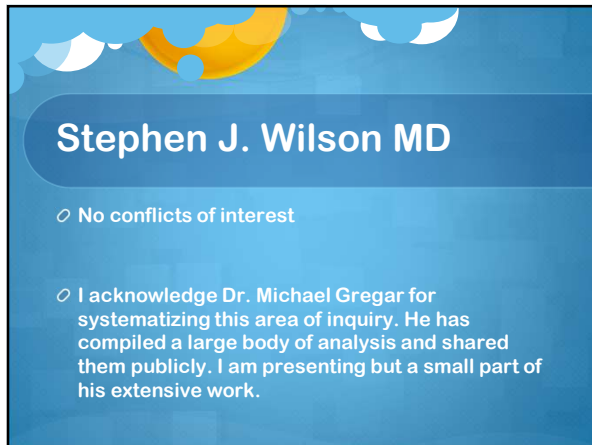










Introduction. Mammogram Recommendations: Why the Conflicting Guidelines?

When women are fully informed about the risks and benefits of mammograms, 70% may choose not to get screened, but you may be in that 30%, and have a right to decide for yourself.



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Perspective FREE PREVIEW

Cancer Screening Campaigns — Getting Past Uninformative Persuasion

Steven Woloshin, M.D., Lisa M. Schwartz, M.D., William C. Black, M.D., and Barnett S. Kramer, M.D., M.P.H.

Public health campaigns have long used powerful tools of persuasion — including fear, guilt, and a sense of personal responsibility — to convince people to get screened for cancer. It's now time to get past pure persuasion and move toward informed decision making.

November 1, 2012
N Engl J Med 2012;
DOI: 10.1056/NEJ
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Persuasion

Woloshin, M.D., Lisa M. Schwartz, M.D., William C. Black, M.D., and Barnett S. Kramer, M.D., M.P.H.

For nearly a century, public health organizations, professional associations, patient advocacy groups, academics, and clinicians largely viewed cancer screening as a simple, safe way to save lives.¹

Public health messages and campaigns reflected and amplified For example: "If you're a woman over 35, be sure to schedule a

Cancer Medicine Open Access

Commentary | Open Access

Screening mammography: sparing the emperor's blushes

Saroj Niraula

First published: 28 September 2016 <https://doi.org/10.1002/cam4.859>

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Abstract

Differing interpretations about evidence on benefits and harms of screening mammography has led to conflicting recommendations among different jurisdictions that range from intensive screening starting at age 40 to no screening at all. Despite broad attention of scientific and nonscientific media, evidence suggests substantial discrepancy between real and perceived benefits of screening mammography among women. In this commentary, underlying concept of mammographic screening, limitations in primary evidence, results from secondary evidence, and existing misunderstandings are underscored with a critical gaze at available information.

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American Cancer Society Changes Breast Cancer Screening Guidelines to Reflect Analysis of Benefits and Harms

Marilyn Fetschel

JNCI: Journal of the National Cancer Institute, Volume 108, Issue 2, 1 February 2016, djv022, <https://doi.org/10.1093/jnci/djv022>

Published: 01 February 2016

Volume 108, Issue 2, February 2016

"Yet these changes have raised concerns. That's especially true since ACS, the U.S. Preventive Services Task Force (USPSTF), the American College of Obstetricians and Gynecologists (ACOG), and the National Comprehensive Cancer Network (NCCN)—four organizations charged with making screening recommendations—now differ"

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Conclusions in systematic reviews of mammography for breast cancer screening and associations with review design and author characteristics

Smith et al.

BMC Systematic Reviews 2017, 4:105 <https://doi.org/10.1186/s13643-017-0495-6> | © The Author(s) 2017

Received: 14 September 2016 | Accepted: 5 May 2017 | Published: 22 May 2017

"In the last 15 years, 50 systematic reviews on the use of routine mammography for breast cancer screening in asymptomatic women have been published but a consistent conclusion has not emerged." "We sought to quantify the disagreement across systematic reviews of mammography.... the results suggested that the specific expertise and competing interests of the authors influenced the conclusions of systematic reviews."

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SOUNDING BOARD (FREE PREVIEW)

Lessons from the Mammography Wars

Kerianne H. Quanstrum, M.D., and Rodney A. Hayward, M.D.

In this article, the authors argue that any intervention produces a continuous gradient of benefit versus harm. Subjective thresholds can vary, even if the data are agreed upon. Should we rely solely on expert panels to make arbitrary judgments, especially in the gray areas?

September 9, 2010
N Engl J Med 2010; 363:1111-1074-9
DOI: 10.1056/NEJMsa
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tising and antitrust laws. It is only in
that we have failed to recognize the need for anal-
ogous protections. It is only in health care, after
all, that the same group that provides a service p
also tells us how valuable that service is and how
much of it we need, as when the Society of Breast
Imaging sets the recommendations for mammog-
raphy.* If there is overutilization in health care,
we can be sure that it will continue unabated as a

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SOUNDING BOARD (FREE PREVIEW)

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that just as in any other profession or industry,
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Are benefits and harms in mammography screening given equal attention in scientific articles? A cross-sectional study

Karsten Juhl Jørgensen [†] , Anders Klahn [†] and Peter C Gøtzsche [†]

[†]Contributed equally

BMC Medicine 2007 5:12
<https://doi.org/10.1186/1745-7015-5-12> | © Jørgensen et al; licensee BioMed Central Ltd. 2007
Received: 18 January 2007 | Accepted: 30 May 2007 | Published: 30 May 2007

Conclusion

Scientific articles tend to emphasize the major benefits of mammography screening over its major harms. This imbalance is related to the authors' affiliation.

