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DEBATE: Is breast screening in patients over 70 cost effective?

YES

NO

Experts:



N.T. van
Ravesteyn, NL



P. Panizza, IT



BREAST CANCER IN THE ELDERLY

IS BREAST SCREENING IN WOMEN OVER 70 COST EFFECTIVE?

YES

N.T van Ravesteyn

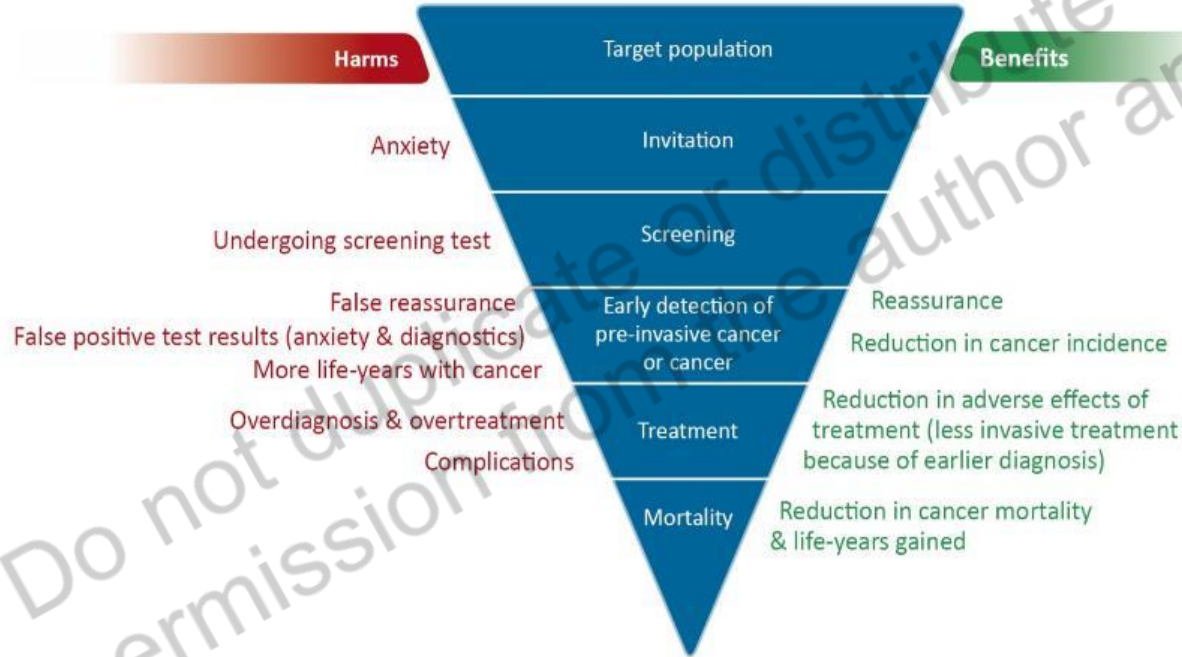
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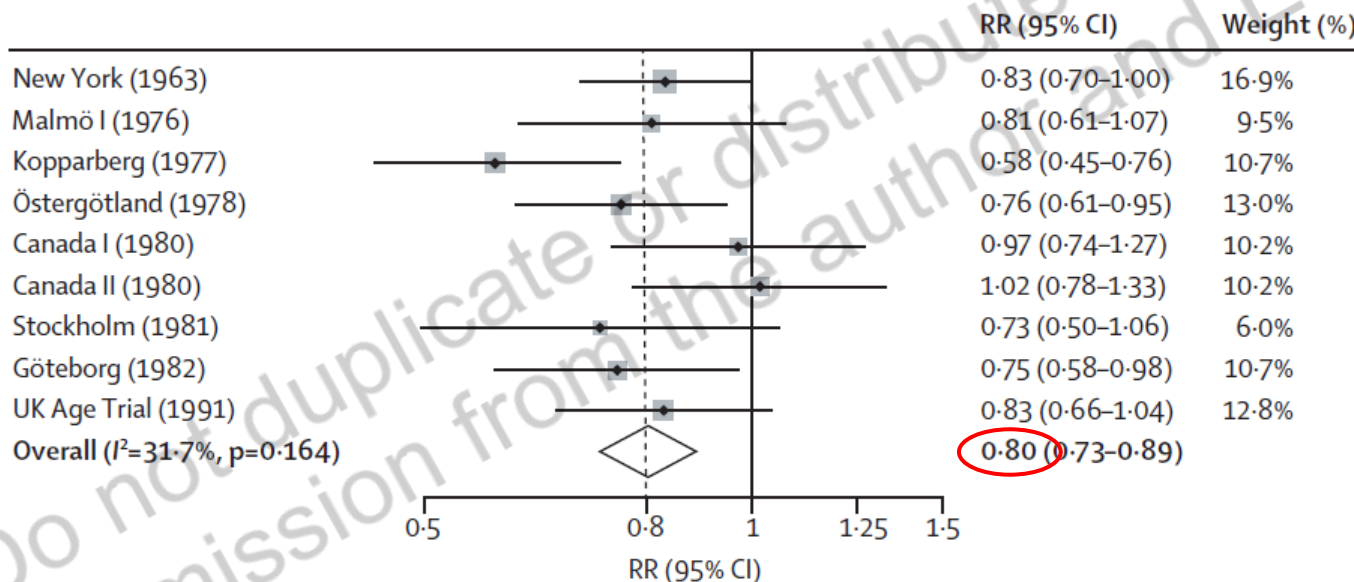


Screening: benefits and harms



Benefit: mortality reduction (RCTs)

Mammography screening has been found to reduce breast cancer mortality:



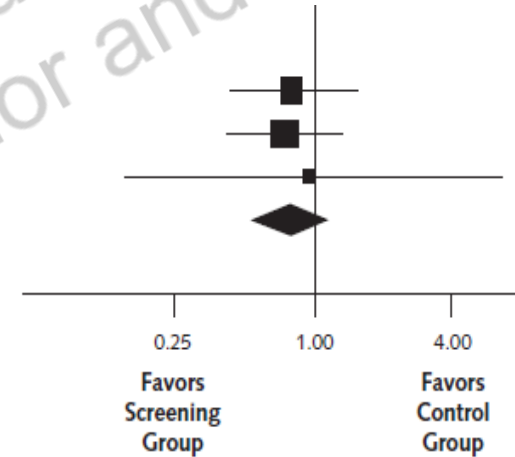
Independent UK Panel on Breast Cancer Screening, the Lancet, 2012

Mortality reduction (RCTs) in older women

Mammography screening has been found to reduce breast cancer mortality, in women age 70-74 years:

