

Michael Berger

Gedächtnisvorlesung

The epidemic of screening-related
pseudo-disease with a particular
focus on cancer screening

Screening

”To ask about the ethics of screening, generally aimed to make healthier people healthier, sounds, if not perverse, then definitely superfluous.”

Petr Skrabanek, 1994 in: "The death of Human medicine - and the rise of coercive healthism."

Screening

Phenylketonuria at birth

Diabetes

Cholesterol and blood pressure

Depression in general practice

Bone scans

Clinical breast examination

Digital rectal examination

Routine chest X-ray and ECG preoperatively

Full body CT scan

Regular health checkups

Prevention, who should do it?

There were three times as many deaths in the traffic in 1970 than today...

No-one got the insane idea to ask half of the police force to conduct individual, pedagogical, motivating conversations with those who like motor power too much and cannot abandon the car when drunk. Instead, the politicians introduced limits on speed and alcohol.

Why is it so difficult for politicians to do something that prevents life-style diseases?

Vinge, Ugeskr Læger 2009:2054

Screening

To provide all services recommended by the US Preventive Services Task Force, an average GP would need 7.4 hours per working day...

Yarnall, Am J Pub Health 2003;93:635

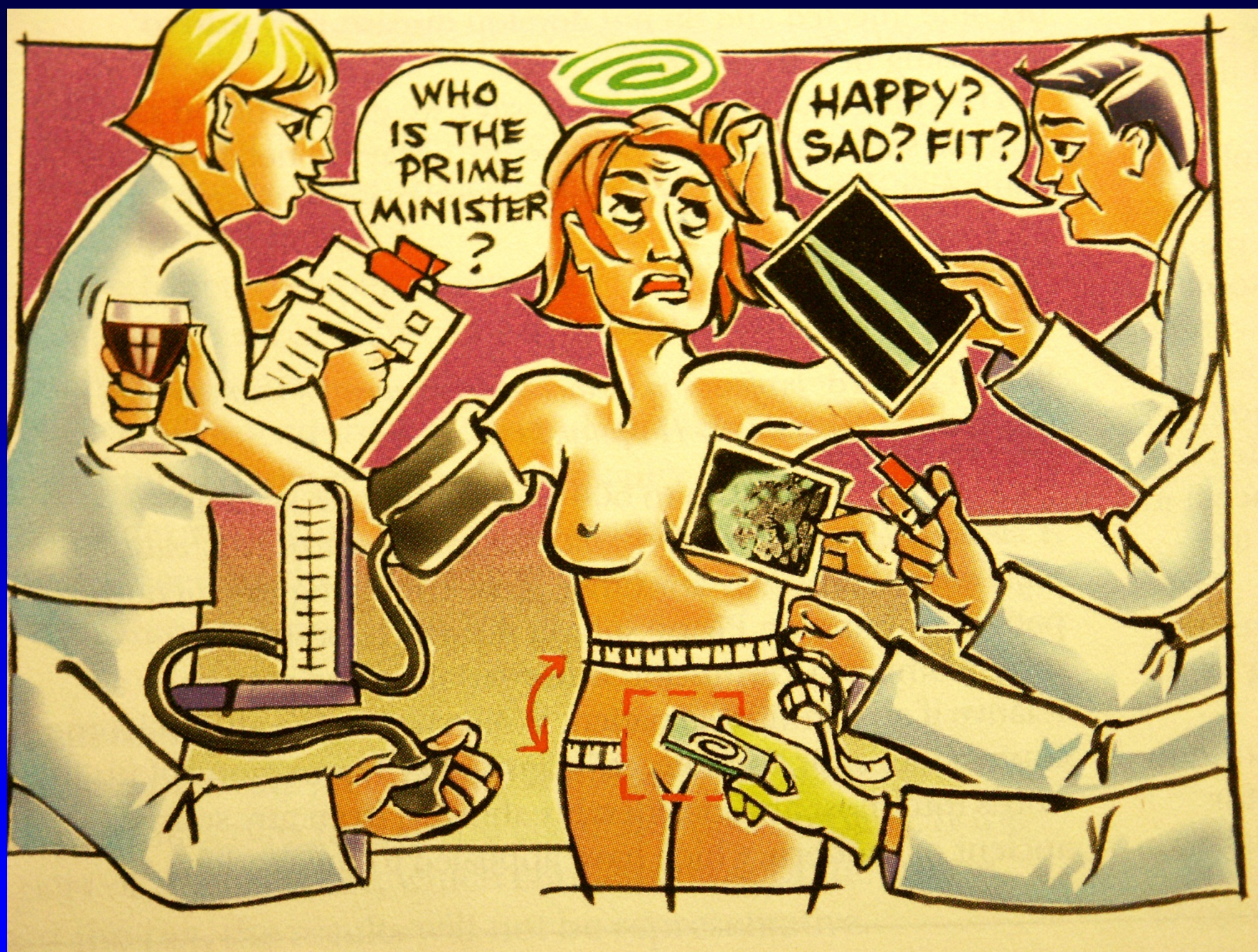
Framing

Likelihood of not dying from colorectal cancer:

99.34% if screened

99.20% if not screened

Getz, BMJ 2005



Germany will penalise cancer patients who do not undergo regular screening

Annette Tuffs *Heidelberg*

The German government is planning to make cancer patients who failed to undergo regular cancer screening before their diagnosis pay more towards their treatment.

The proposal is part of the

Financial disincentives for not participating in preventive measures is not new in Germany. Dental patients who do not have regular dental check ups have to contribute to the cost of dental treatment.

Screening

All screening programmes do harm;
some can do good as well.

(Muir Gray, director,
UK Cancer Screening Programme)
Evidence-based health care, 1997, p.53

Screening for cardiovascular diseases

European Guidelines 2003

Cutoffs: cholesterol 5 mM, BP 140/90 mm Hg

In Norway, at age 40:

At high risk: 86% of males, 23% of females

At low risk: no males, 10% of females

Getz, BMJ 2005



Full body scans are now regarded as the most effective means for screening out potential illness, resulting from an outgrowth of shared concerns for health, diet and life-style. Many medical professionals agree with the assessment and encourage patients to participate in a full body scan.

http://www.bodyscan.md/fullbody_scan.html
(9 June 2009)



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- Full Body Scan**

Visit your doctor for your annual check-up

Full Body Scan

The full body package includes:

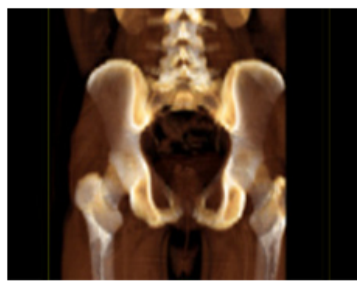
- Cardiac Calcium Scoring
- Smoker's Lung Scan
- Abdominal/Pelvic Cancer Screening

A full body scan can save your life!

A painless, safe, and accurate series of CAT scans can tell you whether or not you are at risk for heart attack, lung cancer, and abdomen cancer, as well as diagnose cysts, arthritis of the spine and aneurysms.



By evaluating and measuring the calcium buildup in your coronary arteries, we can calculate your risk of heart attack and give you the opportunity to seek treatment and make appropriate life style changes. By scanning your lungs, abdomen and pelvis we can evaluate your internal organs and lungs for cancer and other serious disorders that may not be causing symptoms. Our ultimate goal is to give you the peace of mind that you are now in charge of your health.



The information obtained will then be read by our board-certified radiologists and the information will be sent to you and your physician for further consultation.

New Lower Price- Full Body Scan (Includes Above): \$595.00

New Lower Pricing!!!

Costs for these screening tests are:

New Low Price !!!! - Cardiac calcium score CAT Scan:	\$95.00
NEW! - Smoker's Lung Scan:	\$125.00

Full body CT scan

For every 100 people who undergo a full body CT scan, between 30 and 80 of them will be told there is something that needs a workup and it will turn out to be nothing.