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Author's specialty and conflicts of interest contribute to conflicting guidelines for screening mammography

Susan L Schune
multifactorial. Specialists who derive their income from screening or treating breast cancer (e.g., radiologists and surgical or medical oncologists) might be more likely to recommend routine screening than physicians who do not derive most of their income from these activities (e.g., generalists). Further, specialist physicians might have values

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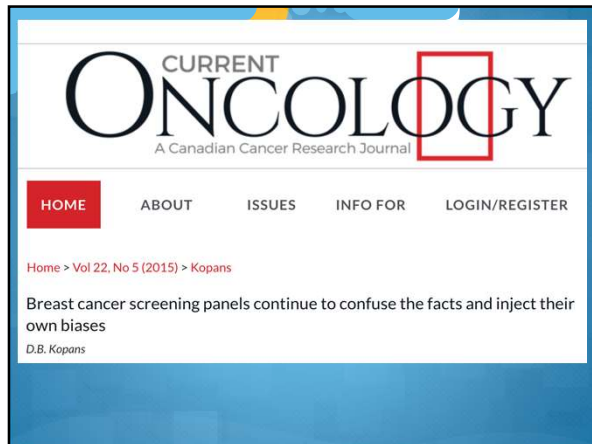


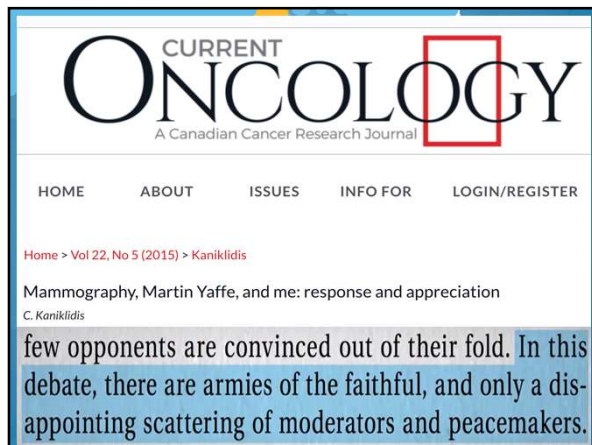
Editorial

**'We do not see the lens through which we look':
screening mammography evidence and non-financial
conflicts of interest**

Richard Saltz

Daniel Kopans a leading proponent of mammography screening said "I earn my living reading mammograms", and "if you don't have a conflict of interest you probably don't have the expertise".⁶ This quote raises the







CURRENT

and safety. Such paternalism assumes that women cannot decide for themselves whether the available evidence supports or refutes the case for mammography. Discouraging a discussion with women about the evidence for and against mammo-

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Mamm

C. Kaniklic

graphy is more harmful for women's health, not less, if doctors truly believe that patients should be active partners in making decisions about their care.

Format: Abstract - Send to -

Radol Technol. 2016 May;87(5):529M-48M.

Breast Cancer Screening Benefits: Research and Controversies.

Odle TG.

Abstract

The debate regarding the efficacy of breast cancer screening with mammography has intensified since about 2009, as the literature has reported on benefits, harms, and effectiveness of the technology in breast cancer diagnosis. As a result, women and their referring clinicians have been confused by conflicting reports in medical journals and the media. This article provides an overview of research and methodology used to generate these reports and the effects of contradictory research, screening recommendation changes, and the controversy over mammography efficacy on patients and the public.

PMID: 27146193

lish their results.^{24,40} Although investigators must reveal conflicts of interest in research studies, such as funding, conflicts do not always preclude them from publishing. Nor are conflicts of interest necessarily clear to women who might hear about results of studies from the media or friends. Even when investigators do not have conflicts

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PMID: 27146193

cancer.⁴² Many authors in the literature propose renewed attention to emphasizing evidence over commercial or financial interests in developing all screening guidelines for the benefit of patients.^{5,40}

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PMID: 27146193

when possible. For all women, this requires a certain degree of cultural change in the patient-provider relationship from past directives from advocacy groups, media, and providers to “get a mammogram,” to becoming informed consumers who make the best choice with the help of current screening recommendations, their providers, and their values.^{1,17}

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 **Uninformed Compliance or Informed Choice? A Needed Shift in Our Approach to Cancer Screening** 

Michael Edward Stefaneck

JNCI: *Journal of the National Cancer Institute*, Volume 103, Issue 24, 21 December 2011, Pages 1821-1826, <https://doi.org/10.1093/jnci/djr474>
Published: 22 November 2011 Article history

Volume 103, Issue 24
21 December 2011

“It is virtually impossible for organizations to claim that they engage in “evidence-based” medicine when they also must be sensitive to advocacy groups and public sentiment because they depend on the opinions of these groups for their very existence....”

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Journal of Women's Health, Vol. 24, No. 11 | Commentary

Four Principles to Consider Before Advising Women on Screening Mammography

John D. Keen and Karsten J. Jorgensen

Published Online: 10 Nov 2015 | <https://doi.org/10.1089/jwh.2015.5220>

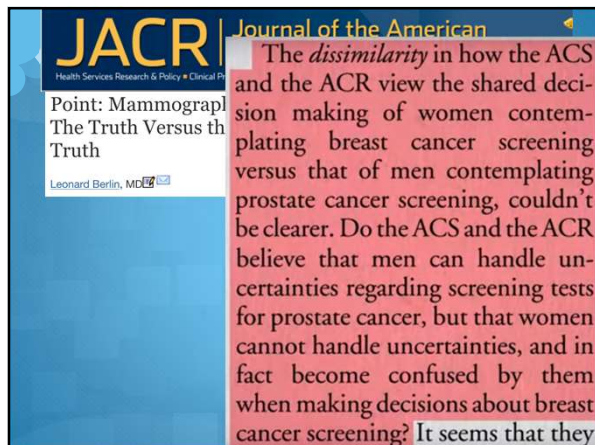
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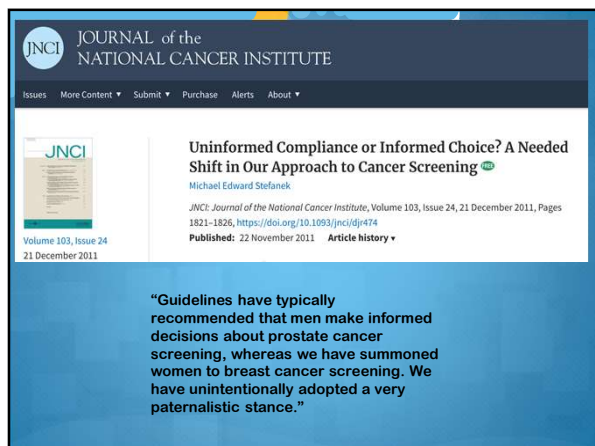
Abstract

This article reviews four important screening principles applicable to screening mammography.

"In the United States (U.S.), a double standard exists: women are encouraged to participate in screening mammography, while men are advised to make informed decisions regarding prostate screening, although the fundamental issues to consider are very similar.(3-5)"







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ORIGINAL ARTICLE

Effect of Three Decades of Screening Mammography on Breast-Cancer Incidence

Archie Bleher, M.D., and H. Gilbert Welch, M.D., M.P.H.

November 22, 2012
N Engl J Med 2012; 367:1998-2005
DOI: 10.1056/NEJMoa1206809

24 References 554 Citing Articles Letters

“Should I be screened for breast cancer?” However, they can rest assured that the question has more than one right answer.”