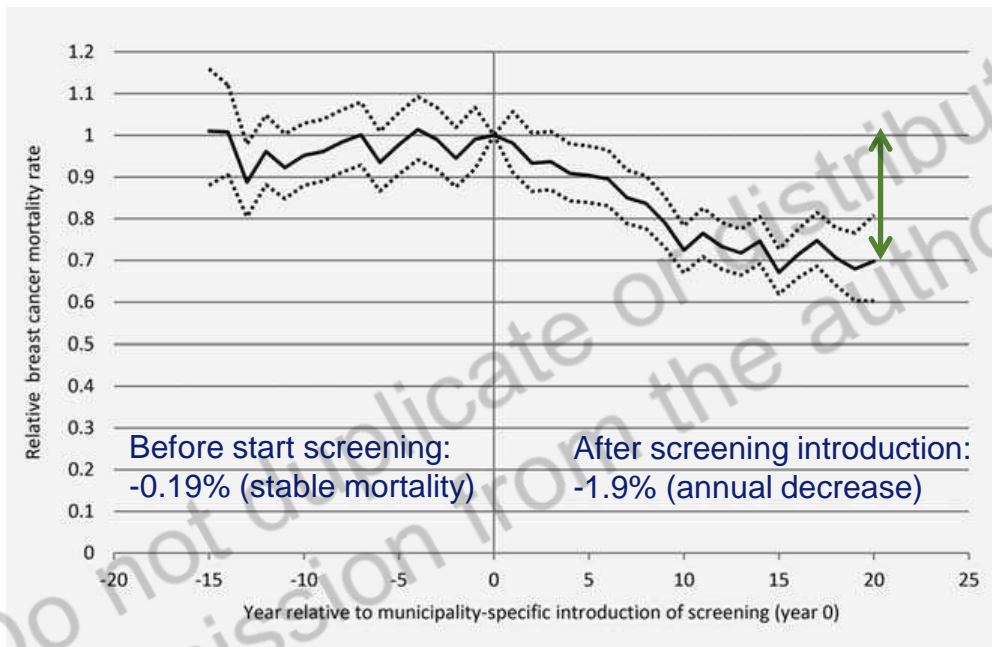
Women aged 70-74 y

| | | | |
|---|--------------|------|------------------|
| Tabár et al, 1995 (26) | Östergötland | 12.5 | 0.82 (0.43-1.58) |
| Tabár et al, 1995 (26) | Kopparberg | 12.5 | 0.76 (0.42-1.36) |
| Nyström et al, 2002 (30)* | MMST I | 13.6 | 0.98 (0.15-6.60) |
| Overall ($I^2 = 0.0\%$; $P = 0.962$) | | | 0.80 (0.51-1.28) |



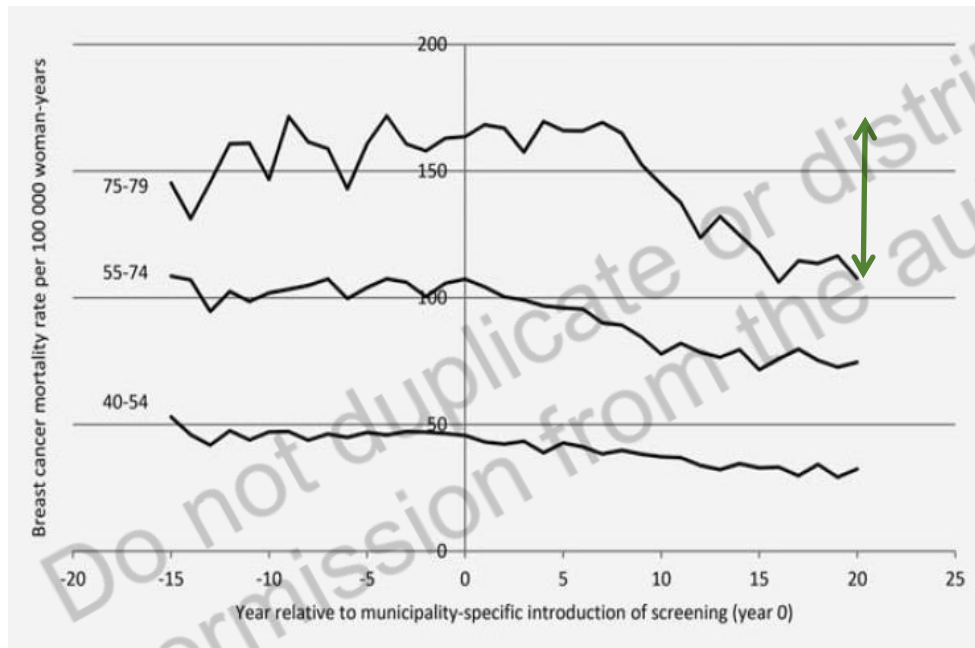
Nelson et al., *Annals Int Med*, 2016

Benefit: mortality (trend study)



Sankatsing, et al., *Int J Cancer*, 2017

Mortality (trend study) in older women



breast cancer mortality reduction 20 years after the introduction of screening: 34%

N.B. turning point later, due to extension in later years

Sankatsing, et al., *Int J Cancer*, 2017

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Factors influencing benefits and harms in older women (age 70+)

- Breast cancer incidence (increases with age)
- Screening test sensitivity (increases with age, due to lower breast density)
- Lower remaining life expectancy:
 - Reduces the potential to avert breast cancer death and gain life years
 - Increases the probability of overdiagnosis

Overdiagnosis

Definition: 'the detection of tumors that would not have been detected in a woman's lifetime in the absence of screening'

including:

Non- or slowly progressing pre-clinical cancers

Regressing pre-clinical cancers

Difficulty: unknown what would have happened in the absence of screening (no appropriate control group)

The amount of overdiagnosis associated with breast cancer screening has been widely debated

Wide range of estimates has been published from 0%-54%, but more reliable estimates up to 10%

General consensus that there is more overdiagnosis when screening older women

Benefits and harms for older women

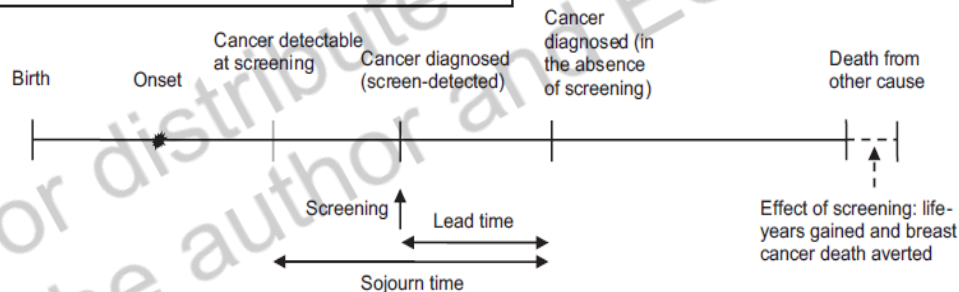
US setting

Modeling study (3 microsimulation models)