Cassels: What's in a scan? 2009
Kolata, NY Times 2005;23 Jan

Cumulative Incidence of False-Positive Results in Repeated, Multimodal Cancer Screening

PLCO Cancer Screening Trial, screening for:

- prostate cancer: digital rectal examinations, PSA
- ovarian cancer: transvaginal sonograms, CA-125
- colorectal cancer: **sigmoidoscopies**
- lung cancer: chest X-ray

14 tests were possible within 3 years. After 3 years:

False positives in 60% (men) and 49% (women)

Invasive procedures in 29% (men) and 22% (women)

Crosswell, Ann Fam Med 2009;7:212-222

Neuroblastoma

Screening in Japan

5 times more cancer than before in children below 1 year of age

11 parents chose watchful waiting,
the tumours regressed in all 11 children

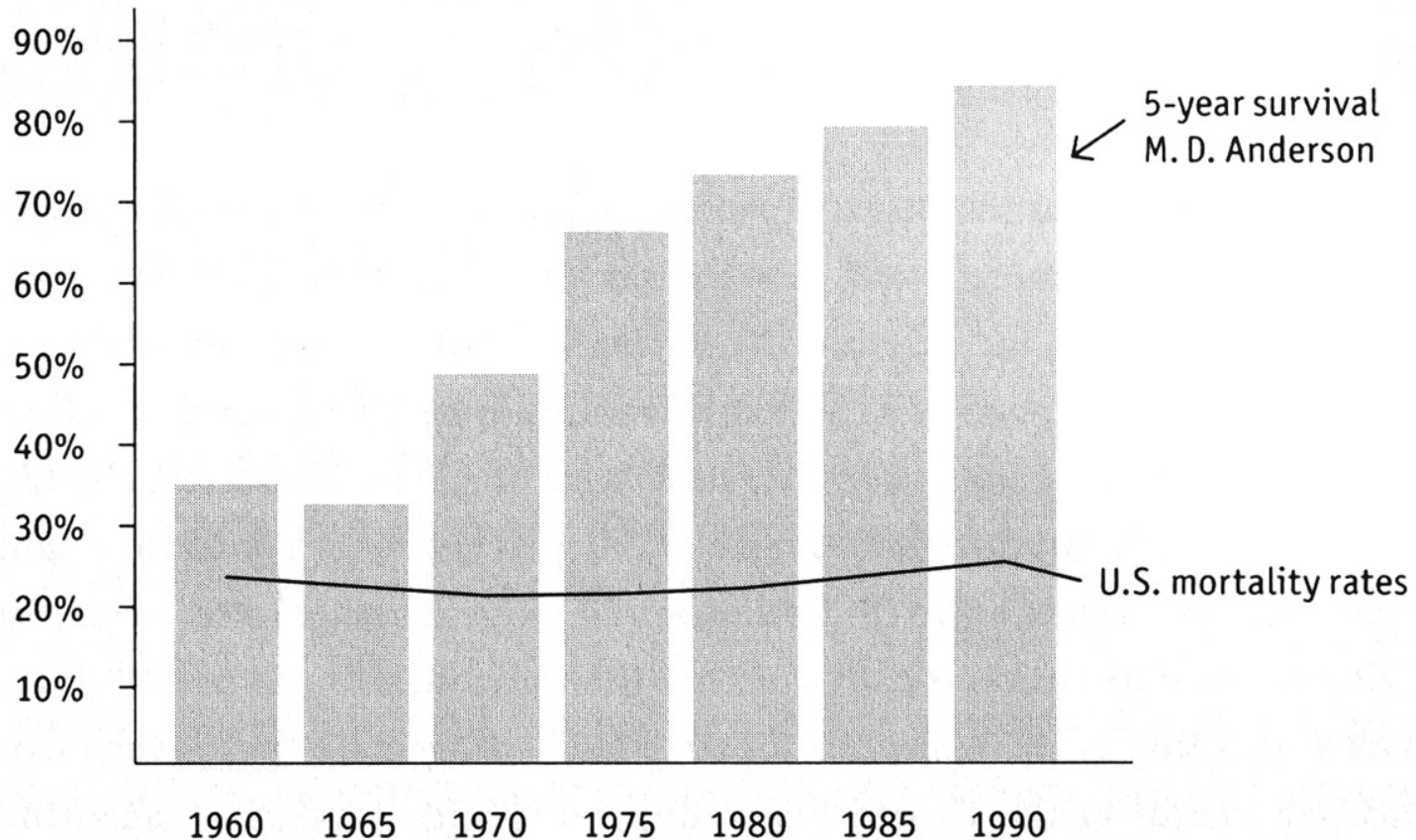
(Welch. Should I be tested for cancer?)

Two RCTs: no effect on mortality, but harm
(sometimes fatal)

Raffle, Gray. Screening.

Prostate cancer

“As national mortality rates fluctuated between 1960 and 1990, five-year survival rates for prostate cancer among our patients continued to improve.”



(Woloshin et al, Know your chances, 2008)

The I-ELCAP study

Henschke CI, NEJM 2006

Screening for lung cancer with spiral CT

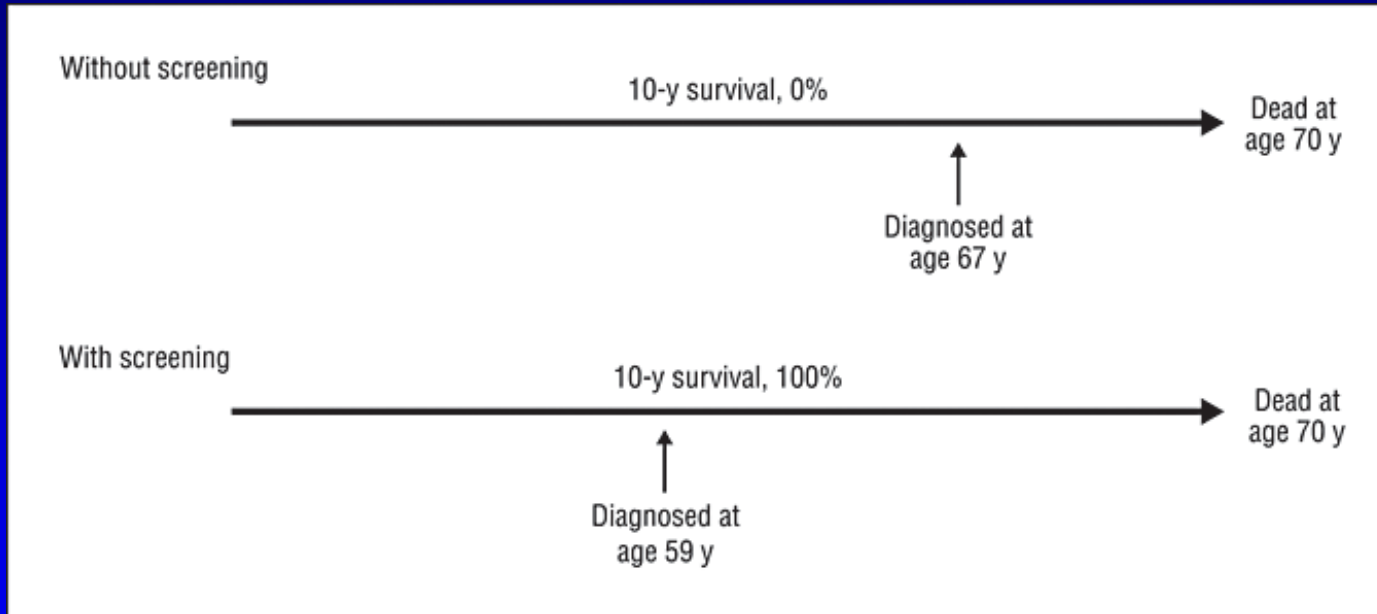
10-yr survival:

- about 90%
- about 10% usually (SEER database)

Read why this is too good to be true:

