

Mortality ascribed to breast cancer after 13 years (CD001877)

	C	:	No			Diela Detie	Dial Datia
Ctt	Scree	_	No scre	_		Risk Ratio	Risk Ratio
Study or Subgroup	Events		Events	Total	weight	M-H, Fixed, 95% CI	M-H, Fixed, 95% CI
1.2.1 Adequately ran	domised	trials					
Canada 1980a	105	25214	108	25216	8.6%	0.97 [0.74, 1.27]	-
Canada 1980b	107	19711	105	19694	8.3%	1.02 [0.78, 1.33]	
Malmö 1976	87	20695	108	20783	8.5%	0.81 [0.61, 1.07]	
UK age trial 1991	105	53884	251	106956	13.3%	0.83 [0.66, 1.04]	
Subtotal (95% CI)		119504		172649	38.7%	0.90 [0.79, 1.02]	•
Total events	404		572				
Heterogeneity: Chi²=	2.16, df=	3 (P = 0.9)	$54); I^2 = 0$	%			
Test for overall effect:	Z = 1.64 ((P = 0.10)					
1.2.2 Suboptimally ra	ındomise	d trials					
Göteborg 1982	88	21650	162	29961	10.8%	0.75 [0.58, 0.97]	
Kopparberg 1977	126	38589	104	18582	11.1%	0.58 [0.45, 0.76]	
New York 1963	218	31000	262	31000	20.7%	0.83 [0.70, 1.00]	-
Stockholm 1981	66	40318	45	19943	4.8%	0.73 [0.50, 1.06]	
Östergötland 1978	135	38491	173	37403	13.9%	0.76 [0.61, 0.95]	
Subtotal (95% CI)		170048		136889	61.3%	0.75 [0.67, 0.83]	♦
Total events	633		746				
Heterogeneity: $Chi^2 = 4.94$, $df = 4$ ($P = 0.29$); $I^2 = 19\%$							
Test for overall effect: Z = 5.34 (P < 0.00001)							
		-	-				
Total (95% CI)		289552		309538	100.0%	0.81 [0.74, 0.87]	♦
Total events	1037		1318				
Heterogeneity: Chi²=	11.82, df	= 8 (P = 0)	$(16); I^2 =$	32%			
Test for overall effect:							0.2 0.5 1 2 5
			•				Favours screening Favours no screening

The trials that have reported the largest reductions in breast cancer mortality have:

- used poor equipment
- had long intervals between screens
- screened the control group early, after 3-5 years
- used only one view mammography

Trial quality seems more important than program quality

All cancer mortality

Review: Screening for breast cancer with mammography

Comparison: 01 Screening with mammography versus no screening

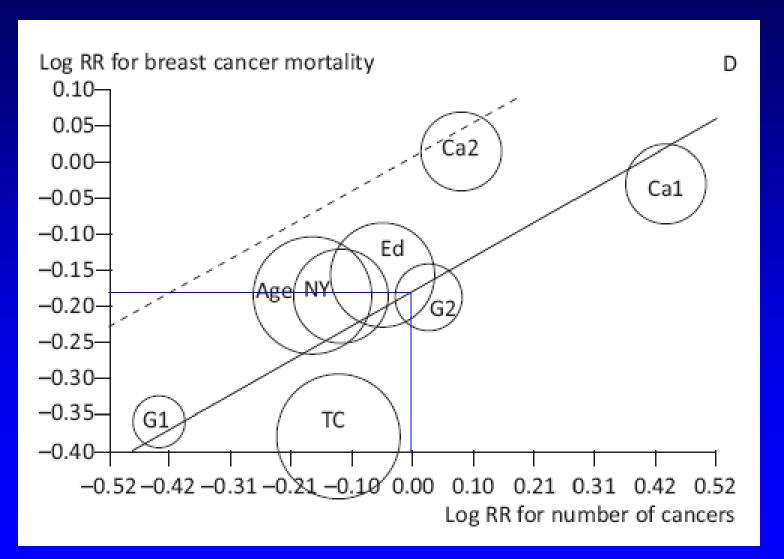
Outcome: 07 Deaths ascribed to any cancer, all women