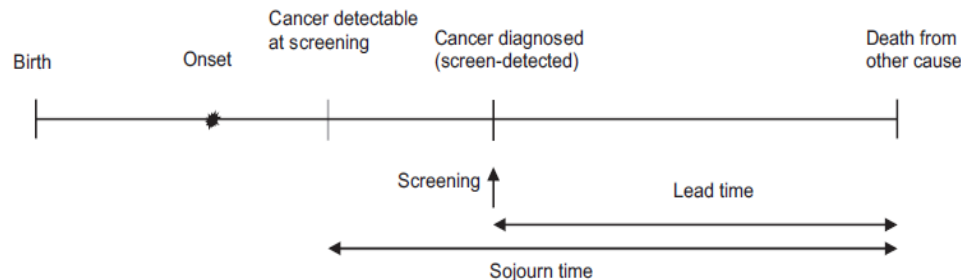
Screening: biennial screening starting at age 50, with upper ages varying from 74 up to 96 years

van Ravesteyn, et al., JNCI, 2015

Life history with breast cancer and screening



Life history with breast cancer and screening – overdiagnosis



Screening benefits by age

Figure 3E- Breast cancer deaths averted

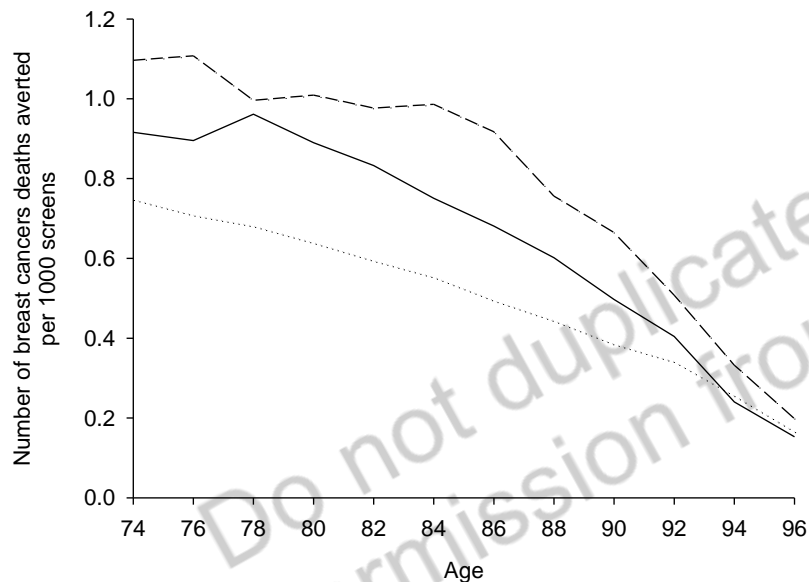
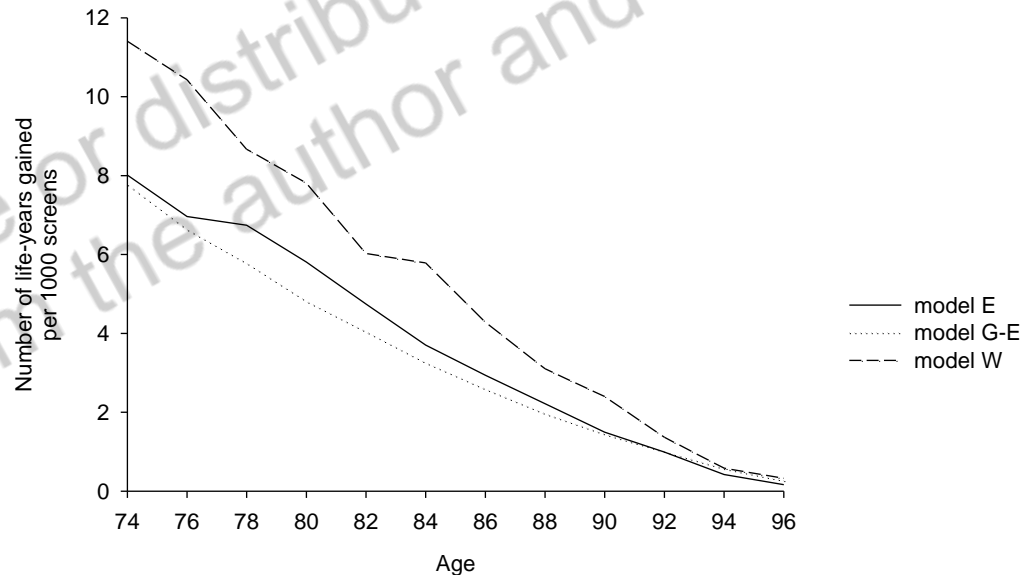


Figure 3F- Life-years gained



van Ravesteyn, et al., JNCI, 2015

Screening harms by age

Figure 3C - Overdiagnosis total (invasive + DCIS)

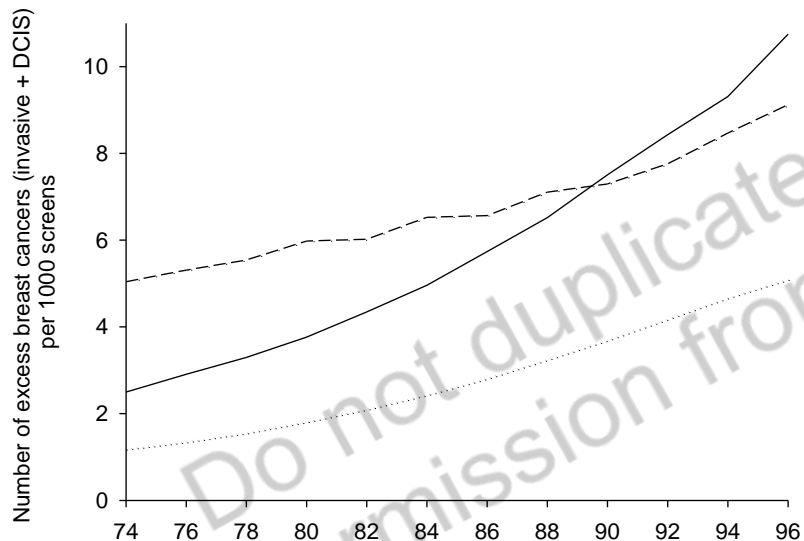
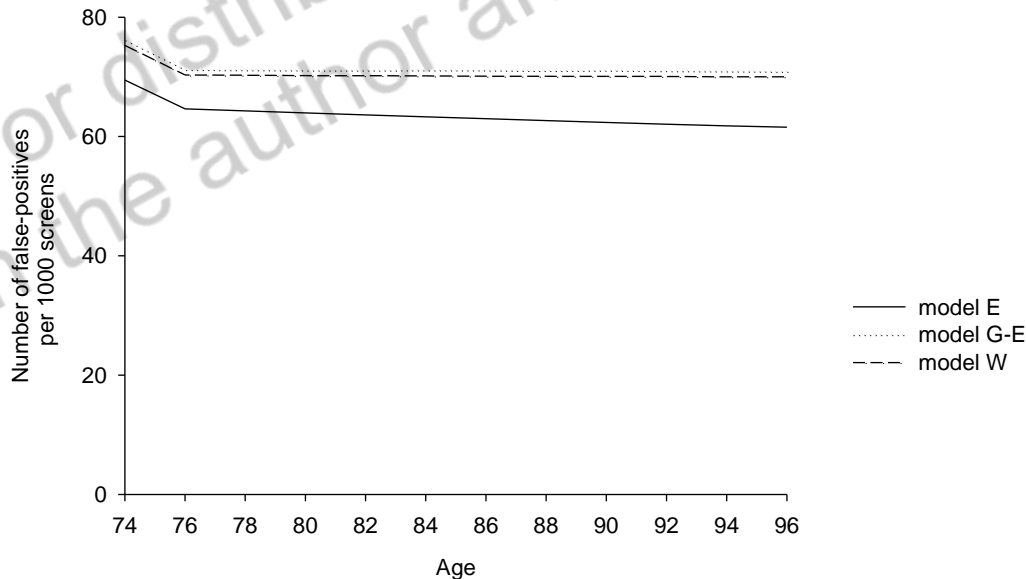