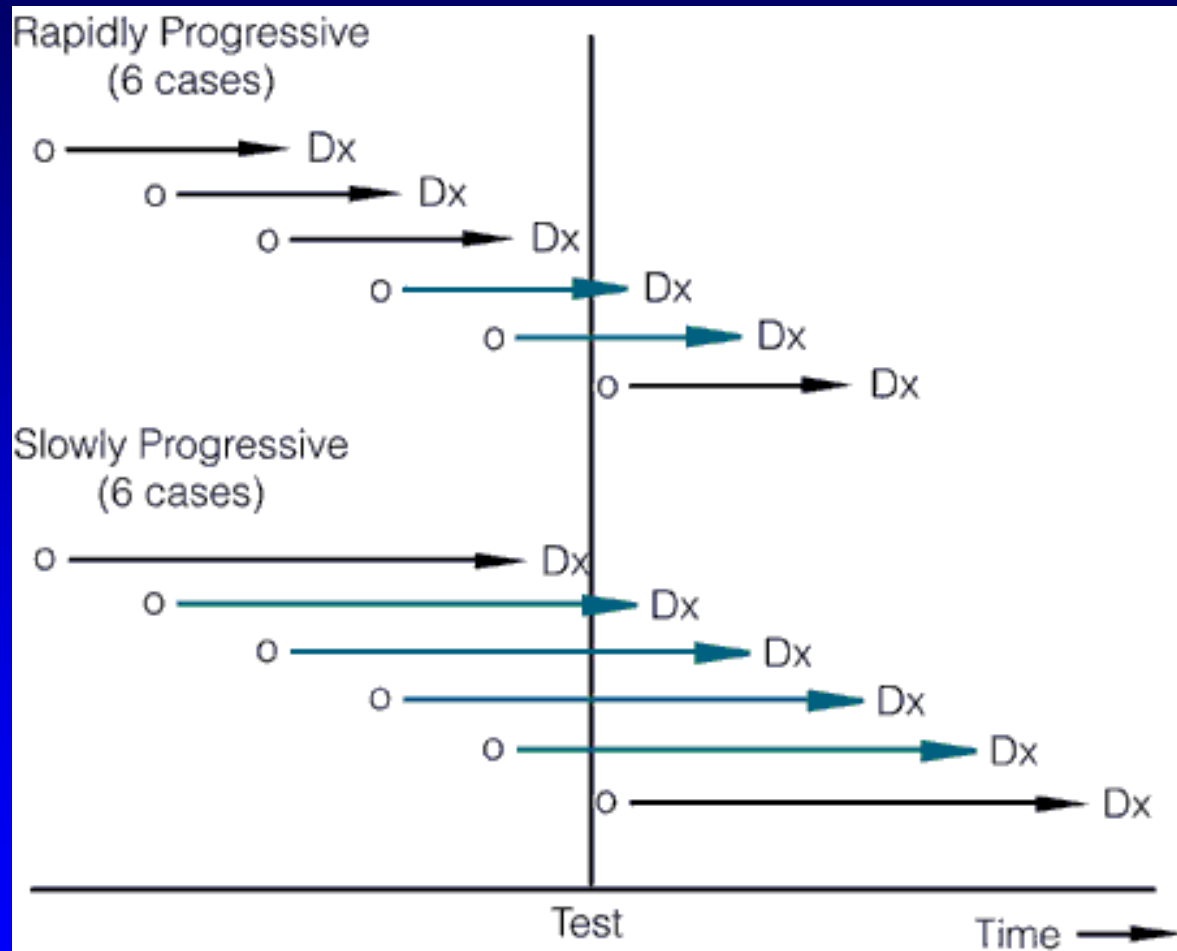
- Arch Intern Med 2007;167(26 Nov):2289-95

Lead-time bias



Welch, H. G. et al. Arch Intern Med 2007;167:2289-2295.

Length bias



o = Time of disease onset.

Dx = Time when disease is clinically obvious without testing.

Overdiagnosis

(caused by lead-time and length bias)

1000 patients with clinical lung cancer

900 dies, 10-yr survival: 10%

+ 4000 overdiagnosed patients

900 dies, 10-yr survival: $4100/5000 = 82\%$

Overdiagnosis

Mayo RCT of screening for lung cancer with
thorax X-ray

Overdiagnosis many years later: 30%

	<u>screened</u>	<u>control</u>
10-yr survival rate:	29%	14%
Mortality rate/1000:	4.4	3.9

More stuff

5-yr survival rate for melanoma, USA

1950: 49%

2005: 92%

Death rates

1950: 1 per 100,000

2005: 3 per 100,000

(Woloshin et al, Know your chances, 2008)

Seven types of findings

1. Lethal cancer
2. Curable cancer
3. Harmless cancer (overdiagnosis)
4. Non-cancer, but not corrected (error)
5. Non-cancer, but corrected (false positive)
6. Tumour in other organ (incidentaloma)
7. Other findings, eg. plaques, aneurysm

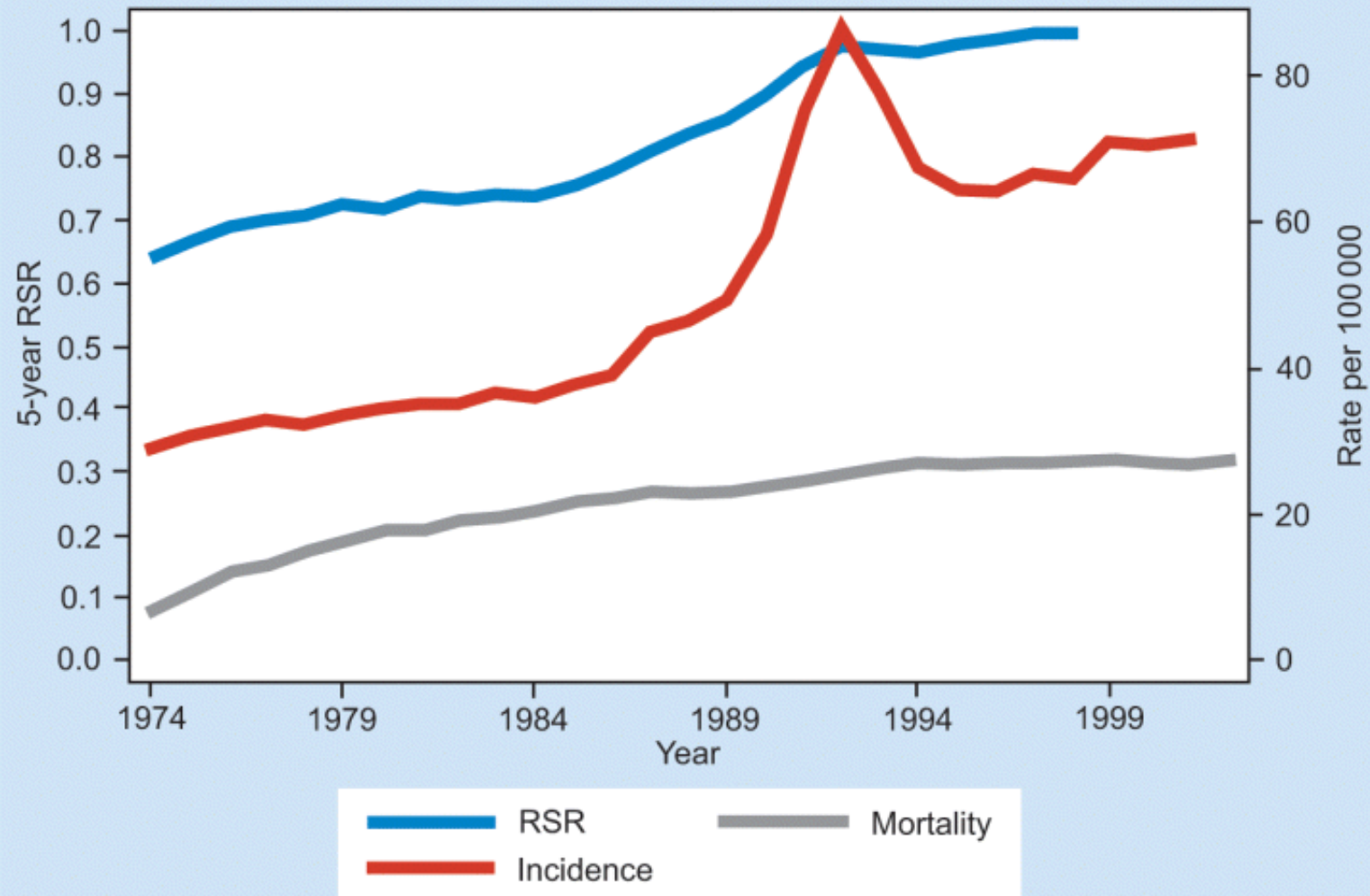
Seven types of findings

Helpful or harmful?

