The Norwegian Breast Cancer Screening Program

Economical experiences

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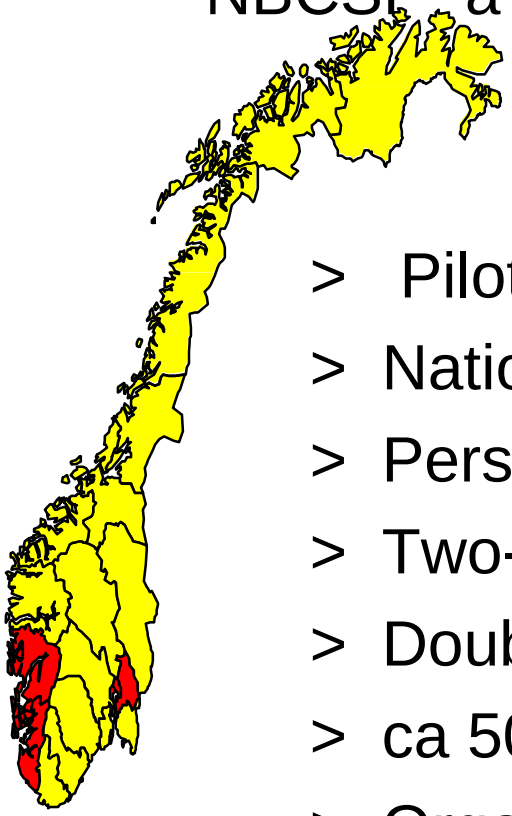
NBCSP- a short outline



- Pilot project in four counties started in 1995
- Nationwide from 2004
- Personal invitation every second year, 50-69
- Two-view mammograms
- Double reading, independently
- ca 500 000 in the target group
- Organized with 17 breast centers and 32 screening units

Organisation of the Norwegian health care system

- The Government endeavours to ensure that everyone, irrespective of their personal finances and where they live, has access to good health and care services of equal standard.
- *The Ministry of Health and Care Services* has chief responsibility for health policy, public health, health services, municipal services for the elderly and disabled, health legislation and parts of social legislation in Norway.

- The Ministry of health and Care Services comprise seven departments:
  - Department of Public Health
  - Department of Municipal Healt Care Services
  - Department of Specialist Health Care Services
  - Department of HospitalOwnership
  - Department of Health Legislation
  - Department of Administration
  - Department of Budgetary and Financial Affairs

  Each of these departments is headed by a director general.

- The Ministry of Health and Care Services has supervisory responsibility for all hospitals in Norway, and the state owns the public hospitals. Organized into four regional health authorities, the hospitals operate with a combined budget of over NOK 75 billion
- The hospitals provide the public with specialised treatment. In addition, the hospitals have tasks involving research and training, as well as educating patients and their loved ones.
- The breast centers are localized in the hospitals.

”kick off”

- In 1993 there was a gift from the Norwegian Cancer Society, which is an ideal organisation, on the amount of NOK 5 mill (1 mill. US$) to start screening for breast cancer
- In 1994 the Government granted NOK 25 mill for the same purpose.
- This was the kick off to get the Norwegian Breast Cancer Screening Program started.

Financial resources

1995- 2003: Strategies and budget was delegated from the Ministry of Health and Care System to the administration center at the Cancer Registry

> All the cooperative institutions sent their budget proposal to the Cancer Registry, where a common budget for all was made and sent to the Central Government Budget committe

> There was a common assignment through the Cancer Registry to all the other partners,including the breast centers. In that way the program administation was in charge of the economics.

Variation in county budgets

- Different needs of investments in the different counties
- Different wages (local wage negotiations)
- High travel costs espescially in the northern scarcely populated areas (travel costs for the staff on the mobile units)
- In one county there was a need to rent substitutes in radiologist vacancies, and there still is
- Gradually expansion of the program

- From 1996 to 2003 the total cost, included investments, wages and costs for ”running the business” was app. NOK 500 mill.

  (65 mill USdollar)
- One of the ”success factors” in the NBCSP is that the breast centers got their needs for investments in the phase of start up.

From 2004:

The Breast Cancer Screening Program became nation wide

The budget and annual accounts is now sent from each health trust (county) to it's own regional health authority (of which there are four)

The Ministry of Health and Care Services gives a steering document to the regional health authorities to assure that the Breast Cancer Screening Program is run according to the Quality Manual

Cost-effectiveness

> The research-based evaluation refered to yesterday, has just started in Norway,and is probably terminated within a period of three years.