Obstetrics and Gynecology Clinics of North America

Volume 40, Issue 3, September 2013, Pages 413-427

Controversies Regarding Mammography, Breast Self-Examination, and Clinical Breast Examination

Anita L. Nelson MD

more interesting, however, was the fact that if women knew how small the real effectiveness of breast cancer screening in preventing breast cancer deaths is, 70% said they would not submit to it.

Should Women Get Mammograms Starting at Age 40?

- Various health organizations offer clashing mammogram recommendations that range from annual mammograms starting at age 40 to eliminating routine mammograms altogether. Who should you trust?



International journal of science

Outlook | Published: 18 November 2015

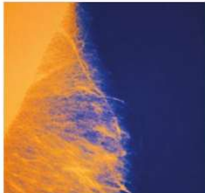
Screening: Don't look now

Emily Sohn

Nature **527**, S118–S119 (19 November 2015) | [Download Citation](#)

Mammogram screenings are an established part of women's health care, but are they more trouble than they are worth?

Back in 1980, Canadian researchers decided to tackle a pressing question: how many women could be saved with breast-cancer screening? At the time, many researchers suspected that the relatively new technology could prevent breast-cancer deaths by detecting tumours before they





International journal of science

Outlook | Published: 18 November 2015

Screening: Don't look now

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Nature **527**, S118–S119 (19 November 2015) | [Download Citation](#)

“Various organizations offer clashing recommendations that range from the American College of Obstetricians and Gynecologists suggesting that regular mammograms should start at age 40 to the Swiss Medical Board proposing the elimination of routine screening altogether.”

Journal of Women's Health, Vol. 24, No. 11 | Commentary



Four Principles to Consider Before Advising Women on Screening Mammography

John D. Keen and Karsten J. Jørgensen

Published Online: 10 Nov 2015 | <https://doi.org/10.1089/jwh.2015.5220>

While professional society screening guidelines generally promote breast screening, they may be influenced by intellectual and financial conflicts of interest and generally have a poor evidence base compared with, for example, those from the U.S. Preventive Services Task Force.^{6,7}

[illegible]

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Cancer Causes & Control
October 2014, Volume 25, Issue 10, pp 1423–1426 | [Cite as](#)

Breast screening: an obsessive compulsive disorder

Authors Authors and affiliations

Yunus A. Luqmani

prevailing evidence and make recommendations. In the USA, the Preventive Services Task Force (USPSTF) published its report in late 2009 on Screening for Breast Cancer [8], evoking a swift and decidedly passionate condemnation from members of the public, the media, and also ardent supporters of screening within the medical fraternity itself [9]. Since then, there has been no shortage

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Original Investigation

Knowledge of and Attitudes Toward Evidence-Based Guidelines for and Against Clinical Preventive Services: Results from a National Survey

PAULA M. LANTZ, W. DOUGLAS EVANS, HOLLY MEAD, CARMEN ALVAREZ, LISA STEWART

First published: 14 March 2016 | <https://doi.org/10.1111/1468-0009.12181> | Cited by: 8

only 7.7% had heard of the USPSTF.

Journal Women & Health
Volume 56, 2016 - Issue 3

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1 CrossRef citations to date

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Re-examining current breast cancer screening: An analysis of the 2009 U.S. Preventive Services Task Force guidelines for breast cancer screening

Carol Beard PhD & Virginia Beard PhD

Pages 281–295 | Received 26 Jun 2014, Accepted 14 Jan 2015, Accepted author version posted online: 11 Sep 2015, Published online: 09 Nov 2015

Download citation | <https://doi.org/10.1080/03630242.2015.1088115> | Check for updates

Created in 1984, the USPSTF is considered the leading independent panel of private sector experts in breast cancer prevention and primary care and is with the best available evidence (Newland 2010). Primary care physicians rely on the Task Force for evidence-based recommendations and consider these to be their gold standard for preventative care (Berg 2010).

South Med J. 2015 Aug;108(8):459-62. doi: 10.14423/SMJ.0000000000000318.

Healthcare Professionals' Perceptions and Knowledge of the USPSTF Guidelines on Breast Self-Examination.

Loh KP¹, Stefan MS¹, Friderici J¹, Tan EK¹, Ogunneye O¹, Kleppel R¹, Stewart JA¹.

Author information

Abstract

OBJECTIVES: In 2009, the US Preventive Services Task Force (USPSTF) published revised guidelines for breast cancer screening, which recommended against teaching breast self-examination (BSE). The objective of this study was to assess providers' perceptions and knowledge regarding these updated guidelines.

METHODS: A cross-sectional survey study was administered to 205 attending and resident physicians, nurse practitioners, physician's assistants, and registered nurses working in five medical and gynecological practices affiliated with a large academic teaching hospital in western Massachusetts. The survey solicited demographic data and inquired about practitioners' perceptions and knowledge of the revised guidelines.

RESULTS: Fewer than half (41.1%) of respondents correctly identified the new USPSTF guidelines for BSE. Among those who stated they were aware of guidelines, only 37.1% adhered to them. Overall, 70% report that they teach patients to perform BSE. Teaching BSE was associated with female sex (odds ratio [OR] 2.64, 95% confidence interval [CI] 1.11-6.29), a belief that BSE reduces morbidity and mortality (OR 2.91, 95% CI 1.08-7.81), and internal medicine residency (OR 0.18, 95% CI 0.06-0.59).

CONCLUSIONS: Knowledge of the 2009 USPSTF guidelines is suboptimal and greater efforts should be made to educate healthcare professionals about them.

PMID: 26280768 DOI: 10.14423/SMJ.0000000000000318

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perform routine BSE.¹⁴ A 2003 Cochrane review of two RCTs of 388,535 patients concluded that BSE has no beneficial effect and actually increased the number of biopsies performed.⁵

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evidence is insufficient to recommend for or against BSE.³ This was the result of emerging evidence suggesting that BSE does not reduce breast cancer diagnosis, mortality, or tumor stage upon diagnosis and unnecessarily increases the number of biopsies performed.⁴⁻⁷ The American Cancer Society's posi-

The screenshot shows the JAMA website interface. At the top, there's a navigation bar with the JAMA logo, a search bar, and a dropdown menu. Below this, the article title "The 2009 Breast Cancer Screening Recommendations of the US Preventive Services Task Force" is prominently displayed in a large, bold, black font. The author's name, "Steven H. Woolf, MD, MPH", is listed below the title. The publication date, "January 13, 2010", and the number of citations, "52", are also visible. The abstract text is highlighted in a light blue background, and the conclusion text is highlighted in a light orange background. The overall layout is clean and professional, typical of a medical journal website.