- harm 1. Lethal cancer
- help 2. Curable cancer
- harm 3. Harmless cancer (overdiagnosis)
- harm 4. Non-cancer, but not corrected (error)
- harm 5. Non-cancer, but corrected (false positive)
- harm 6. Tumour in other organ (incidentaloma)
- harm 7. Other findings, eg. plaques, aneurysm

Prostate cancer, SEER data

(Dickman, J Intern Med 2006;260:103)



RSR: relative survival rate

What do men know?

Males who had a PSA test and were treated generally believe the test saved their life.

Screening for prostate cancer

1 prostate cancer death avoided (maybe...)

50 overdiagnosed cancers

(N Engl J Med 2009;360:1320-8)

Most get impotent after the treatment.

Screening for prostate cancer?

“Doctor, can I be ensured that I will live longer?”

“No, but I can assure you that it will *feel* longer!”

Why screen for breast cancer?

Smaller tumours means improved survival.

Smaller tumors means more breast conserving surgery and less need for adjuvant therapy.

Why screen for breast cancer?

Smaller tumours means improved survival.

**EFFECT ON TOTAL MORTALITY NOT SHOWN,
AND TOTAL CANCER MORTALITY IS THE SAME.**

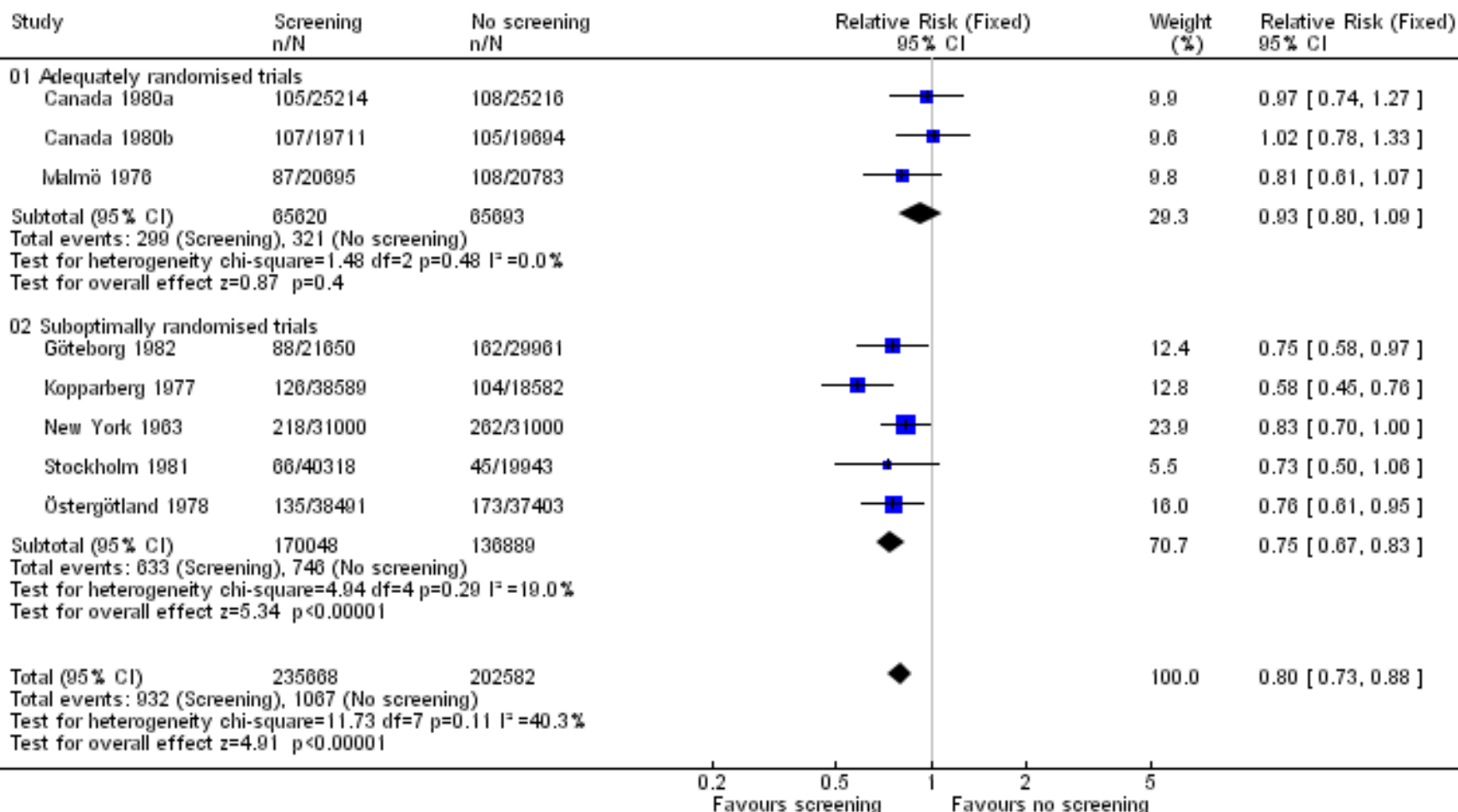
Smaller tumors means more breast conserving surgery
AND MORE MASTECTOMIES and (less) **MORE**
need for adjuvant therapy.

(Cochrane review: CD001877)

Breast cancer screening

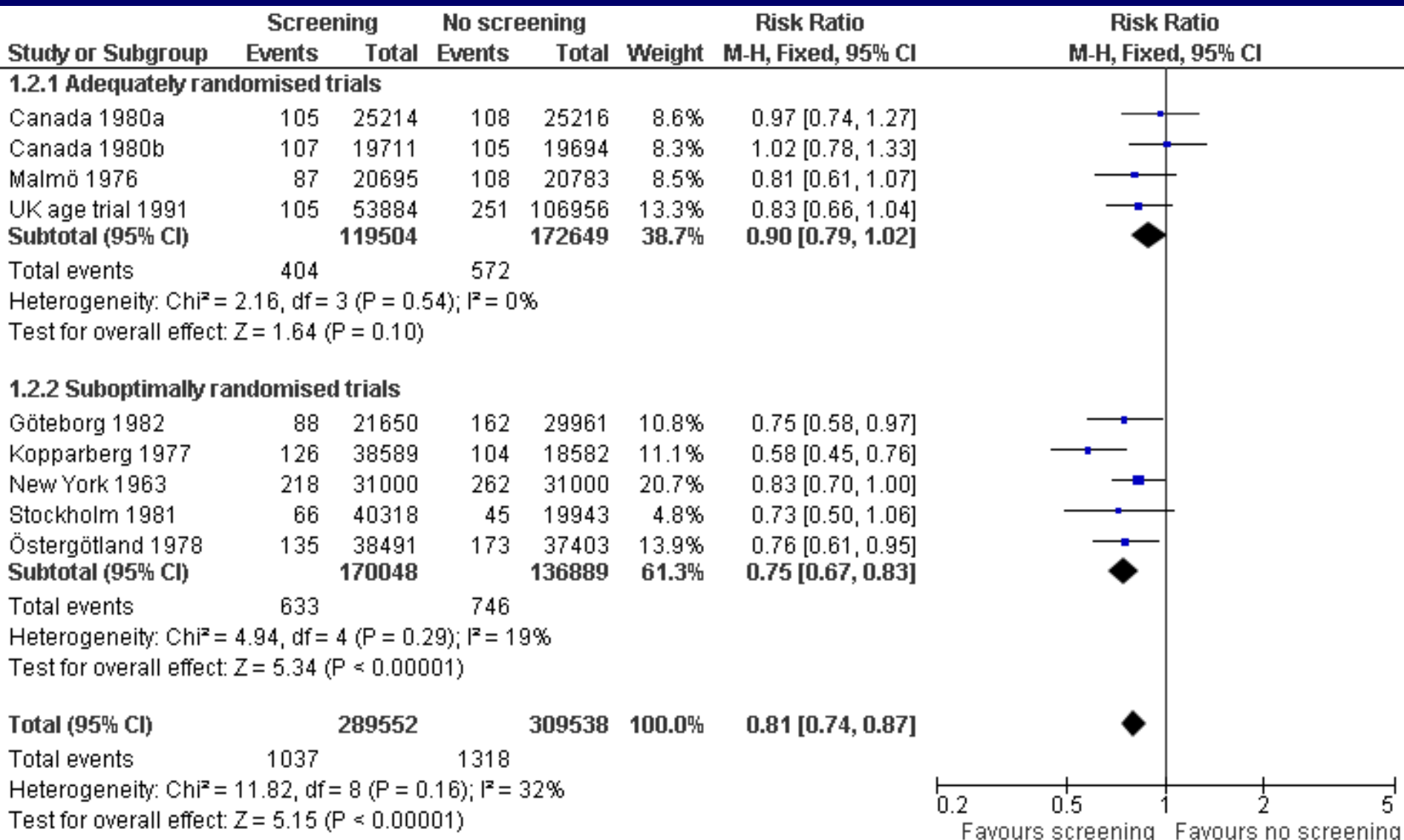
(Cochrane review: CD001877)