> There are seven groups of researchers working on the evaluation, with different aims. The three main fields for the evaluation are: **mortality,overdiagnosis** and **cost-effectivness**, including analyses of the total use of resources.

While waiting for the results of the evaluation, I have to get back to data collected in 2001 and refer to you some moments from a part of an article written by a former employee at the Cancer Registry, Hege Wang(Phd):

Cancer Causes and Control
12 (1):39-45, January 2001.

Mammography screening in Norway: results from the first screening round in four counties and cost-effectiveness of a modeled nationwide screening

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Cost-effectivness analysis

- a comparison between the cost of a program and the health effects it provides
- The result presented as a cost-effectiveness ratio(C/E ratio)
- Assumptions in 2001:
  - Nationwide screening program,starting in 1996
  - Age group 50-69
  - 80% attendance rate, 2-year screening interval
  - Cost per screen as in the first screening round in Oslo
- Uncertainty in the C/E ratios was examined by performing a sensitivity analysis of variation in mortality reduction, cost per screen, positive predictive value and discount rate.

Cost per screen

- Cost of invitation
- Cost of screening
- Fee
- Cost of diagnostic work-up until å final benign/malign diagnosis
- Treatment costs not included
- Based on the1996 and 1997 accounts of the Oslo Breast Diagnostic Center (OBDC) and a time-consumption study of the recall examinations

Calculation of effect

- Based on several predictions and calculations, there among
  - the incidence of breast cancer without screening
  - A maximum mortality reduction of breast cancer of 30% (based on the Sweedish studies)
  - A calculation of the predicted fraction of fatal cases after implementation of a screening program, based on a matrix applied to the predicted fraction of fatal cases 10 years after diagnosis without screening

Calculation of life years saved

- Basis: number of lives saved 10 years after diagnosis
  - Multiplied by the predicted remaining years of life will give an underestimate because of women dying from breast cancer less than ten years after diagnosis will gain a few life years because of screening
  - To improve the estimate, women who died 1-5 years after diagnosis were antecipated to have gained 2.0 years, and those who died between 5 and 10 years after diagnosis - 2.5 years.

Results

- The cost per screen in OBDC was 50 USD
- The cost of a recall examination was 153 USD
- The cost per false positive was 107 USD
- The total accumulated discounted cost of the modeled nationwide program was

  154 796 590 USD.
- The estimated total accumulated discounted amount of lives saved was 1799.
- The estimated total accumulated discounted amount of years of lives saved was 41 279.

> The resulting **C/E ratios** were

86 045 USD per saved life

3750 USD per life-year saved.

Discussion

- The costs of the participating woman, for instance travel expences , was not included.
- Estimation of costs related to breast cancer treatment is attended with large uncertainty, and is not included in the model
- The discount rate of health effects has been discussed among health economists. In this article the authors have followed the recommodations from Viscusi to discount both costs and health effect with a rather low discount rate of 4.5%.

- The C/E ratios of breast cancer screening reported in the litterature vary widely.
- Ours are low, but in agreement with results from Sweeden and Holland at that time.
- The C/E ratios found in this article, at that time, are inexpensive compared with other medical treatments and other life-saving initiatives such as prevention of road accidents.

Expanding of NBCSP?

- Several pressure groups have expressed a desire to include the age group 45-49 into the Norwegian Breast Cancer Screening Program.
- The Ministry of Health and Care Services will decide whether there will be an expanding of the Norwegian Breast Cancer Screening Program to include this group.
- To help with the decition we have done some calculations at The Cancer Registry, which I shortly will describe:

- Number of invitations every year would expand from 255 000 to 415 000 (Screening every year from 45 to 49 years, every second year from 50 to 69)
- There would be a 60% increase in the number of screens.
- 110 % increase in recalls
- 24% increase in number of breast cancer the first years

- Need of 60% increase in the number of radiologists
- Need of 98% increase in surgeons and nurses
- Need of 30 more mammography equipments and 3 more busses.

So then it is up to the Health Authorities to make the decision, also depending on the results of the ongoing research-based evaluation.

KREFT registeret
INSTITUTT FOR POPULASJONS-BASERT KREFTFORSKNING

MAMMOGRAFI programmet

Encontro Internacional sobre

Rastreamento do Câncer de Mama

International Meeting on Breast Cancer Screening

16 e 17 de abril
Rio de Janeiro