Figure 3D - False-positives



van Ravesteyn, et al., JNCI, 2015

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Balance benefits & harms (QALYs) by age

Figure 3G - QALYs gained

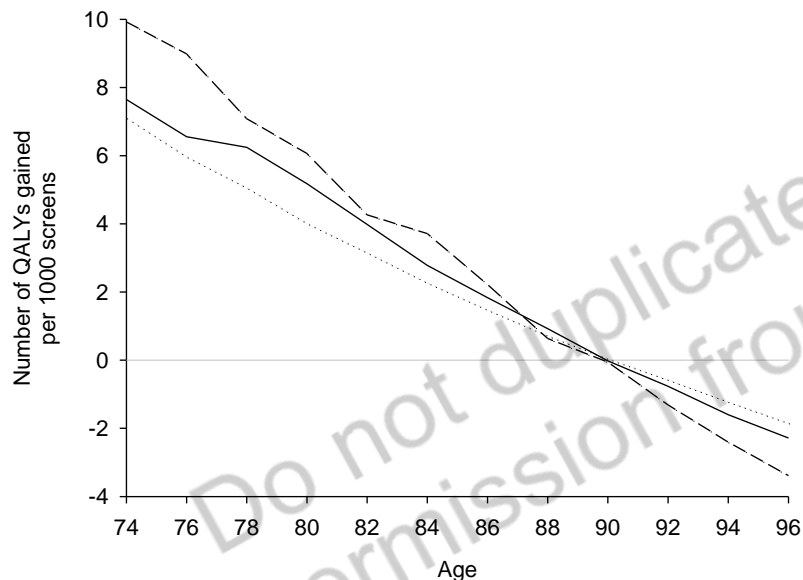
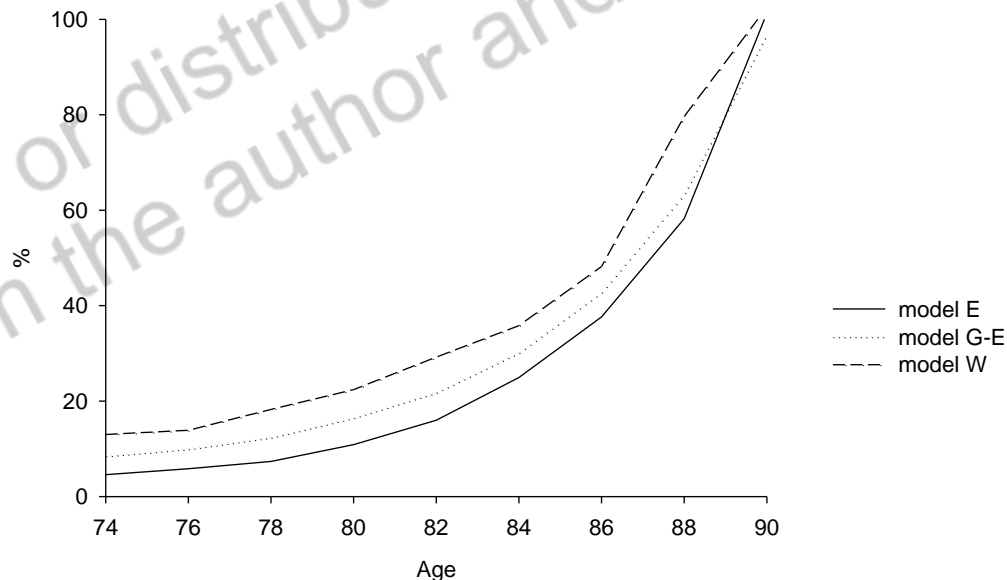


Figure 3H - reduction in LYG after adjustment for quality of life



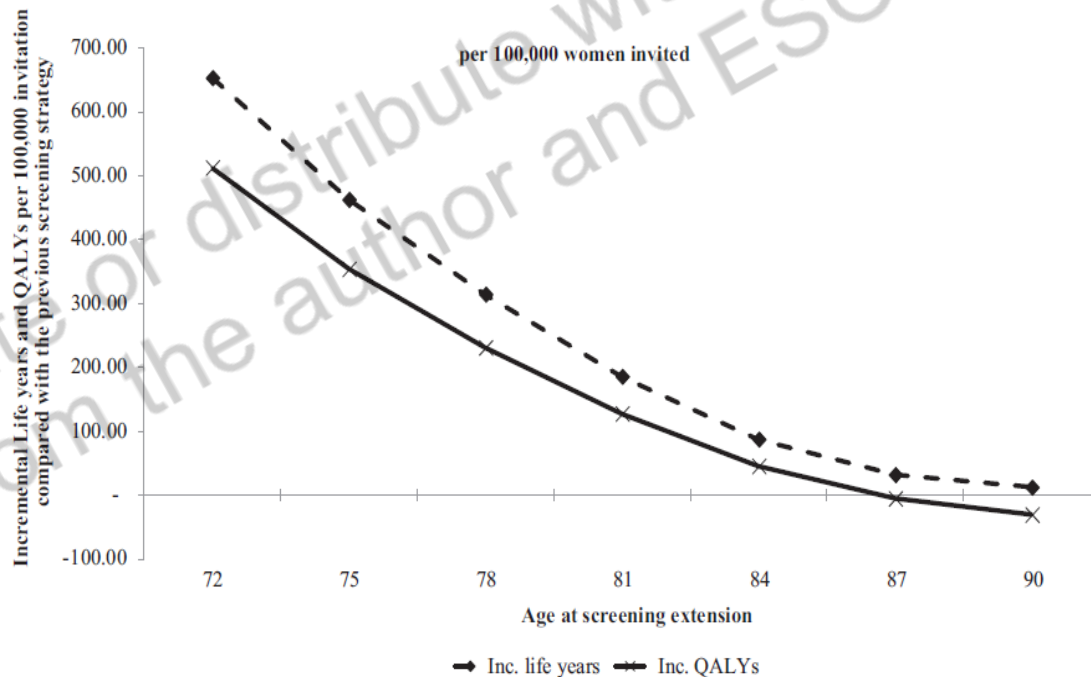
van Ravesteyn, et al., JNCI, 2015

Cost-effectiveness

UK setting (3-year screening interval)

Modeling study

Upper age: 72-90years



Rafia, et al., Value Health, 2016

Table 2 – Incremental cost per life-years and QALY gained (compared with

| Outcome | Strategy 1 (up to 72 y) | Strategy 2 (up to 75 y) | Strategy 3 (up to 78 y) | Strategy 4 (up to 81 y) |
|--|----------------------------|----------------------------|----------------------------|----------------------------|
| Primary treatment (£) | 1,442,274 | 1,546,467 | 1,639,677 | 1,726,968 |
| Recurrence (£) | -457,125 | -326,562 | -339,639 | -275,051 |
| Follow-up cost (£) | 92,071 | 98,554 | 104,931 | 114,897 |
| Palliative care (£) | -389,359 | -328,405 | -248,314 | -182,399 |
| Screening mammography (£) | 1,116,888 | 1,007,829 | 908,935 | 819,434 |
| Invitation cost (£) | 1,190,000 | 1,073,312 | 968,066 | 873,140 |
| Recall for investigation (£) | 550,364 | 496,530 | 447,704 | 401,650 |
| Total incremental costs (£) | 3,545,114 | 3,567,725 | 3,481,361 | 3,478,639 |
| Incremental life-years | 653.16 | 462.44 | 314.31 | 185.71 |
| Incremental QALYs associated with breast cancer | 561.07 | 396.73 | 268.88 | 160.63 |
| Disutility associated with screening | -48.61 | -42.96 | -37.91 | -33.24 |
| Total incremental QALYs | 512.47 | 353.77 | 230.98 | 127.39 |
| Cost per life- year gained (£) | 5,428 | 7,715 | 11,076 | 18,731 |
| Cost per QALY gained (£) | 6,918 | 10,085 | 15,072 | 27,306 |

QALY, quality-adjusted life-year.