Ann Intern Med. Author manuscript; available in PMC 2014 Aug 24.

Published in final edited form as:
Ann Intern Med. 2014 Feb 4; 160(3): 145.
doi: [10.7326/M13-1217](https://doi.org/10.7326/M13-1217)

PMCID: PMC4142190
NIHMSID: NIHMS610655
PMID: [24658691](https://pubmed.ncbi.nlm.nih.gov/24658691/)

Aggregate Cost of Mammography Screening in the United States: Comparison of Current Practice and Advocated Guidelines

Cristina O'Donoghue, MD, MPH, Martin Eklund, PhD, Elissa M. Ozanne, PhD, and Laura J. Esserman, MD, MBA

participation and makes sense from a business perspective. The authors conservatively estimate that the breast imaging community receives \$4.4 billion in additional revenue from the status quo each year, knowledge that the \$8 billion consumed annually by screening mammography might be better spent on something else—that is, the

One person's cost is another person's income. The authors have quantified the financial conflict of interest among those most stridently defending aggressive annual screening mammography: an extra \$2.3 billion in revenue beyond the status quo. Financial considerations best explain the organized resistance to the implementation of the reasonable USPSTF recommendations.

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POLITICS AND POLICY

New Breast Screening Limits Face Reversal

By *Alicia Mundy*
Updated Jan. 12, 2010 12:01 a.m. ET

"The American College of Radiology, a trade group, called the new government guidelines scientifically unfounded, and said that if the guidelines are adopted, two decades of decline in breast-cancer mortality could be reversed and countless American women may die needlessly."

"Its flagship research program studies the role of radiology in medicine. It received donations of at least \$1 million each from General Electric Co.'s GE Healthcare and Siemens AG , according to the trade group's 2007-08 annual report. Both companies make mammography equipment and MRI scanners. Several other medical-device makers donated at least \$100,000."

Smith, Mittl J., 2015, Aug;108(8):459-82; doi: 10.14423/SMJ.0000000000000031E

Healthcare Professionals' Perceptions and Knowledge of the USPSTF Guidelines on Breast Self-Examination.

Loh RK¹, Stefan MS¹, Frederici J¹, Tan EK¹, Ogunmoye O¹, Kleppel R¹, Stewart JA¹.

© Author information

Abstract

OBJECTIVE: In 2009, the US Preventive Services Task Force (USPSTF) published revised guidelines for breast cancer screening, which recommended against teaching breast self-examination (BSE). The objective of this study was to assess providers' perceptions and knowledge regarding these updated guidelines.

METHODS: A cross-sectional survey study was administered to 205 attending and resident physicians, nurse practitioners, physician's assistants, and registered nurses working in five medical and gynecological practices affiliated with a large academic teaching hospital in western Massachusetts. The survey solicited demographic data and inquired about practitioners' perceptions and knowledge of the revised guidelines.

RESULTS: Fewer than half (41.1%) of respondents correctly identified the new USPSTF guidelines for BSE. Among those who stated they were aware of guidelines, only 37.1% adhered to them. Overall, 70% reported that they teach patients to perform BSE. Teaching BSE was associated with female sex (odds ratio [OR] 2.64, 95% confidence interval [CI] 1.11-6.29), a belief that BSE reduces morbidity and mortality (OR 2.91, 95% CI 1.08-8.71), and internal medicine residency (OR 0.18, 95% CI 0.06-0.59).

CONCLUSIONS: Knowledge of the 2009 USPSTF guidelines is suboptimal and greater efforts should be made to educate healthcare professionals about the updated guidelines.

PMID: 26280786 DOI: 10.14423/SMJ.0000000000000031E

The persistence of BSE promotion may be explained in part by the great effort from breast advocacy groups to endorse BSE. Evidence from large, well-designed, randomized controlled trials (RCTs) with follow-up of 5 to 16 years has shown that the practice of regular BSE by trained women does not reduce breast cancer-specific or all-cause mortality, rates of breast cancer diagnosis, or a reduction of tumor stage or size, however.^{1,6,7} The

nature REVIEWS CLINICAL ONCOLOGY

News & Views | Published: 15 September 2015

Breast cancer

Doubtful health benefit of screening from 40 years of age

Philippe Autier

Nature Reviews Clinical Oncology **12**, 570–572 (2015) | [Download Citation](#)

Results of the UK Age trial suggest a significant benefit of annual mammography initiated at 39–41 years of age in preventing breast-cancer deaths occurring before the age of 50 years; however, this approach had no effect on the risk of breast-cancer death occurring before the age of 60 years and leads to prolonged deteriorations in quality of life owing to overdiagnosis.

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News & Views | Published: 15 September 2015

Breast cancer

Doubtful health benefit of screening from 40 years of age

Philippe Autier

Nature Reviews Clinical Oncology **12**, 570–572 (2015) | [Download Citation](#)

Moss *et al.*¹ have now published long-term results of the UK Age trial, which is the only study that has specifically addressed the population-wide efficacy of mammography screening starting at the age of 40 years.

nature REVIEWS CLINICAL ONCOLOGY

News & Views | Published: 15 September 2015

Breast cancer

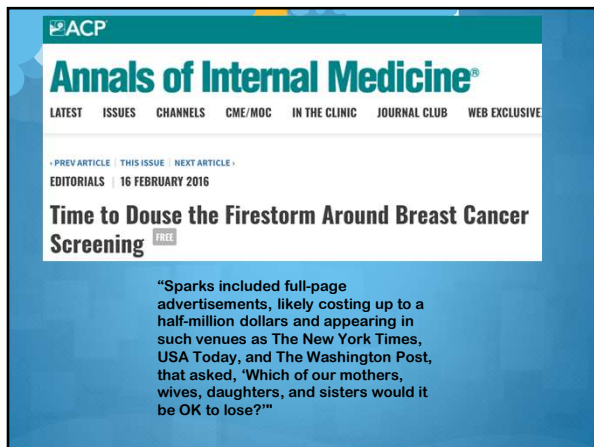
Doubtful health benefit of screening from 40 years of age