Review: Screening for breast cancer with mammography
 Comparison: 01 Screening with mammography versus no screening
 Outcome: 02 Deaths ascribed to breast cancer, 13 years follow up



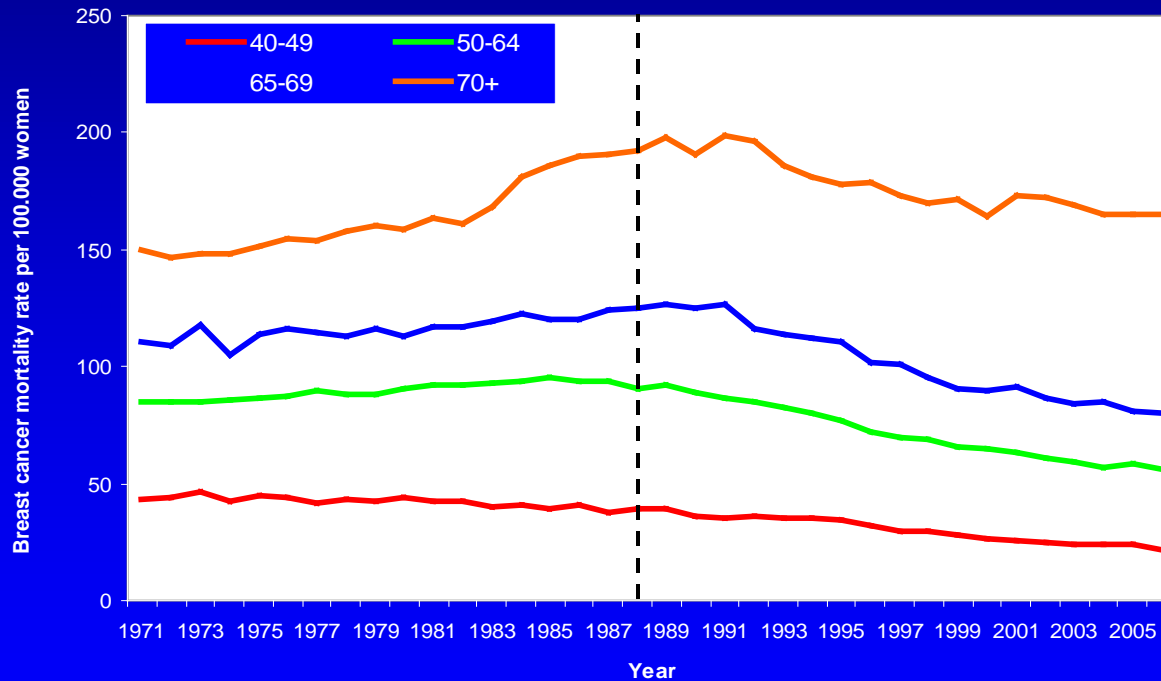
Breast cancer screening

(Updated Cochrane review: CD001877)



20 years of screening in the UK

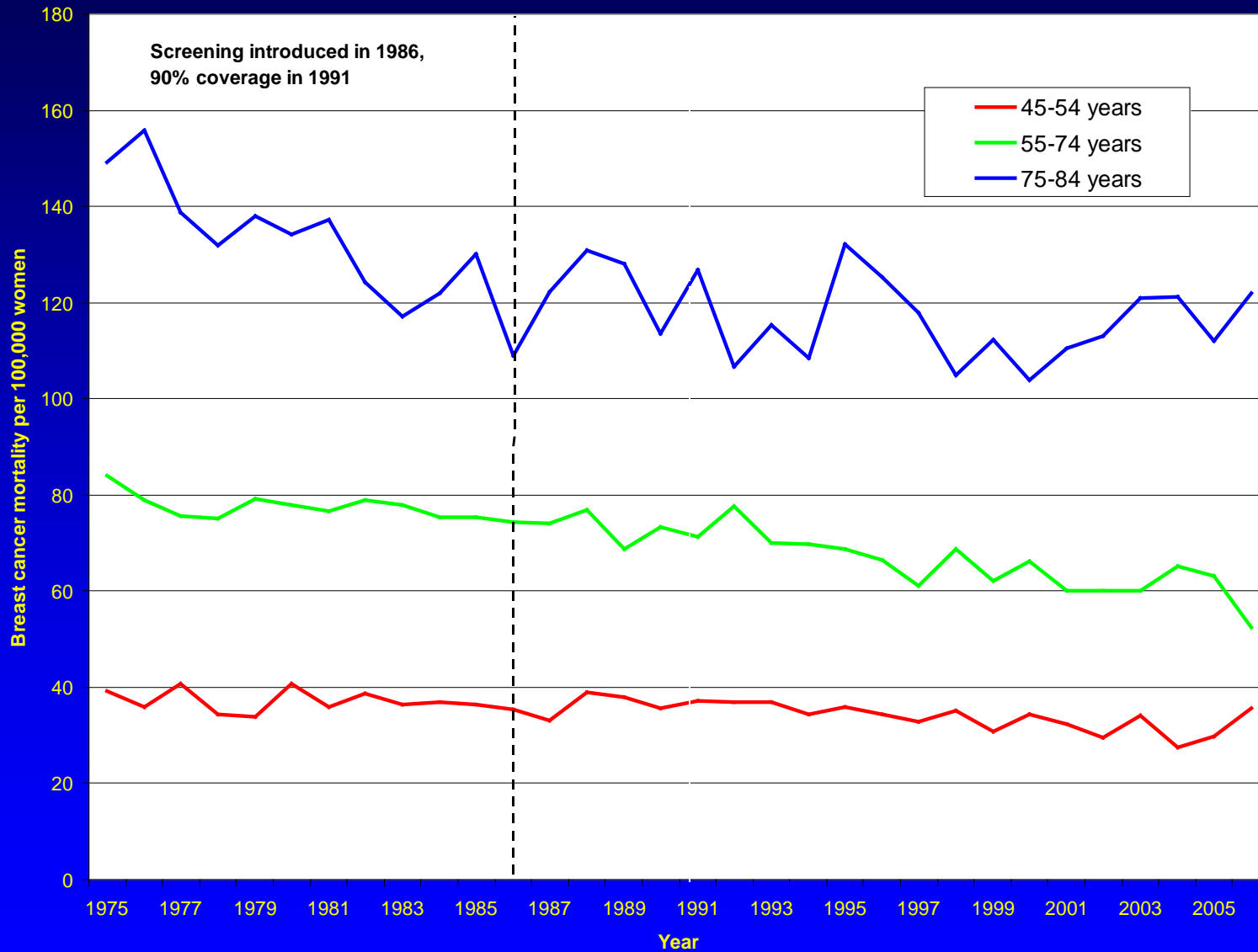
Mortality from breast cancer



Biggest declines
among women
not invited to
screening

Same results in
other EU
countries

Breast cancer mortality in Sweden



The screening lottery

Equivalent statements (10 year period):