*increase in primary treatment cost
(incidence + overdiagnosis)*

*(sharp) decrease in incremental LY
& QALYs*

Increase in ICERs

Cost-effective up to age 78

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Screening for women aged 70-74

PAGE CONTENTS

Healthcare question

Recommendation

Recommendation strength

Subgroup considerations

Considerations for implementation and policy making

Monitoring and evaluation

Supporting documents

RELATED LINKS

[Summary information for women](#)

These recommendations are for women who do not have any symptoms of breast cancer, are not at high risk of breast cancer, and want to know when they should be screened.

Healthcare question

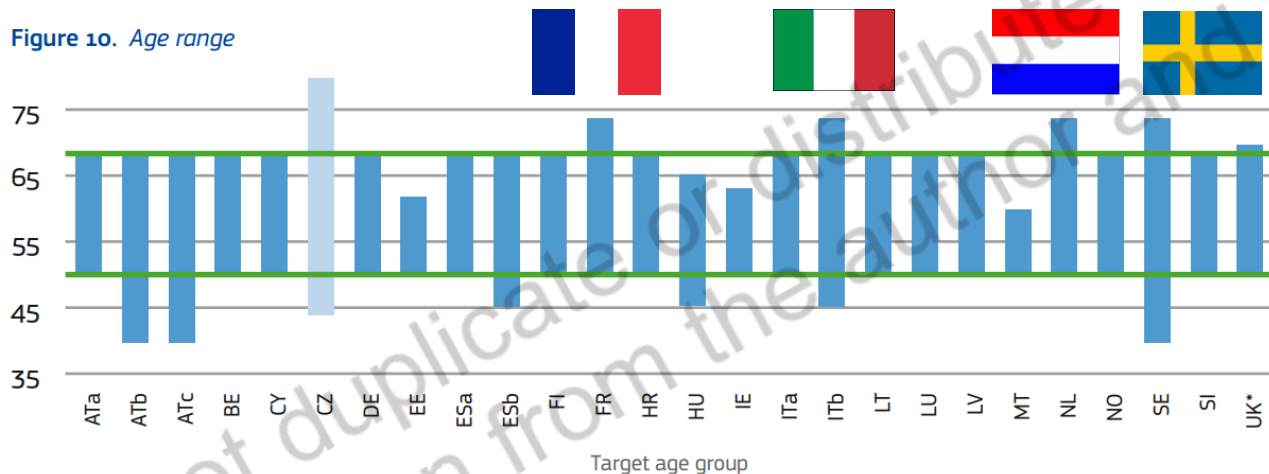
Should organised mammography screening vs. no mammography screening be used for early detection of breast cancer in women aged 70 to 74?

Recommendation

For asymptomatic women aged 70 to 74 with an average risk of breast cancer, the ECIBC's Guidelines Development Group (GDG) suggests mammography screening over no mammography screening, in the context of an organised screening programme.

Current screening practice in Europe

Figure 10. Age range



UK* data refer to England only.

Factors influencing benefits and harms in older women (age 70+)

- Breast cancer incidence (increases with age)
- Screening test sensitivity (increases with age, due to lower breast density)
- Lower remaining life expectancy:
 - Reduces the potential to avert breast cancer death and gain life years
 - Increases the probability of overdiagnosis

However, there have been substantial increases in life expectancy over time in many countries (e.g., Dutch screening programme implemented in 1990, since then life expectancy has increased by 5 years)

thus 69y → 74y

Statements

“it is good that there is an upper age”

Screening older women is associated with more overdiagnosis and fewer life-years gained, due to shorter remaining life expectancy

“...but in many countries it is too low”

life expectancy has increased over time

screening can be cost-effective up to age 80

screening programmes should be extended to include women age 70-74y

“in the future, ...”

comorbidity / health / remaining life expectancy should be considered in determining preferred/optimal stopping age in more individualized screening programmes

Conclusions

- Breast cancer screening is also effective in older women
- However, due to shorter life expectancy at older ages:
 - benefits become smaller
 - harms increase (more overdiagnosis)
- Despite this less favourable balance:
- **Breast cancer screening is cost-effective in women age 70-74 year**
 - (in some countries/women up to age 80)

Acknowledgement



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport



Horizon 2020
European Union Funding
for Research & Innovation



NATIONAL CANCER INSTITUTE

Cancer Intervention and Surveillance Modeling Network



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Questions?



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Breast cancer in the elderly

PART 2 – DEBATE

Is breast screening in patients
over 70 cost effective?

NO

Is breast screening in patients over 70 cost effective? **NO**

National System Organized Screening

Public Health Intervention

Spontaneous Screening

Personal Health Intervention

Is breast screening in patients over 70 cost effective? **NO**

National Health System Organized Screening

Not tailored

Does not take into account personal BC risk

Philosophy: One fits all

Paid by the NHS

Spontaneous Screening

Tailored

Takes into account personal BC risk

Not only Mammography

Is breast screening in patients over 70 cost effective? **NO**

Early Diagnosis

Benefits

Conservative surgery
Less Chemotherapy
Less risk of metastasis
Less risk of recurrences
Better QALY
Mortality Reduction ???

Screening in the elderly

Harms

Mammography stress & discomfort
Recalls & false positives
Overdiagnosis !!!
Surgery & anaesthesia risks & complications
Chemotherapy toxicity
RT collateral effects
NHS Costs

Is breast screening in patients over 70 cost effective? **NO**

Should screening be stopped at 69 or at 74?

J Med Screen 2002; 9: 163-67. doi: 10.1136/jms.9.4.163.

Repeated mammographic screening reduces breast cancer mortality along the continuum of age

Broeders M J.M. , Verbeek A L.M. , Straatman H , et al.

- Significant reduction in mortality in the 70-74 year-olds (OR = 0.45; 95% CI 0.20-10.2)
- Not in the 75-79 year-olds (OR = 1.05; 95% CI 0.27-4.14) .

Is breast screening in patients over 70 cost effective? **NO**

Should screening be stopped at 69 or at 74?

Guidelines for Screening Mammography among Women 75 years or Older

American Cancer Society

2010

There is no specific upper age at which mammography screening should be discontinued. As long as a woman is in good health and would be a candidate for breast cancer treatment, she should continue to be screened with mammography. If performed, recommend screening every 1 year.

American College of Obstetricians and Gynecologists

2011

Women aged 75 or older should, in consultation with their physicians, decide whether or not to continue mammographic screening. Medical comorbidity and life expectancy should be considered. If performed, recommend screening every 1 year.