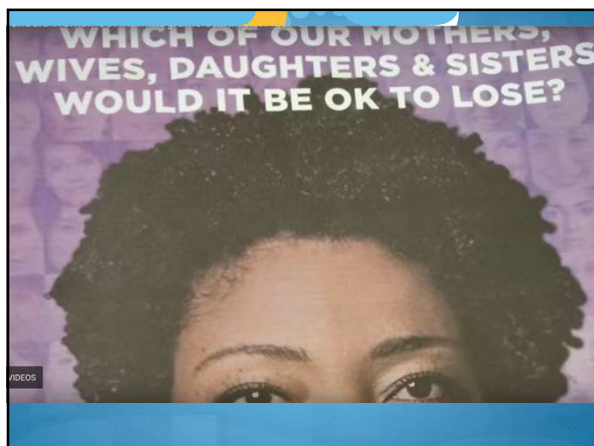
Philippe Autier

Nature Reviews Clinical Oncology **12**, 570–572 (2015) | [Download Citation](#)

95% CI 0.58–0.97; Table 1). However, this risk reduction faded away beyond the 10-year time point; at year 20, the risk of breast-cancer death in both groups was not significantly different (RR 0.93, 95% CI 0.80–1.09). What is







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screening.” Strong recommendations for screening average-risk women in their 40s, for annual rather than biennial screening in any age group, or for continuing screening in elderly women would misrepresent the net benefit of mammography in these groups. Guidelines that mislead women about the net health benefits they can expect from mammography would disrespect our mothers, wives, daughters, and sisters. When the

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agree more. Let's douse the flames and clear the smoke so that we can clearly see what the evidence shows and where we need to focus efforts to fill gaps in

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Viewpoint

March 8, 2016

A Public Health Framework for Screening Mammography Evidence-Based vs Politically Mandated Care

Kenneth W. Lin, MD, MPH¹; Lawrence O. Gostin, JD²

Author Affiliations

JAMA. 2016;315(10):977-978. doi:10.1001/jama.2016.0322

Viewpoint
March 8, 2016

A Public Health Framework for Screening Mammography

Evidence-Based vs Politically Mandated Care

Kenneth W. Lin, MD, MPH¹; Lawrence O. Gostin, JD²

The FY 2016 Consolidated Appropriations Act instructs DHHS to interpret any reference to “current” USPSTF breast cancer screening recommendations to mean those issued “before 2009”—in other words, its 2002 recommendations. Essentially, Congress is requiring health insurers to ignore modern scientific assessments and instead use 14-year-old guidance.

Viewpoint
March 8, 2016

A Public Health Framework for Screening Mammography

Evidence-Based vs Politically Mandated Care

Kenneth W. Lin, MD, MPH¹; Lawrence O. Gostin, JD²

guidance. Although many women's health advocates applauded the congressional mandate, it actually undermines women's rights to make informed decisions based on the best scientific evidence. This Viewpoint high-

Viewpoint
March 8, 2016

A Public Health Framework for Screening Mammography

Evidence-Based vs Politically Mandated Care

Kenneth W. Lin, MD, MPH¹; Lawrence O. Gostin, JD²

Highly respected scientific panels have drawn the same conclusions. As early as 1997, a National Cancer Institute (NCI) consensus panel arrived at similar results, later overturned by NCI's politically appointed advisory board. In 2015, the American Cancer Society recom-

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POLITICS AND POLICY

New Breast Screening Limits Face Reversal

By Alicia Mundy
Updated Jan. 12, 2019 12:01 a.m. ET

Guideline Revisions | How

1997
A government medical panel says routine yearly mammograms may not be necessary for women under the age of 50. Senate votes 98-0 to ignore guidelines.

2002
The U.S. Services calls for screening two years age 40 and thereby insurance

Viewpoint
March 8, 2016

A Public Health Framework for Screening Mammography

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improve the health of the nation. However, Congress's decision to assign disproportionate value to breast cancer compared with other conditions that middle-aged and older women experience (eg, cardiovascular disease) has a social cost. Since health care dollars are limited, devoting resources to marginally effective preventive services in a group with low disease rates results in fewer resources devoted to more effective (and cost-effective) services.

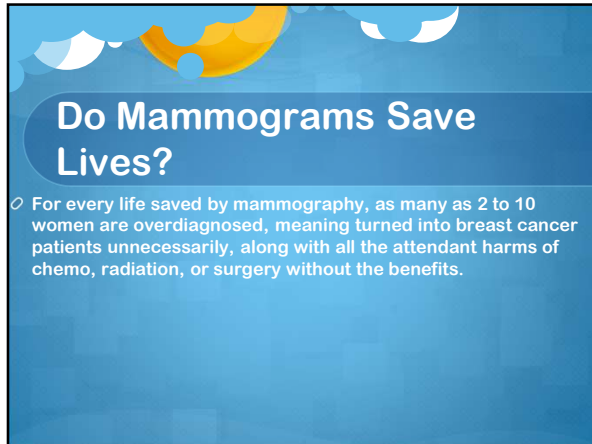
Viewpoint
March 8, 2016

A Public Health Framework for Screening Mammography

Evidence-Based vs Politically Mandated Care

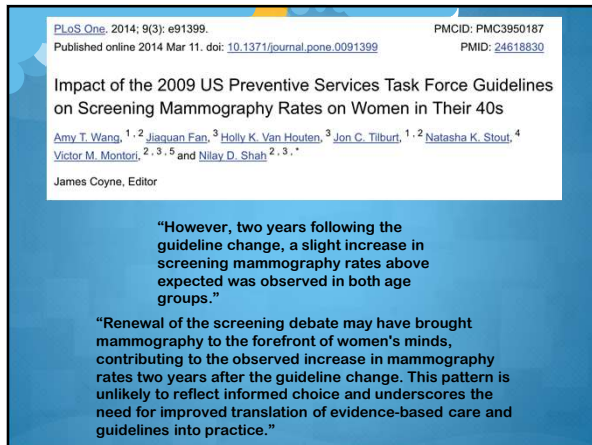
Kenneth W. Lin, MD, MPH¹; Lawrence O. Gostin, JD²

Task Force's independence. The House's version of 2016 omnibus spending bill (which was not included in the final legislation) would have denied funding for any future USPSTF mammography recommendation. Some members of Congress have gone further, proposing to alter the Task Force's composition to include "stakeholders from the medical products manufacturing community."⁶



Do Mammograms Save Lives?

- For every life saved by mammography, as many as 2 to 10 women are overdiagnosed, meaning turned into breast cancer patients unnecessarily, along with all the attendant harms of chemo, radiation, or surgery without the benefits.