- 15% reduction in breast cancer mortality
- 0.05% fewer die from breast cancer
- 90.20% survive if not screened, 90.25% if screened
- 1 days' extra life per woman invited
(subtract time spent going to mammography,
and time used by the screening unit)

Average risk reduction equivalents of regular screening (age 40-60)

- Wearing a helmet when riding a bicycle for 10 hrs
- Canceling a 20-hr bicycle ride (planned to wear helmet)
- Losing 1 oz (28 g) of body weight (and keeping it off)

(slide from chief statistician Don Berry, M.D, Anderson Cancer Center, Houston, Texas)

The screening lottery

15% effect, 30% overdiagnosis

For every 2,000 women invited for 10 years:

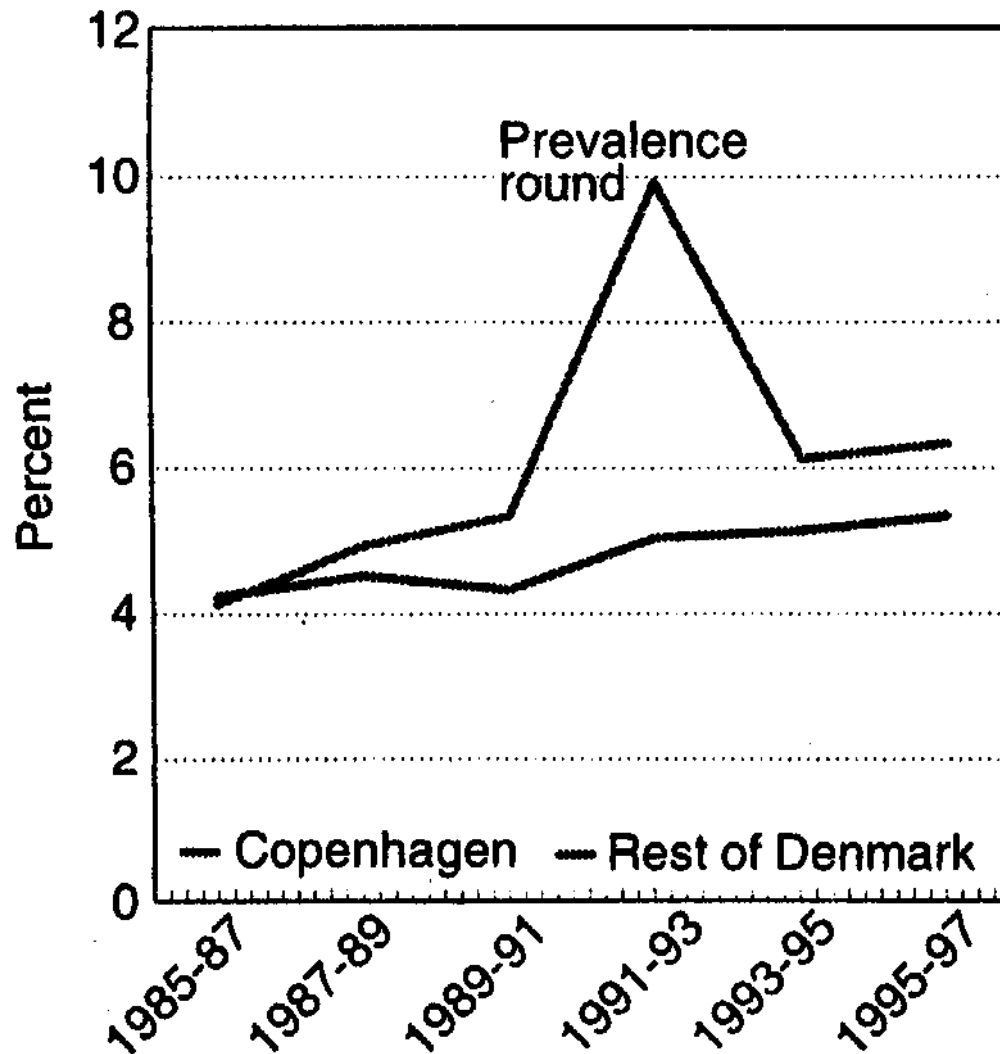
- 1 breast cancer death avoided (maybe...)
- 10 overdiagnosed cancers
- >200 with psychological distress for many months

Does screening do more harm than good?

Try to make a utility or quality of life assessment, using these numbers.

(Cochrane review, CD001877)

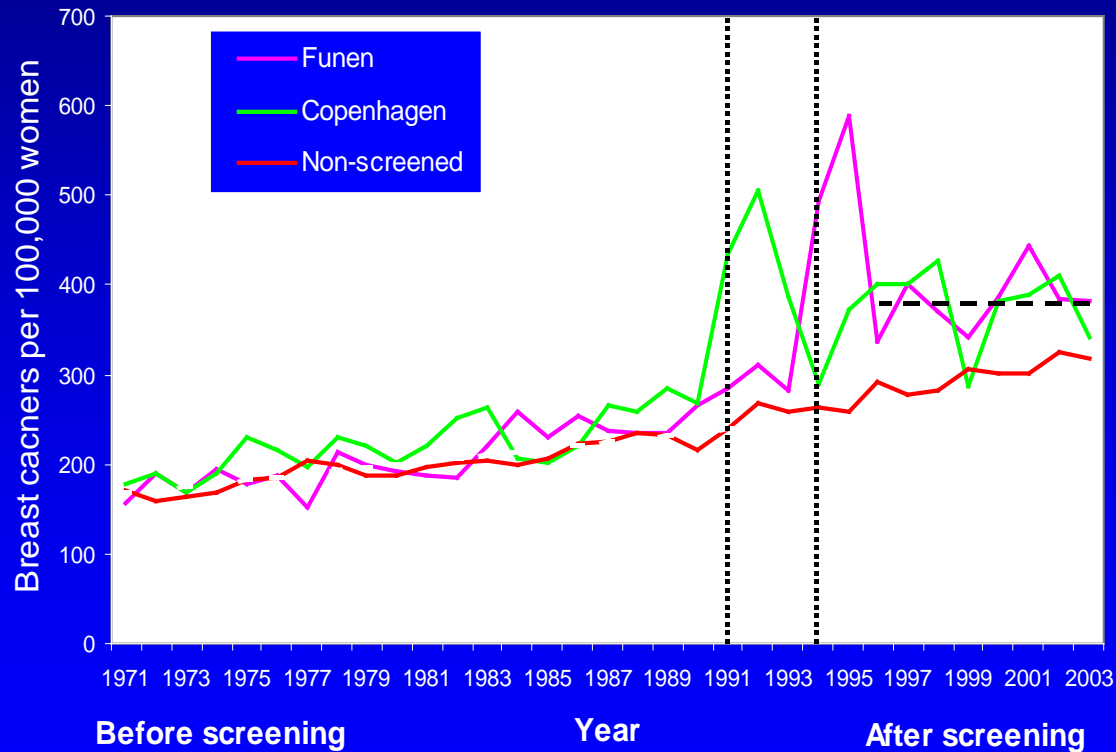
”...organised mammography screening can operate without overdiagnosis of breast cancer”