American College of Radiology

2008

It is unclear at what age, if any, women cease to benefit from screening mammography. Because this age is likely to vary depending on the individual's overall health, **the decision as to when to stop routine mammography screening should be made on an individual basis by each woman and her physician.** If performed, recommend screening every 1 year.

Canadian Task Force on Preventive Health Care

2011

A tailored approach to screening mammography is warranted in women aged 70 years or older. **If a woman desires to continue screening mammography, it is justified if her life expectancy exceeds 5-10 years (weak recommendation; low quality evidence).** If performed, recommend screening every 2-3 years.

National Comprehensive Cancer Network

2013

In older women, mammography screening should be individualized, weighing its potential benefits/risks in the context of the patient's overall health and estimated longevity. If a patient has severe comorbid conditions limiting her life expectancy and no intervention would occur based on the screening findings, then the patient should not undergo screening. If performed, recommend screening every 1 year.

National Health Service, United Kingdom

2010

Women aged 74 or older can request continued mammography screening, but they do not receive routine invitations. If performed, recommend screening every 3 years.

US Preventive Services Task Force

2009

Evidence is insufficient to assess the additional benefits and harms of screening mammography in women 75 years or older. No recommendation (I statement—If the service is offered, patients should understand the uncertainty about the balance of benefits and harms). If performed, recommend screening every 2 years.

Is breast screening in patients over 70 cost effective? **NO**

Should screening be stopped at 69 or at 74?

Epidemiol Prev 2007; 31(1):15-22. PMID: 17591400

On the opportunity of extending screening service by mammography to 40-49 and 70-74 years of age women. Recommendations of a National Italian Consensus Conference.

Distante V., Ciatto. S., Alfonso Frigerio A, et al.:

The extension of screening to 70-74 year olds may be recommended because:

- **sensitivity is the same**, if not higher, than that obtained in 50-69 year olds (less dense breasts);
- **the expected specificity is the same**, due to the the lower incidence of benign lesions which can cause differential diagnosis problems with cancer, and due to the lower masking effect of dense breast;
- Previous conditions imply a **greater positive predictive value of screening, and a lower cost per diagnosed cancer.**

But **negative aspects** must also be kept in mind, such as:

- **participation in screening tends to decrease with increasing age.**
- **life expectancy is lower** than in younger women and competitive causes of mortality can interfere with the benefit of screening, as the reduction in breast cancer mortality in 50-69 year-olds tends to manifest 6-7 years after the start of screening.

Is breast screening in patients over 70 cost effective? **NO**

Should screening be stopped at 69 or at 74?

Epidemiol Prev 2007; 31(1):15-22. PMID: 17591400

On the opportunity of extending screening service by mammography to 40-49 and 70-74 years of age women. Recommendations of a National Italian Consensus Conference.

Distante V., Ciatto. S., Alfonso Frigerio A, et al.:

■ **due to the limited life expectancy and competitive causes of mortality, the risk of overdiagnosis and overtreatment is substantially higher** than in younger women. The decision to **extend organized screening beyond the age of 70 essentially depends on the local availability of resources and life expectancy.** The individual life expectancy could be better predicted by the **family doctor**, who knows well the general state of health of the subject, and who could thus regulate access to opportunistic screening.

Bone densitometry, which can predict the risk of bone fracture on an osteoporotic basis, a frequent cause of death in elderly women, could also be used as an indicator of life expectancy.

The cost-effectiveness analysis can suggest priority of choice over which extension of screening to favor: the cost (per QALY) of extending the screening up to 79 years has been estimated between \$ 8,000 and \$ 27,000, compared to \$ 24,000-65,000 for extension to 40-49 year olds. We can summarize as follows:

- **there is no evidence from controlled studies of the effectiveness of screening over the age of 70;**
- **It is reasonable to expect screening of over 70s to have the same (or better) diagnostic accuracy than 50-69 year olds.** There is no reason not to believe that this translates into the same effectiveness of screening, if not for the possible interference of the shorter life expectancy due to competitive causes of mortality;

Is breast screening in patients over 70 cost effective? **NO**

Should screening be stopped at 69 or at 74?

Epidemiol Prev 2007; 31(1):15-22. PMID: 17591400

**On the opportunity of extending screening service by mammography to 40-49 and 70-74 years of age women.
Recommendations of a National Italian Consensus Conference.**

Distante V., Ciatto. S., Alfonso Frigerio A, et al.:

The few data present in the literature do not allow to have sufficient scientific evidence on the matter, but the characteristics of women in the age group, mammography tests, epidemiological data and simulation models, albeit indirectly, address the indications as follows:

- in case of sufficient availability of resources, it is recommended to extend the mammography screening program up to 74 years;
- as a minimum goal, it is recommended to extend it up to 74 years at least for those responding to the previous screening steps.

If the extension of the program is not possible, alternative solutions should still be sought **to allow women of the age group considered, previously involved in the screening program, not to fend for themselves** if they still wish to be followed by the same screening program.



Is breast screening in patients over 70 cost effective? **NO**

Should screening be stopped at 69 or at 74?

Epidemiol Prev 2007; 31(1):15-22. PMID: 17591400

On the opportunity of extending screening service by mammography to 40-49 and 70-74 years of age women.

Recommendations of a National Italian Consensus Conference.

Distante V., Ciatto. S., Alfonso Frigerio A, et al.:

Conclusions

The cost-effectiveness analysis suggests that extending screening to 70-74 year-olds may be convenient, much more than extension to 75-79 year-olds, and more than extension to 40-49 year-olds;

the choice of extending screening to 70-74 year olds **depends on local resources and local estimates of life expectancy, on a population and individual basis.**

An estimate of the latter is the responsibility of the **family doctor**, who is aware of the woman's overall state of health.

Is breast screening in patients over 70 cost effective?

Should screening be stopped at 69 or at 74?

J Natl Cancer Inst. 2015 Jul; 107(7) doi: 10.1093/jnci/djv103

Benefits and Harms of Mammography Screening After Age 74 Years: Model Estimates of Overdiagnosis

van Ravesteyn N.T., Stout N.K., Schechter C.B et al.

The aim of this study was to quantify the benefits and harms of mammography screening after age 74 years, focusing on the amount of overdiagnosis of invasive breast cancer and ductal carcinoma in situ (DCIS).

The models predicted that there were 7.8 to 11.4 LYG per 1000 screens at age 74 years (range across models), decreasing to 4.8 to 7.8 LYG per 1000 screens at age 80 years, and 1.4 to 2.4 LYG per 1000 screens at age 90 years.

The balance between screening benefits and harms becomes less favorable after age 74 years. At age 90 years, harms outweigh benefits, largely as a consequence of overdiagnosis.

Is breast screening in patients over 70 cost effective? **NO**

JAMA. 2014 April 2; 311(13): 1336–1347. doi:10.1001/jama.2014.2834.

Screening Mammography in Older Women: A Review

Walter L.C. and Schonberg M.A.

There is **considerable uncertainty about the benefit of screening mammography in women age 75 years and older.**

While meta-analyses of randomized controlled trials for women ages 50 to 74 years indicate screening mammography is associated with a reduction in breast cancer mortality of 15% to 25% after 10 to 15 years, none of the trials included women over age 74.