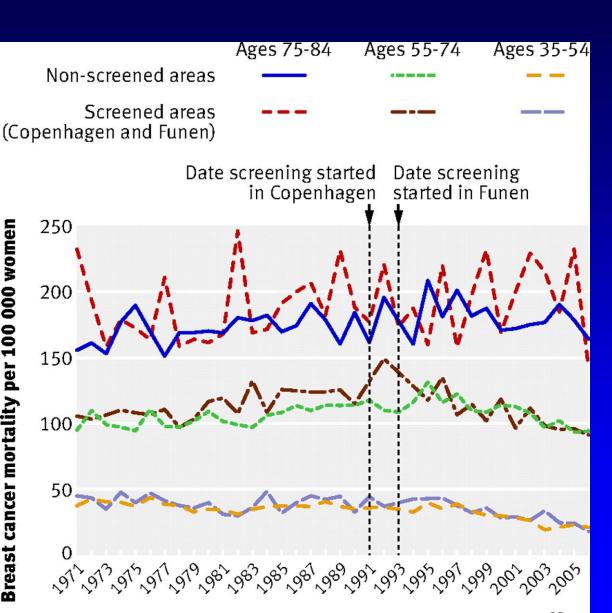
Study	Screening n/N	No screening n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% Cl
01 Adequately randomise Canada 1980a	d trials 280/25214	285/25216		20.0	0.98 [0.83, 1.16]
Canada 1980b	464/19711	403/19694		28.3	1.15 [1.01, 1.31]
Malmö 1976	707/21088	739/21195		51.7	0.96 [0.87, 1.06]
Subtotal (95% CI) Total events: 1451 (Scree Test for heterogeneity ch Test for overall effect z=	i-square=4.69 df=2 p		•	100.0	1.02 [0.95, 1.10]
02 Suboptimally randomis Kopparberg 1977	sed trials (unreliable e 666/39051	estimates) 319/18846		24.6	1.01 [0.88, 1.15]
New York 1963	791/30239	823/30765		46.6	0.98 [0.89, 1.08]
Östergötland 1978	510/39034	498/37936		28.8	1.00 [0.88, 1.13]
Subtotal (95% CI) Total events: 1967 (Scree Test for heterogeneity ch Test for overall effect z=	i-square=0.14 df=2 p		•	100.0	0.99 [0.93, 1.06]
			0.5 0.7 1 1.5	2	

Favours screening

Favours no screening

Screening effectiveness of zero predicts 16% reduction in breast cancer mortality





Unadjusted breast cancer mortality rates for screened and non-screened areas in Denmark

Jørgensen et al. BMJ 2010;340:c1241

BMJ

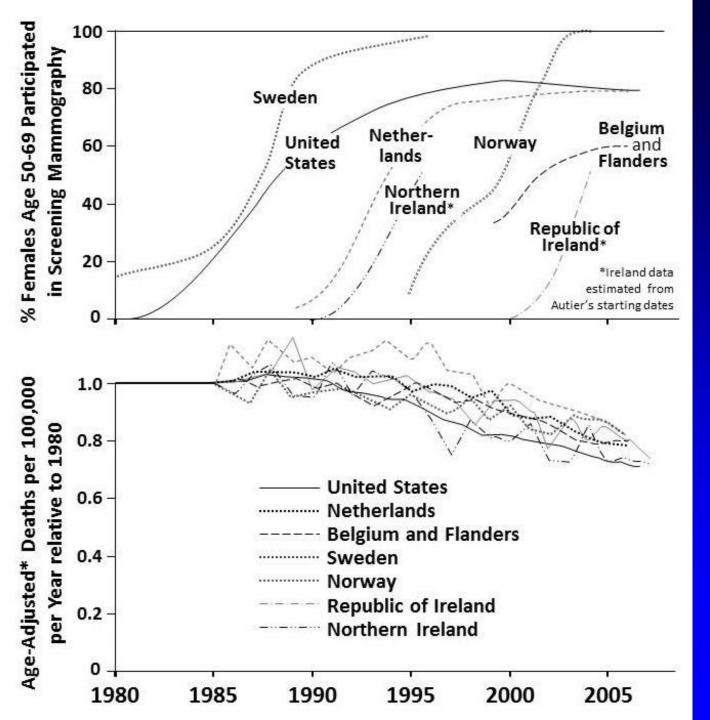
Year

Before screening After screening

Any effect of screening in Denmark? Annual reductions in breast cancer mortality

	Screened areas (20%)	Control areas (80%)
55-74 years	1%	2%
35-54 years	5%	6%
75-84 years	little change	little change

Reductions likely due to improved treatment, greater breast cancer awareness, and changes in risk factors, not to screening mammography



From Archie Bleyer, similar figure in BMJ 2011;343:d5630

Builds on data From Autier et al. BMJ 2011;343:d4411

International
Prevention
Research
Institute (iPRI),
Lyon, France

Screening does not reduce the occurrence of advanced cancers and therefore cannot work

Autier, Ann Oncol 2011

Data from Australia, Italy, Norway, Switzerland, The Netherlands, UK and the USA.