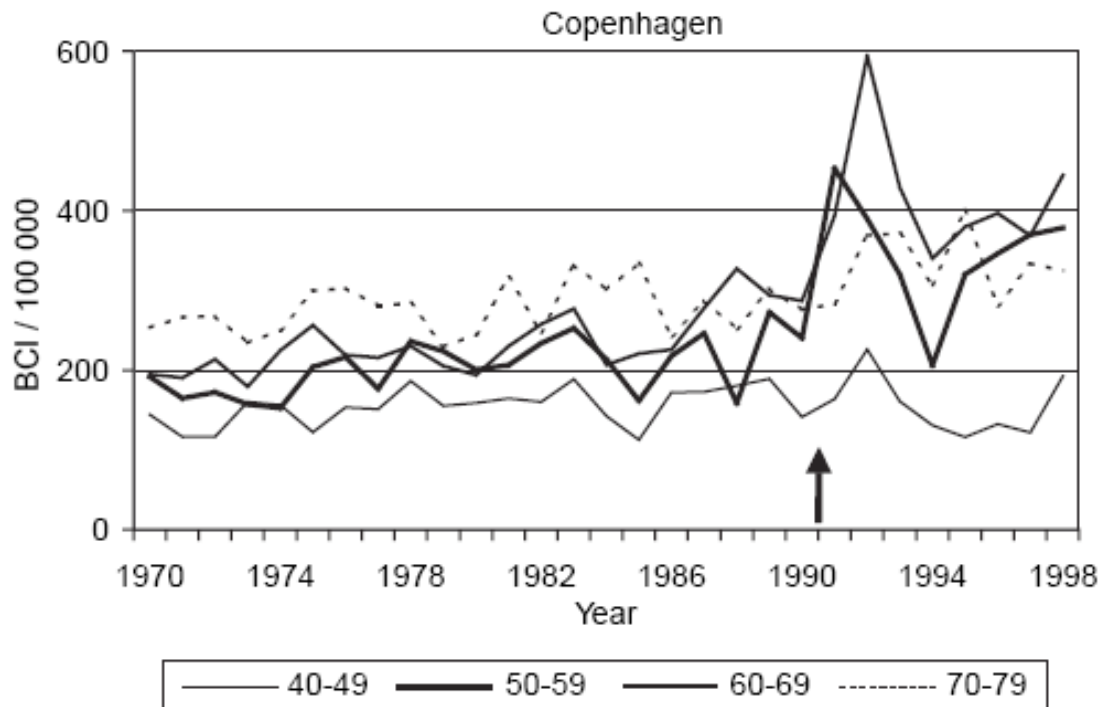
Br J Cancer
2003;88:362

Total cancers in screened age groups (incl. carcinoma in situ)

Screening starts 1991 in Copenhagen and 1994 in Funen



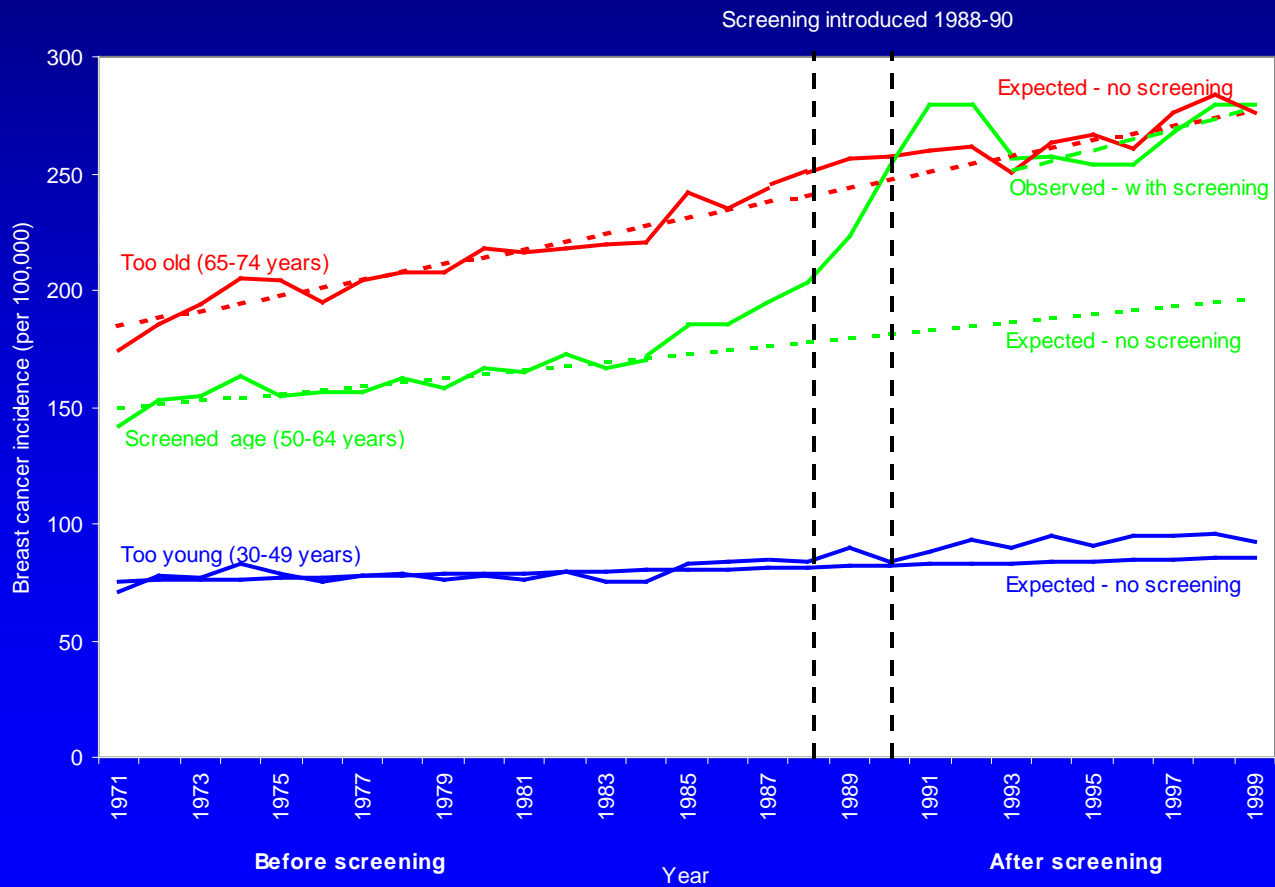
Breast cancer incidence and mortality in the Nordic capitals, 1970-1998.
Trends related to mammography screening programmes. SVEN
TÖRNBERG¹, LEVENT KEMETLI¹, ELSEBETH LYNGE², ANNE HELENE
OLSEN², SOLVEIG HOFVIND³, HEGE WANG³, AHTI ANTTILA⁴, MATTI
HAKAMA⁵ & LENNARTH NYSTRÖM⁶ (Acta Oncologica 2006; 45: 528-35)