Given this lack of trial data, **most guideline panels and organizations recommend decisions about screening mammography in older women be individualized**, weighing potential benefits and harms of screening in the context of a woman's overall health, life expectancy and preferences.

Is breast screening in patients over 70 cost effective? **NO**

JAMA. 2014 April 2; 311(13): 1336–1347. doi:10.1001/jama.2014.2834.

Screening Mammography in Older Women: A Review

Walter L.C. and Schonberg M.A.

Estimating Late-life Breast Cancer Risk

The Gail model, which integrates multiple breast cancer risk factors into a risk score, is commonly used to identify women at increased risk for developing breast cancer. However, its performance was **evaluated** in a cohort of Vermont **women aged 70 and older and was found to predict breast cancer only slightly better than flipping a coin** (c-statistic 0.54).

Advancing age is actually the major risk factor for breast cancer.

The incidence of breast cancer increases substantially with age, peaking between ages 75-79.

Is breast screening in patients over 70 cost effective? **NO**

JAMA. 2014 April 2; 311(13): 1336–1347. doi:10.1001/jama.2014.2834.

Screening Mammography in Older Women: A Review

Walter L.C. and Schonberg M.A.

Estimating Life Expectancy

While the **risk of developing and dying from breast cancer increases with advancing age**, which favors screening, a decrease in the overall **life expectancy reduces the chance of dying of an asymptomatic screen-detectable cancer**

Age alone is a crude predictor of life expectancy

Is breast screening in patients over 70 cost effective? **NO**

JAMA. 2014 April 2; 311(13): 1336–1347. doi:10.1001/jama.2014.2834.

Screening Mammography in Older Women: A Review

Walter L.C. and Schonberg M.A.

Estimating Benefits And Harms Of Screening Mammography In Older Women

The appropriate measure of screening **benefit is the reduction in mortality from breast cancer in women offered screening mammography on comparison with women who are not offered screening.**

None of the randomized controlled trials evaluating screening mammography included women over age 74, such that there is no direct evidence that screening is beneficial in older women.

Overdiagnosis is the major harm of cancer screening and increases with age due to decreasing life expectancy and an increasing proportion of slower growing cancers.

Is breast screening in patients over 70 cost effective? **NO**

Ann Intern Med. 2020;172:381-389. doi:10.7326/M18-1199

Continuation of Annual Screening Mammography and Breast Cancer Mortality in Women Older Than 70 Years

García-Albeñiz X., Hernán M.A., Logan R.W. et al ... MBA, MSCE

1.058.013 beneficiaries aged 70 to 84 years who had a life expectancy of at least 10 years, had no previous breast cancer diagnosis, and underwent screening mammography.

Measurements: Eight-year breast cancer mortality, incidence, and treatments, plus the positive predictive value of screening mammography by age group.

In women aged 70 to 74 years, the **estimated difference in 8-year risk** for breast cancer death between continuing and stopping screening **was 1.0** (95% CI, 2.3 to 0.1) **death per 1000 women** (hazard ratio, 0.78 [CI, 0.63 to 0.95]) (a negative risk difference favors continuing).

Is breast screening in patients over 70 cost effective? **NO**

Ann Intern Med. 2020;172:381-389. doi:10.7326/M18-1199

Continuation of Annual Screening Mammography and Breast Cancer Mortality in Women Older Than 70 Years

García-Albeñiz X., Hernán M.A., Logan R.W. et al ... MBA, MSCE

In those **aged 75 to 84 years**, the corresponding **risk difference was 0.07** (CI, 0.93 to 1.3) **death per 1000 women** (hazard ratio, 1.00 [CI, 0.83 to 1.19]).

Continuing annual breast cancer screening past age 75 years did not result in substantial reductions in 8-year breast cancer mortality compared with stopping screening.

The reduced benefit in older women is consistent with the hypothesis that **competing causes of death, such as cardiovascular or neurologic conditions, overtake breast cancer mortality with increasing age.**

Is breast screening in patients over 70 cost effective? **NO**

Ann Intern Med. 2020;172:381-389. doi:10.7326/M18-1199

Continuation of Annual Screening Mammography and Breast Cancer Mortality in Women Older Than 70 Years

García-Albeñiz X., Hernán M.A., Logan R.W. et al ... MBA, MSCE

Although breast cancer prognosis depends on the extent (nodes and distant spread) and biology of the tumor rather than its size, the **justification for annual mammography is that treatment is more effective for the small asymptomatic tumors detected at screening than for the larger symptomatic tumors detected in the absence of screening.**

In our study, as expected, women who continued screening were more likely to receive a breast cancer diagnosis. The **excess diagnoses in this group were either aggressive asymptomatic tumors or tumors that would not have become clinically apparent in the absence of screening (overdiagnosis).**

Consequently, in our study, **women were treated more aggressively under the “stop screening” strategy, as we expected.**

Is breast screening in patients over 70 cost effective? **NO**

Journal of the American Geriatrics Society: 15 February 2013. <https://doi.org/10.1111/jgs.12123>

Targeting of Mammography Screening According to Life Expectancy in Women Aged 75 and Older

Mara A. Schonberg MD, MPH, Erica S. Breslau PhD, Ellen P. McCarthy MD, MPH

Of 2.266 respondents.

Despite uncertainty of benefit, many women aged 75 and older are screened with mammography.

Life expectancy is strongly associated with receipt of screening, which may reflect clinicians and patients appropriately considering life expectancy in screening decisions, but

36% of women with short life expectancies are still screened,

suggesting that

new interventions are needed to further improve targeting of screening according to life expectancy.

Is breast screening in patients over 70 cost effective? **NO**

Breast Cancer Survivors Mammography Surveillance

January 28, 2021 *JAMA Oncol.* 2021;7(4):609-615. doi:10.1001/jamaoncol.2020.7582

Individualizing Surveillance Mammography for Older Patients After Treatment for Early-Stage Breast Cancer

Multidisciplinary Expert Panel and International Society of Geriatric Oncology Consensus Statement

Freedman R.A., Minami C.A, Winer E.P. et al.

The final **consensus guidelines recommend**

- Stop mammography for breast cancer survivors age 75 and older if they are expected to live less than 5 years.
- Consider stopping mammography for breast cancer survivors age 75 and older who are expected to live between 5 and 10 years.
- Continue mammography for breast cancer survivors age 75 and older who are expected to live more than 10 years.

Is breast screening in patients over 70 cost effective?

Screening over 74 ?

National Health System Organized Screening NO !

But



Spontaneous Informed Screening (under the NHS)

Tailored, taking into consideration

Life expectancy

Physical & psychological conditions

Woman's preference

Is breast screening in patients over 70 cost effective? **NO**

JAMA. 2001;286(10):1175-1176. doi:10.1001/jama.286.10.1173

Discussing Cancer Screening With Elderly Patients

Cunningham J

For example, imagine a patient who will die in 5 years, with or without screening for breast cancer.

But, if in one scenario

she will die in her sleep

and if in the other

die of painful metastatic breast cancer,

she may well see an advantage to having the breast cancer diagnosed and treated, even if there is no survival benefit.

Is breast screening in patients over 70 cost effective?

