incidence risk of interval breast cancer.

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Screening women with a family history of breast cancer – Results from a national audit

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An audit was performed of all breast units in the UK who offered a screening service for women with a family history of breast cancer. A total of 19 units were able to provide data on 8236 women. All women were under age 50 with a family history of at least 1 first-degree relative affected with breast cancer before age 50.

The cancer detection rate was 4.9/1000 at prevalent screen and 4.4/1000/year at incident screen. The interval cancer rate was 2.3/1000/year.

Of the 76 cancers detected by screening, 21.1% were DCIS. Of the invasive cancers 42.3% were <15 mm and 55.8% were node-negative. Mean age at diagnosis was 42.5 years.

This audit suggests that screening women under age 50 with a significant family history of breast cancer is worthwhile and that cancer detection rates

are similar to those for women over age 50 in the UK National Breast Screening Program.

417 ORAL

Is annual mammography better to detect a contralateral breast cancer than mammography at a greater interval?

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Background: Follow up with annual mammography (MG) and regular clinical breast examination (CBE) is generally advised for women after curative treatment for primary breast cancer in order to detect a contralateral breast cancer (CBC) in an early stage.

Purpose: To investigate whether annual mammography results in the detection of contralateral breast cancers in an earlier stage compared to less frequent MG.

Patients and Methods: We compared stage and outcome of women with CBC diagnosed while on an annual MG and CBE schedule to women with the same CBE, but a less frequent MG screening interval. We studied 269 patients with a CBC treated for the first breast cancer in the period 1976–1987. They were followed until 1998.

Results: Group A consisted of 120 patients with CBC who had a MG interval of at the most 15 months. In group B 149 patients were analysed, their MG was made at a greater interval.

Group	N	Mean MG/pat	Mean MG interval months	Mean age at first BC	Found by %	Clinical occult %	Stage 0+I CBC %	node negative %	Dead by % 1998
A	120	6.25	12.2	49.5 yr	37	32	51	69	43
B	149	4.35	21.0	54.2 yr	40	25	59	68	42

MG was more often the source of first suspicion in recent years and tumor stages improved, but compared to the ipsilateral tumor stages hardly any difference was seen.

Survival curves will be presented.

Conclusion: Intensive follow up with annual MG does not lead to more non-palpable CBC's, nor better tumor stages than follow up with a less frequent radiological follow up.

418 POSTER

Continuing education and results in breast cancer screening

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At the end of 1997 the implementation of the nationwide mammographic screening has been completed in the Netherlands, resulting in 625.000 tests per year involving the age cohort 50–69 and with a screening interval of two years. All radiologists, radiographers and pathologists participating in the screening programme are trained in the National Expert and Training Centre in Nijmegen, the Netherlands, before the commencement of the screening. Technical quality control of all the 50 screening units is an additional task of the Centre.

The training programme for the radiologists includes the topics of screening vs clinical diagnosis, pattern recognition, the threshold for recall and radiologic/pathologic correlation, for the pathologists, handling of the specimen, differential diagnostic problems and similarly the radiologic/pathologic correlation. The radiographers are trained in positioning techniques, pattern recognition, psycho-social aspects and technical quality assurance.

The Centre has the task to evaluate the medical performance of the various disciplines by means of site visits. At these visits, first, the overall screening results of the first and subsequent rounds are evaluated, second, mammograms of a one-day production are reviewed for positioning- and technical quality and third, screening and diagnostic mammograms of interval and screen-detected St. II cancers are reviewed.

Results of 15 site visits will be presented and reasons for the regional variations will be discussed.

We conclude that training should be done before the commencement of the screening, that a continuous follow-up of the results is mandatory and that the various disciplines should be retrained continuously, both centrally and at the site by self-education.

419 POSTER

Screening – Yes, but whom and when?

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Screening is a way of detecting breast cancer in an asymptomatic, hence in many cases early stage. Early diagnosis – so women were taught – means a better chance for – if not curative – so at least improved treatment. So why is there lately so much argument about screening? Mostly because there is actually no scientific evidence proving (or disproving) the benefit of an early detection. The optimal age for starting screening, age-related anatomical difficulties, the interval, the techniques (mammography, BSE, CBE), the costs, no proof of a decrease in cause-specific mortality and the too often lacking experience of the mammographers, are only a few of the unsettled issues, that render the women insecure. In addition genetic markers have to be added by which women with a high risk to develop breast or ovarian cancer can be identified.

But since these open questions perhaps can never be answered univocally, women should be educated to inform themselves and take advice from their physician of confidence about the advantages and limits of screening and then take their health program in their own hands.

420 POSTER

Can population based screening reduce the mortality from breast cancer?

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Aim: We analyse the impact of the NHS breast screening program on disease stage, estimate the impact on mortality.

Methods: The pathology reports were obtained for all invasive breast cancers from 1988 to 1996 in women aged 50–64 in a defined geographical area. The distribution of tumour size was compared pre-screening and the second round. Mortality pre-screening was compared to that predicted for the second round.

Results: Tumour size changed significantly (Table 1). Mortality is predicted to drop by 22% from an observed 39% to 30.5% ($p < 0.0000$).

Table 1. The Distribution Of Tumour By Screening Round And Observed And Predicted Mortality

Tumour size mm	Observed 7 year mortality	Observed dist. Prescreening	Contribution to overall mortality	Observed dist. round 2	Predicted mortality round 2
<10	13%	0.03	0.4%	0.2	2.6%
10–19	18%	0.2	3.6%	0.31	5.6%
20–39	42%	0.36	15.1%	0.26	10.9%
40+	56%	0.15	8.4%	0.07	3.9%
unknown	47%	0.25	11.8%	0.16	7.5%
Total		1.00	39.3%	1.00	30.5%

Dist. = Distribution of tumour size

Conclusions: The change of tumour size seen due to the NHS Breast Screening Program implies that population based screening is effective.

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Symptomatic status, mammographic sensitivity and screening policy

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Population-based mammographic screening was introduced in Victoria, Australia in the 1990s and was fully operational by 1994. Screening is biennial with two-view mammography and double reading. The program is specifically targeted to women aged between 50 and 74 years, however women 40 to 49 years of age and women older than 75 can attend. Although the program is designed for asymptomatic women some women with symptoms do participate. According to BreastScreen Victoria policy women with a breast lump for less than 12 months who have not seen a doctor for the lump and women who report a blood-stained or watery nipple discharge should be referred for clinical assessment irrespective of the outcome of their screening mammogram. Women with 'other symptoms' are managed the same way as asymptomatic women.

We calculated the sensitivity of screening mammography according to the symptomatic status of women presenting for first round screening in 1994.