Rate of advanced cancers (bigger than 20 mm) was not reduced with screening.

Kalager, Ann Intern Med 2012

Norwegian screening programme.

Rate of advanced cancers (stage III and IV disease) exactly the same in screened and non-screened areas.

What is overdiagnosis with screening?

The detection of cancers, which would not have been detected clinically in the remaining lifetime of the people.

Thus, many are slow-growing, or don't grow, or regress, but some grow quickly.

Number of cancers (incl. carcinoma in situ)

Review: Screening for breast cancer with mammography

Comparison: 01 Screening with mammography versus no screening

Outcome: 21 Number of cancers

Study	Screening n/N	No screening n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% Cl
01 Adequately randomised Canada 1980a	trials (after 7-9 year 426/25214	s) 327/25216	-	28.7	1.30 [1.13, 1.50]
Canada 1980b	460/19711	365/19694	- 	32.1	1.26 [1.10, 1.44]
Malmö 1976	588/21088	447/21195	_ 	39.2	1.32 [1.17, 1.49]
Subtotal (95% CI) Total events: 1474 (Screer Test for heterogeneity chi- Test for overall effect z=6	square=0.28 df=2 p=1		•	100.0	1.30 [1.20, 1.40]
02 Suboptimally randomise Göteborg 1982a	ed trials (before contr 144/11724	ol group screen) 155/14217		11.7	1.13 [0.90, 1.41]
Stockholm 1981	428/40318	142/19943	-	15.8	1.49 [1.23, 1.80]
Two-County 1977	1378/77080	752/55985	 	72.5	1.33 [1.22, 1.45]
Subtotal (95% CI) Total events: 1950 (Screer Test for heterogeneity chi- Test for overall effect z=7	square=3.48 df=2 p=0		•	100.0	1.33 [1.24, 1.44]
			0.5 0.7 1 1.5 Screening No so	2 creening	

Mastectomies

Review: Screening for breast cancer with mammography

Comparison: 01 Screening with mammography versus no screening Outcome: 15 Number of mastectomies

Study	Screening n/N	No screening n/N		Risk (Fixed) %LCI	Weight (%)	Relative Risk (Fixed) 95% CI
01 Adequately randomis Canada 1980a	ed trials 183 <i>1</i> 25214	157/25216	-	-	14.7	1.17 [0.94, 1.44]
Canada 1980b	197/19711	176/19694	_	-	16.4	1.12 [0.91, 1.37]
Malmö 1976	424/21242	339/21244			31.6	1.25 [1.09, 1.44]
Subtotal (95% CI) Total events: 804 (Scree Test for heterogeneity c Test for overall effect z	hi-square=0.86 df=2			•	62.7	1.20 [1.08, 1.32]
02 Suboptimally random Kopparberg 1977	ised trials 475/39051	196/18846			24.7	1.17 [0.99, 1.38]
Stockholm 1981	263/40318	101/19943		-	12.6	1.29 [1.02, 1.62]
Subtotal (95% CI) Total events: 738 (Scree Test for heterogeneity c Test for overall effect z	hi-square=0.45 df=1			•	37.3	1.21 [1.06, 1.38]
Total (95% CI) Total events: 1542 (Sore Test for heterogeneity o Test for overall effect z	hi-square=1.33 df=4			•	100.0	1.20 [1.11, 1.30]
			0.5 0.7 Favours screening	1 1.5 Favours no scr	2 eening	

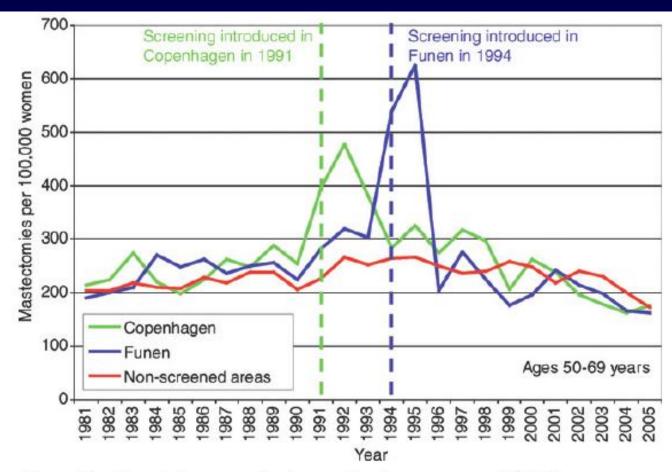


Figure 6: Graph shows mastectomy rates in women aged 50–69 years in Denmark. Screening in this age group began in 1991 in Copenhagen and in 1994 in Funen. Nonscreened areas represent 80% of the Danish population (43).