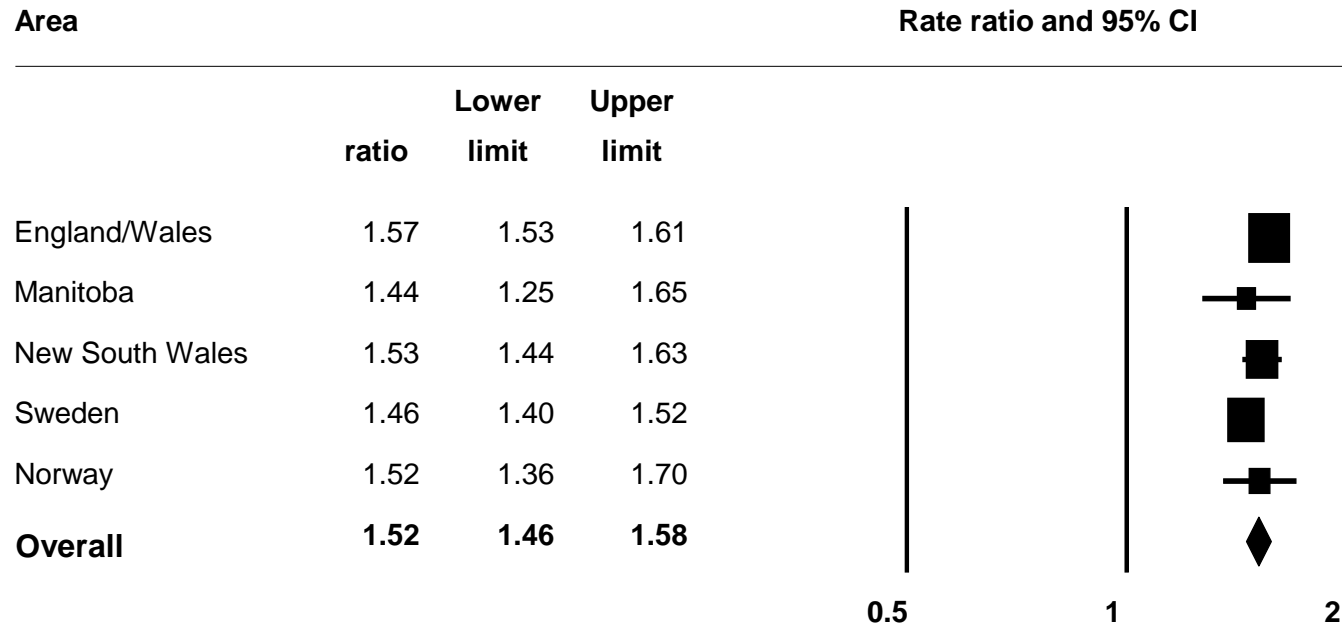
Not a word on
overdiagnosis.

” Breast cancer
incidence increased
continuously in
all four capitals”

Incidence rates for invasive breast cancer per 100,000 women in the UK (BMJ 2009, in press)



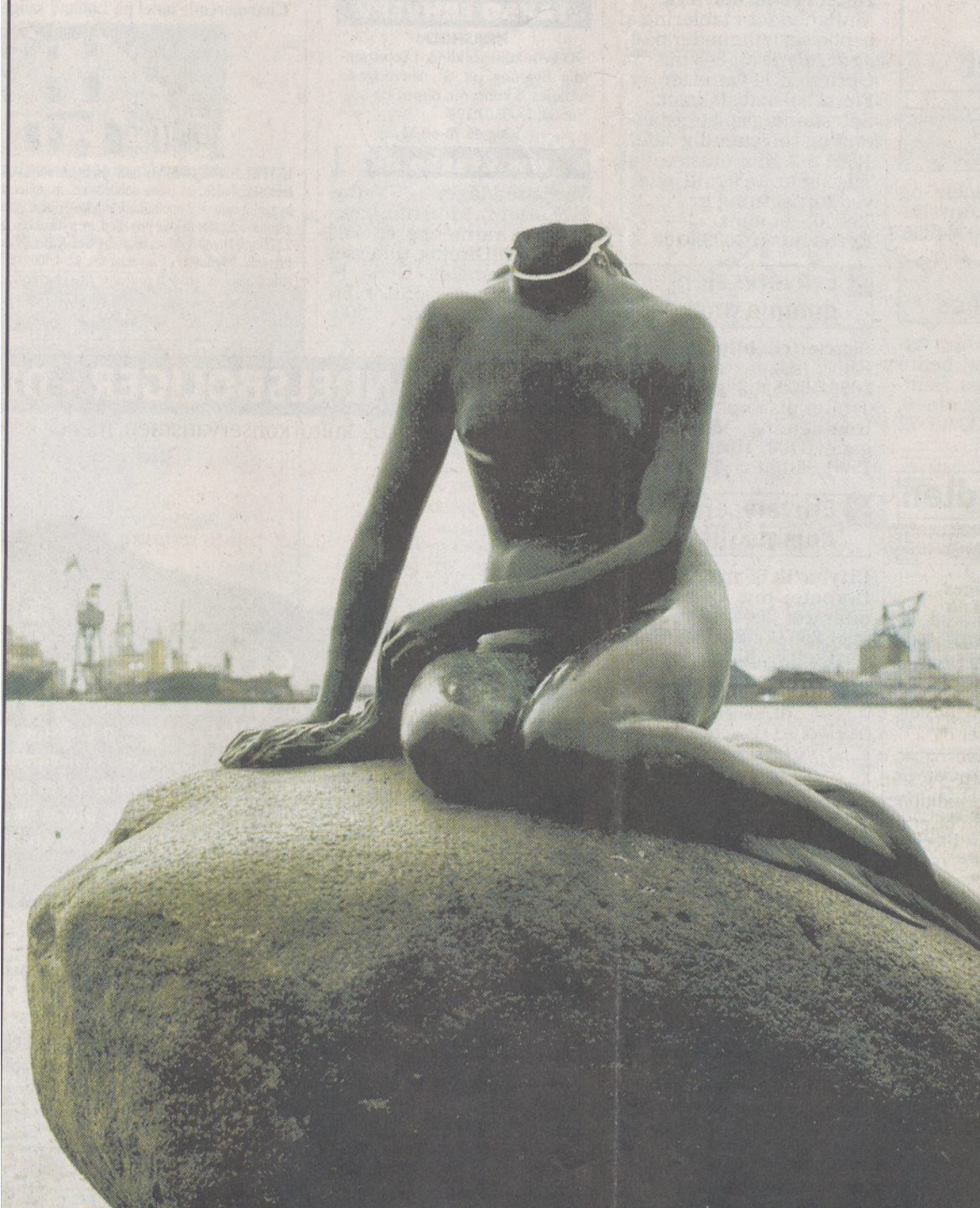
Overdiagnosis in organised screening programmes



**Screening has
caused many
to lose a breast**

**...but even
more to lose
their head**

**Would we have
had screening
today, if the
politicians had
known...?**



What do women know?

- 68% believed screening reduced their risk of contracting breast cancer,
- 62% that screening at least halved mortality,
- 75% that 10 years of screening saves 10 of 1000 participants (an overestimate of 20 times)
- only 8% were aware that participation can harm healthy women
- 15% believed their lifetime risk of contracting the disease was more than 50% (an overestimate of five times).

(Gøtzsche et al, BMJ 21 Feb 2009)



Cancer Screening Programmes

BREAST SCREENING

The Facts



BMJ

2009-02-21 08:00:00
21 February 2009 | bmj.com

BREAST
SCREENING
What the
leaflets don't
tell patients

PLUS Prenatal screening
for Down's syndrome
Providing antiretroviral
therapy during conflicts
Alzheimer's disease

**Breast screening:
the facts - or maybe not
(BMJ 21 Feb 2009)**

**The NHS leaflet doesn't say a
word about the most important
harm of screening: overdiagnosis
and overtreatment.**

**"the responsibility for the
screening programmes must be
separated from the responsibility
for the information material"**

BREAST SCREENING

The Facts

Erhältlich unter:

www.cochrane.dk

www.screening.dk

Zusammenfassung

Es kann vernünftig sein, sich an einem Brustkrebs-Screening zu beteiligen. Es kann aber ebenso vernünftig sein, sich nicht daran zu beteiligen, da das Screening sowohl nützen als auch schaden kann ...

SCREENING ZUR BRUSTKREBS- FRÜHERKENNUNG MIT MAMMOGRAPHIE



Welchen Nutzen und Schaden gibt es, wenn man an einem Brustkrebs-Screening teilnimmt?

Wie vielen Frauen nützt das Screening und wie vielen schadet es?

Auf welchen wissenschaftlichen Erkenntnissen beruhen diese Aussagen?

Conclusions

Can any of you add a single hour to the length of your life by worrying? (Matthæus 6:27)

Should life be a long preparation for becoming a patient?

Karen Blixen wrote: “Frei lebt wer sterben kann”
(Out of Africa)

Life of Brian - Always look on the bright side of life!

Don't worry, be happy (Bobby McFerrin)