PLoS One, 2014; 9(3): e91399. PMID: 24618830
Published online 2014 Mar 11. doi: 10.1371/journal.pone.0091399

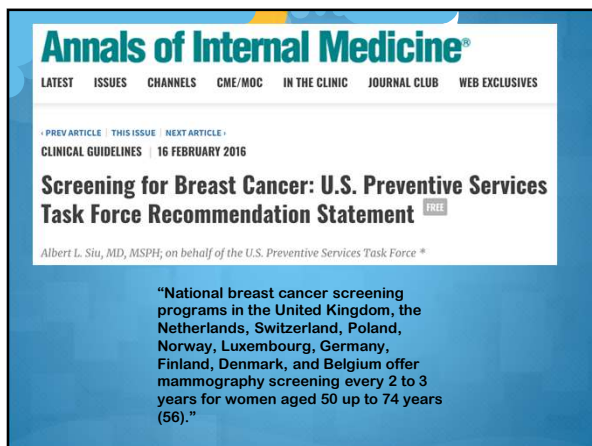
Impact of the 2009 US Preventive Services Task Force Guidelines on Screening Mammography Rates on Women in Their 40s

Amy T. Wang,^{1,2} Jiaquan Fan,³ Holly K. Van Houten,³ Jon C. Tilburt,^{1,2} Natasha K. Stout,⁴ Victor M. Montori,^{2,3,5} and Nilay D. Shah^{2,3,*}

James Coyne, Editor

"However, two years following the guideline change, a slight increase in screening mammography rates above expected was observed in both age groups."

"Renewal of the screening debate may have brought mammography to the forefront of women's minds, contributing to the observed increase in mammography rates two years after the guideline change. This pattern is unlikely to reflect informed choice and underscores the need for improved translation of evidence-based care and guidelines into practice."



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CLINICAL GUIDELINES | 16 FEBRUARY 2016

Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement FREE

Albert L. Siu, MD, MSPH; on behalf of the U.S. Preventive Services Task Force *

"National breast cancer screening programs in the United Kingdom, the Netherlands, Switzerland, Poland, Norway, Luxembourg, Germany, Finland, Denmark, and Belgium offer mammography screening every 2 to 3 years for women aged 50 up to 74 years (56)."

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Progress Toward Consensus on Breast Cancer Screening Guidelines and Reducing Screening Harms

Karla Kerlikowske, MD¹

➤ Author Affiliations

JAMA Intern Med. 2015;175(12):1970-1971. doi:10.1001/jamainternmed.2015.6466

Table

ACS and USPSTF 2015 Breast Cancer Screening Guidelines

Mammography Screening Parameter	Recommendation	
	ACS	USPSTF
Starting age, y	45	50
Screening frequency	Annually to age 54 years, then biennially	Biennially
Stopping age, y	As long as healthy and with life expectancy of at least 10 years	75
Total lifetime mammograms if screening continued to age 74 years, No.	20	13
Lifetime risk of dying from breast cancer, %	1.8–1.9 ^a	2.0 ^a

^aLifetime risk of dying from breast cancer with no screening is 2.7%.

News & Views Published: 31 December 2015

Breast cancer

Updated screening guidelines — much ado about small improvements

Karsten Juhl Jorgensen & Peter C. Gotzsche

Nature Reviews Clinical Oncology 13, 139–140 (2016) Download Citation

The recently updated breast cancer screening guidelines from the American Cancer Society are less aggressive than previous versions and clearer about overdiagnosis. However, a lack of attention was placed on the differences in effect estimates between trials at high and low risk of bias, and the authors failed to quantify the most serious harm.

News & Views Published: 31 December 2015

Breast cancer

Updated screening guidelines — much ado about small improvements

Karsten Juhl Jørgensen & Peter C. Gøtzsche

Nature Reviews Clinical Oncology **13**, 139–140 (2016) | Download Citation

The authors of the ACS-commissioned systematic review³ claim that similar reviews of the randomized trials, including our 2013 Cochrane systematic review⁶, are in agreement that mammography screening is associated with an estimated reduction in breast-cancer mortality of around 20%. This assertion is misleading: in our

20%. This assertion is misleading: in our Cochrane review, although we calculated a 19% reduction in mortality when all trials were combined (95% confidence interval (CI) 0.74–0.87), we documented pronounced heterogeneity between the results of poorly and adequately randomized trials in our sensitivity analysis ($I^2 = 78\%$)⁶. Importantly, trials with adequate randomization did not demonstrate a mortality benefit from mammography screening (relative risk 0.90

News & Views Published: 31 December 2015

Breast cancer

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cancer⁶. The available data certainly do not support the popular idea that screening saves lives⁷.

The ACS is a political organization with financial ties to companies with interests in the multi-billion dollar breast-cancer-screening industry¹⁰. The updated recom-



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Screening for breast cancer with mammography

Cochrane Systematic Review - Intervention | Version published: 04 June 2013 [see what's new](#)

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 Peter C Gotzsche | Karsten Juhl Jørgensen
[View authors' declarations of interest](#)

"The studies which provided the most reliable information showed that screening did not reduce breast cancer mortality."

"We believe that the time has come to re-assess whether universal mammography screening should be recommended for any age group."



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Perspective

Abolishing Mammography Screening Programs? A View from the Swiss Medical Board

Nikola Biller-Andorno, M.D., Ph.D., and Peter Jüni, M.D.

Second, we were struck by how nonobvious it was that the benefits of mammography screening outweighed the harms. The rela-



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Perspective

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It is easy to promote mammography screening if the majority of women believe that it prevents or reduces the risk of getting breast cancer and saves many lives through early detection of aggressive tumors.⁴ We would be in favor of mammography screening if these beliefs were valid. Unfortunately, they are not, and we believe that women need to be told so. From an ethical perspective, a public health program that does not clearly produce more benefits than harms is hard to justify. Providing clear,

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Perspective

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The report caused an uproar

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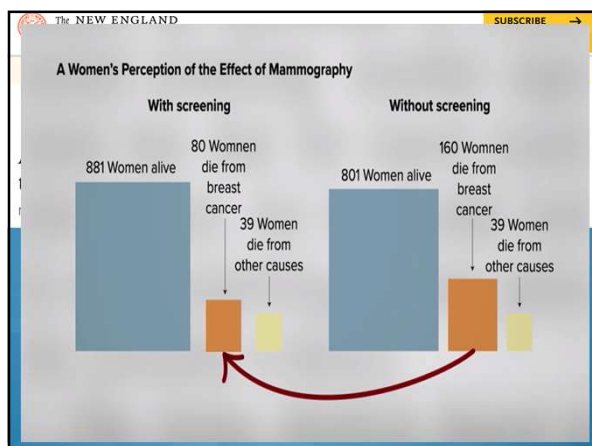
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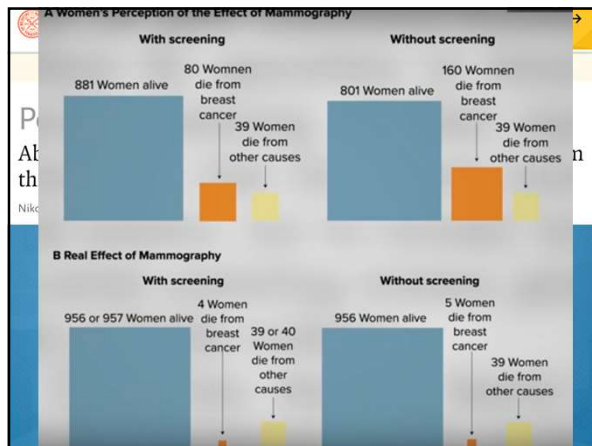
Perspective

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cancer screening. Another argument was that the report unsettled women, but we wonder how to avoid unsettling women, given the available evidence.