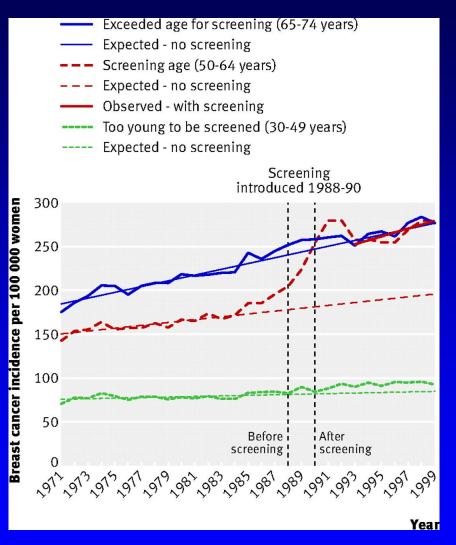
Fig 8 Meta-analysis of overdiagnosis of breast cancer (including carcinoma in situ) in publicly available mammography screening programmes

Geographical area	Rate ratio (random) (95% CI)	Rate ratio (random) (95% CI)
England and Wales		1.57 (1.53 to 1.61)
Manitoba, Canada		1.44 (1.25 to 1.65)
New South Wales, Australia	-	1.53 (1.44 to 1.63)
Sweden		1.46 (1.40 to 1.52)
Norway	-	1.52 (1.36 to 1.70)
Overall	•	1.52 (1.46 to 1.58)
Heterogeneity: I ² =59.0% ().5 1 2	

Jorgensen, K. J. et al. BMJ 2009;339:b2587



Fig 2 Incidence of invasive breast cancer per 100 000 women in UK



Jorgensen, K. J. et al. BMJ 2009;339:b2587



Screening for breast cancer with mammography (Cochrane review 2013)

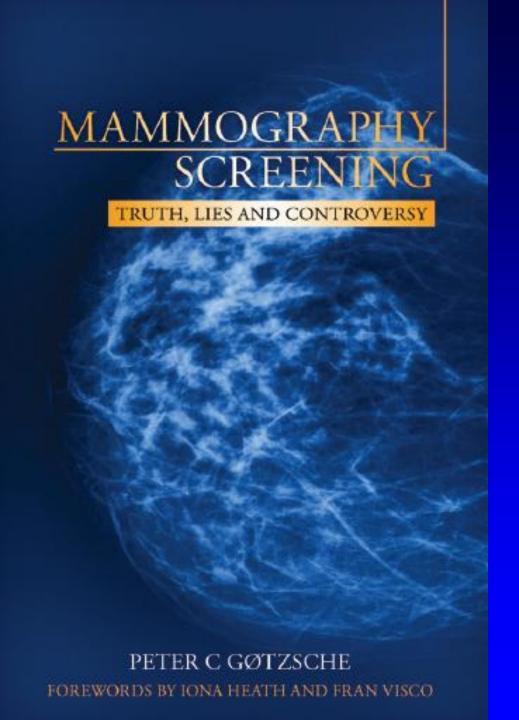
Authors' conclusions

If we assume that screening reduces breast cancer mortality by 15% and that overdiagnosis and overtreatment is at 30%, it means that for every 2000 women invited for screening throughout 10 years, one will avoid dying of breast cancer and 10 healthy women, who would not have been diagnosed if there had not been screening, will be treated unnecessarily. Furthermore, more than 200 women will experience important psychological distress including anxiety and uncertainty for years because of false positive findings.

Screening for breast cancer with mammography (Cochrane review)

Authors' conclusions (continued)

To help ensure that the women are fully informed before they decide whether or not to attend screening, we have written an evidence-based leaflet for lay people that is available in several languages on www.cochrane.dk. Because of substantial advances in treatment and greater breast cancer awareness since the trials were carried out, it is likely that the absolute effect of screening today is smaller than in the trials. Recent observational studies show more overdiagnosis than in the trials and very little or no reduction in the incidence of advanced cancers with screening.



London: Radcliffe; Jan 2012

SCREENING FOR BREAST CANCER WITH MAMMOGRAPHY



What are the benefits and harms of attending a screening programme for breast cancer?

How many will benefit from being screened, and how many will be harmed?

What is the scientific evidence for this?

Available in:

, Dansk, Deutsch, English, Español, Français, Italiano, Íslenska, Nederlands, Norsk, Polska, Русский, Português, Suomi, 繁體中文, 简,体中文

www.cochrane.dk

The two big screening lies

Screening saves lives Screening saves breasts

Stop screening

By dropping screening, a woman can lower her risk of getting a breast cancer diagnosis by one third

Screening causes breast cancer