JAMA Intern Med. 2020;180(6):831-842. doi:10.1001/jamainternmed.2020.0440

Effect of a Mammography Screening **Decision Aid** for Women 75 Years and Older A Cluster Randomized Clinical Trial

Schonberg M.A., Kistler C.E., Pinheiro A. et al.

Because of the uncertainty of a mortality benefit for women 75 years and older, **guidelines recommend that these women be informed of the benefits and harms of mammography before being screened** and that women with less than a 10-year life expectancy not be screened.

Providing women 75 years and older with a mammography screening DA before a PCP (primary care physician) visit helps them make more informed screening decisions and **leads to fewer women choosing to be screened, suggesting that the DA may help reduce overscreening.**

Is breast screening in patients over 70 cost effective?

JAMA Intern Med. 2020;180(6):831-842. doi:10.1001/jamainternmed.2020.0440

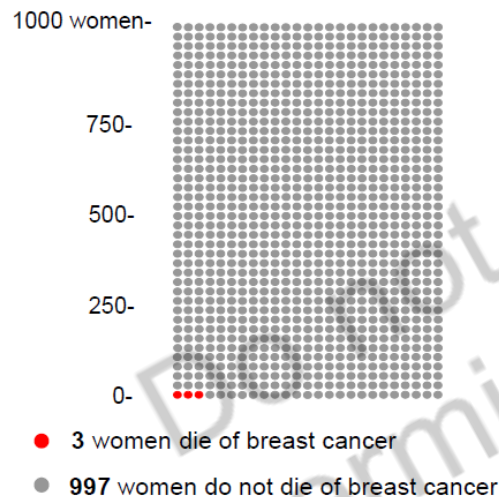
Effect of a Mammography Screening Decision Aid for Women 75 Years and Older A Cluster Randomized Clinical Trial

Schonberg M.A., Kistler C.E., Pinheiro A. et al.

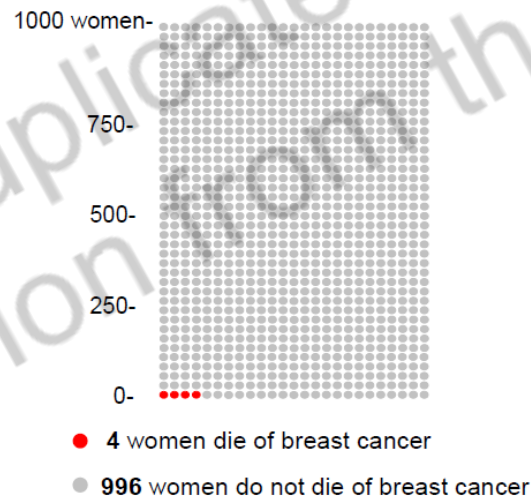
Below is approximately the number of women age 75 to 84 years out of 1,000 that will die of breast cancer in the next 5 years

- Doctors are unsure that having a mammogram will lower your chances of dying from breast cancer, some studies suggest the numbers below:

Women your age who CONTINUE to have mammograms



Women your age who DO NOT have mammograms



To help older women weigh the benefits and harms of screening, we previously developed a paper-based mammography screening decision aid (DA) for women 75 years and older

- Summary:** 1 less woman out of 1,000 may die of breast cancer who chooses to have a mammogram.

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Is breast screening in patients over 70 cost effective?

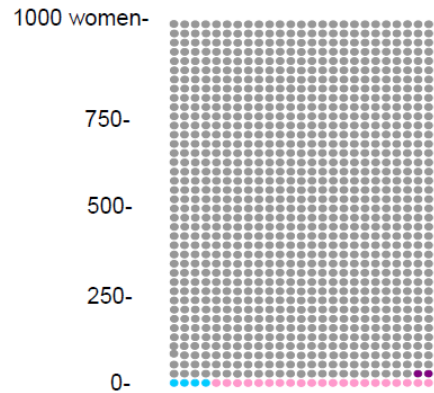
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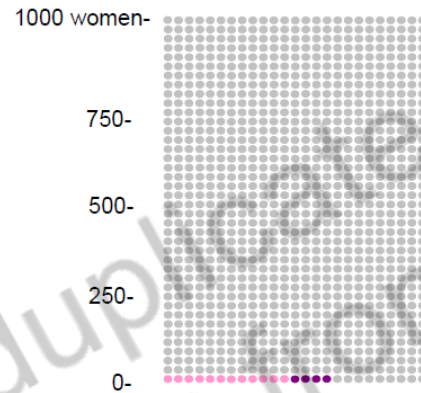
What else happens to 1,000 women age 75 to 84 who CONTINUE to or DO NOT have mammograms over 5 years?

Women your age who CONTINUE to have mammograms



- 4 are diagnosed with a pre-cancer
- 20 are diagnosed with a small breast cancer
- 2 are diagnosed with breast cancer that has spread outside the breast
- 974 are not diagnosed with breast cancer

Women your age who DO NOT have mammograms



- 0 are diagnosed with pre-cancer
- 12 are diagnosed with a small breast cancer
- 4 are diagnosed with breast cancer that has spread outside the breast
- 984 are not diagnosed with breast cancer

To help older women weigh the benefits and harms of screening, we previously developed a paper-based mammography screening decision aid (DA) for women 75 years and older

- Summary:**
- Women who have mammograms are more likely to be diagnosed with small breast cancers.
 - Some of these breast cancers would never have caused problems but these women get treatment.
 - Two more women out of 1,000 who do not get a mammogram are diagnosed with breast cancer that has spread outside the breast.

Is breast screening in patients over 70 cost effective?

JAMA Intern Med. 2020;180(6):831-842. doi:10.1001/jamainternmed.2020.0440

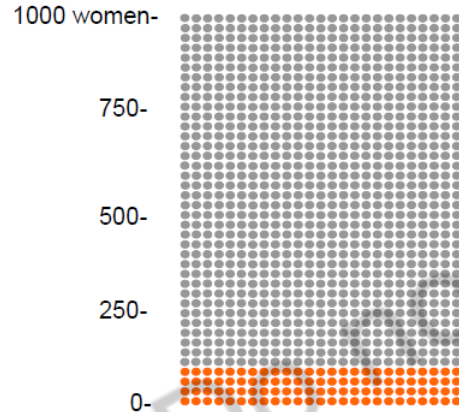
Effect of a Mammography Screening Decision Aid for Women 75 Years and Older A Cluster Randomized Clinical Trial

Schonberg M.A., Kistler C.E., Pinheiro A. et al.

The next three pages show what happens to 1,000 women age 75 to 84 who
CONTINUE to or **DO NOT** have mammograms over 5 years ***PLEASE READ BELOW***

-In the graphs below, each circle represents 1 woman out of 1,000-

Women your age who **CONTINUE** to have mammograms



- **100 False Alarms** – These women have an abnormal mammogram but additional tests do not show breast cancer. Most women find this experience causes anxiety.

Additional tests include:

Additional Mammograms Breast Ultrasounds Breast Biopsies

Women your age who **DO NOT** have mammograms



- **0 False Alarms** – 0 women have a mammogram so they do not experience a false alarm.

To help older women weigh the benefits and harms of screening, we previously developed a paper-based mammography screening decision aid (DA) for women 75 years and older

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Breast cancer in the elderly

PART 2 – DEBATE

Is breast screening in patients
over 70 cost effective?

NO