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Perspective

Abolishing Mammography Screening Programs? A View from the Swiss Medical Board

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It acknowledged that systematic mammography screening might prevent about one death attributed to breast cancer for every 1000 women screened, even though there was no evidence to suggest that overall mortality was affected. At the same time, it em-

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Potential Hazards of Mammography

Carl D. Atkins

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"No trial has ever shown an overall mortality benefit from screening mammography."

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Perspective

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Analysis » Too Much Medicine

Overdiagnosis in mammography screening: a 45 year journey from shadowy idea to acknowledged reality

BMJ 2015; 350 doi: <https://doi.org/10.1136/bmj.h867> (Published 04 March 2015)
Cite this as: BMJ 2015;350:h867

detect low risk cancer was largely ignored. Only recently has the detection of non-progressing early breast cancer that would not be found in the woman's lifetime without screening—that is, overdiagnosis—gained serious attention and recognition.

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Cancer Causes & Control
January 2012, Volume 23, Issue 1, pp 15-21 | [Cite as](#)

Why mammography screening has not lived up to expectations from the randomised trials

Authors Authors and affiliations

Peter C. Getzsche, Karsten Juhl Jørgensen, Per-Henrik Zahl, Jan Møhlen

large. The growth may also stop altogether [15], and many screen-detected breast cancers are harmless, as their normal fate is to regress and disappear [17].

Review
April 2, 2014

A Systematic Assessment of Benefits and Risks to Guide Breast Cancer Screening Decisions

Lydia E. Pace, MD, MPH¹; Nancy L. Keating, MD, MPH^{2,3}

» Author Affiliations | Article Information

JAMA. 2014;311(13):1327-1335. doi:10.1001/jama.2014.1398

“Treatment of an overdiagnosed cancer subjects a patient to the harms of treatment without benefits, since the tumor would not have caused problems if undetected.⁴³”

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Observations » Not So Stories

How a charity oversells mammography

BMJ 2012 ; 345 doi: <https://doi.org/10.1136/bmj.e5132> (Published 02 August 2012)
Cite this as: BMJ 2012;345:e5132

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Steven Woloshin, professor^{1,2}; Lisa M Schwartz, professor^{1,2}

Author affiliations

Lisa.Schwartz@dartmouth.edu

importantly, screening results in overdiagnosis. For every life saved by mammography, around two to 10 women are overdiagnosed. Women who are overdiagnosed cannot benefit

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Observations » Not So Stories

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Lisa.Schwartz@dartmouth.edu

simply produced more overdiagnosis. With more overdiagnosis comes increased mortality from the harms of radiotherapy and chemotherapy given to healthy women.

THE LANCET

CORRESPONDENCE | VOLUME 359, ISSUE 9304, P442, FEBRUARY 02, 2002

Screening mammography: setting the record straight

Heather Goodare • Clare Dimmer • Kathy Page

Published: February 02, 2002 • DOI: [10.1016/S0140-6736\(02\)11000-0](#)

reviews in paper journals. We published the report mainly because we believe it is important for women to know that screening increases their risk of losing a breast. This finding contrasts with the information they get from screening advocates who generally say the opposite, but without reliable data to support their claims.

JRSM
JOURNAL OF THE ROYAL SOCIETY OF MEDICINE

J R Soc Med. 2015 Sep; 108(9): 341–345. PMID: [PMC4582264](#)
doi: [10.1177/0141076815602452](#) PMID: [26359135](#)

Mammography screening is harmful and should be abandoned

Peter C Getzsche¹

Mammography screening has been promoted to the public with three simple promises that all appear to be wrong: It saves lives and breasts by catching the cancers early. Screening does not seem to make the women live longer; it increases mastectomies;^{1,25} and cancers are not caught early, they are caught very late.⁹ They are also caught in too great numbers. There is so much overdiagnosis that the best thing a women can do to lower her risk of becoming a breast cancer patient is to avoid going to screening, which will lower her risk by one-third.¹³

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Commentary: Screening: a seductive paradigm that has generally failed us

PC Getzsche

International Journal of Epidemiology, Volume 44, Issue 1, 1 February 2015, Pages 278–280,
<https://doi.org/10.1093/ije/dyu267>
Published: 14 January 2015

Volume 44, Issue 1
February 2015

"If we assume that the growth rate for a particular cancer is constant, then the women have harboured the cancer for 21 years on average before it is large enough to be detected by mammography screening.¹"



J R Soc Med. 2015 Sep; 108(9): 341–345. PMID: PMC4582264
doi: 10.1177/0141076815602452 PMID: 26359135

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Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement FREE

Albert L. Siu, MD, MSPH, on behalf of the U.S. Preventive Services Task Force *

The small probability that a woman may avoid a breast cancer death must be weighed against the more likely scenario that she may have a false-positive result and possible unnecessary follow-up testing (including invasive testing); a false-negative result, with false reassurance or delayed diagnosis; or most critically, diagnosis and treatment of cancer that would otherwise not have threatened her health or even come to her attention.



Consequences of False-Positive Mammogram Results

- Odds are most women will get at least one false-positive mammogram, but thankfully most women who are called back for further testing of a suspicious mammogram finding do not end up having cancer after all.

Viewpoint | Less Is More
October 2014

Lessons From the Swiss Medical Board Recommendation Against Mammography Screening Programs

Arnaud Chiolerio, MD, PhD¹; Nicolas Rodondi, MD, MAS²
» Author Affiliations
JAMA Intern Med. 2014;174(10):1541-1542. doi:10.1001/jamainternmed.2014.4197

screening.⁴ Furthermore, the report insufficiently emphasizes that assessing the balance between benefits and harms involves a value judgment that each woman should make after she is fully informed about the strengths and weaknesses of screening mammography.² On the basis of the same information, some women will choose screening, and others will not.⁸

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October 2014

Lessons From the Swiss Medical Board Recommendation Against Mammography Screening Programs

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JAMA Intern Med. 2014;174(10):1541-1542. doi:10.1001/jamainternmed.2014.4197

Many of our patients understand that treatments have benefits and harms. They understand there are reasons not to take medication (because it can produce adverse effects) and reasons not to undergo surgery (because it can lead to complications). In addition, they get the idea that the benefits outweigh the harms when given severe symptoms and effective treatment, but may not given when mild symptoms or minimally effective treatment.

Viewpoint | Less Is More
October 2014

Lessons From the Swiss Medical Board Recommendation Against Mammography Screening Programs

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JAMA Intern Med. 2014;174(10):1541-1542. doi:10.1001/jamainternmed.2014.4197

Our patients have been taught to think differently about screening. There are no harms. It's always good to know. It is just about gathering information. Of course you want it. It is a brain-dead decision.

In reality, the truth is more nuanced. There are benefit and harms to consider in screening—just as there are in treatment. There's no longer any argument about this. Even the

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Original Article

A roller coaster of emotions and sense – coping with the perceived psychosocial consequences of a false-positive screening mammography

Anetta Bolejko MSc, RN , Sophia Zackrisson PhD, MD, Peter Hagell PhD, RN, Christine Wann-Hansson PhD, RN

First published: 07 December 2013 | <https://doi.org/10.1111/jocn.12426> | Cited by: 10

Conclusions

“Experiencing a false-positive screening mammography triggers agonising experiences evoking a variety of coping strategies.”

Experiencing a false-positive screening mammography might profoundly influence the woman’s life

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Is the false-positive rate in mammography in North America too high?

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Michelle T Le, BMRSc, Carmel E Moherstral, PhD, BSc, Colin B Seymour, PhD, MA, BA, Fiona E McNeill, PhD, BSc

Medical Physics & Applied Radiation Sciences Department, McMaster University, Hamilton, ON, Canada

<https://doi.org/10.1259/bjr.20160045>

Received: January 12, 2016

Accepted: May 10, 2016

Published Online: June 08, 2016

"Patients affected by an FP have been observed to experience depression,85

short-term anxiety79,86,87 and lack of sleep87 persisting for a short period of

time up to 6 months following the initial recall examination.87 Furthermore,

concern regarding breast cancer development has been reported to persist in

some individuals even 12 months following the receipt of a benign clinical

diagnosis.79,86"

[illegible]

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2

Review article

Is the false-positive rate in mammography in North America too high?

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 Michelle T Le, BMRSc, Carmel E Moheranil, PhD, BSc, Colin B Seymour, PhD, MA, BL, Fiona E McNeill, PhD, BSc

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Self reflection form

“the perceived risk of severe litigation consequences associated with medical malpractice in the USA has been identified as a possible contributor to the relatively high recall rates that exist in the USA.20,49”

wjm western journal of medicine

West J Med. 2000 Nov; 173(5): 307–312. PMID: PMC1071147
PMID: [11069862](#)

US women's attitudes to false-positive mammography results and detection of ductal carcinoma in situ
cross-sectional survey

[Lisa M Schwartz](#), [Steven Woloshin](#), [Harold C Sox](#), [Baruch Fischhoff](#), and [H Gilbert Welch](#)

The women were highly tolerant of false-positive results: 63% thought that 500 or more false-positives per life saved was reasonable, and 37% would tolerate a rate of 10,000 or more. Women who had had a false-positive result ($n = 76$) expressed the same high tolerance: 30 (39%) would tolerate 10,000 or more false-positives. In all, 62% of women did not want to take false-positive results into account when deciding about screening.

British Journal of
Health Psychology

The British
Psychological Society

Original Article

A crisis of visibility: The psychological consequences of false-positive screening mammograms, an interview study

Mary Bond , Ruth Garside, Christopher Hyde

First published: 06 May 2015 | <https://doi.org/10.1111/bjhp.12142> | Cited by: 7

Results

The analysis revealed a wide range of response to having a false-positive mammogram, from nonchalance to extreme fear.

radiography
INTERNATIONAL JOURNAL OF DIAGNOSTIC IMAGING AND RADIATION THERAPY

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Women's experiences of the breast cancer diagnostic process: A thematic evaluation of the literature; Recall & biopsy

Sarah Clark, Pauline J. Reeves

One group of researchers conducted interviews ($n = 8$) the day before additional examinations in an attempt to capture the 'real time' experiences of recalled asymptomatic women.⁵ "Emotional chaos" epitomized the experience; participants contended with uncertainty, expected the worst and tried to remain positive.⁵

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Women's experiences of the breast cancer diagnostic process: A thematic evaluation of the literature; Recall & biopsy

Sarah Clark, Pauline J. Reeves

Waiting for results caused significant distress for many women.^{14,16} Biopsy results were often foremost in women's minds; one participant described herself as a "walking zombie" and another explained "it was on my mind every day".¹⁴

Annals of Internal Medicine

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REVIEWS | 16 FEBRUARY 2016

Harms of Breast Cancer Screening: Systematic Review to Update the 2009 U.S. Preventive Services Task Force Recommendation FREE

Heidi D. Nelson, MD, MPH; Miranda Pappas, MA; Amy Cantor, MD, MPH; Jessica Griffin, MS; Monica Daeges, BA; Linda Humphrey, MD, MPH

Some women had persistent anxiety despite eventual negative results (56, 58-61), whereas some showed only transient anxiety (54, 62-68).

Psycho-Oncology
Journal of the Psychological, Social and Behavioral Dimensions of Cancer
WILEY

Paper

The psychological impact of mammographic screening. A systematic review

J. Brett, C. Bankhead, B. Henderson, E. Watson, J. Austoker

First published: 22 March 2005 | <https://doi.org/10.1002/pon.904> | Cited by: 147

their initial mammogram. Anxiety experienced by false positive women was greater than screen negative women at 1–3 months after recall (Absetz *et al.*, 2003; Dolan *et al.*, 2001; Ong *et al.*, 1997), 4–6 months after recall (Brett *et al.*, 1998; Ellman *et al.*, 1989; Lampic *et al.*, 2003; Olsson *et al.*, 1999) and 6 months to 1 year after recall (Lampic *et al.*, 2001).

ANNALS OF FAMILY MEDICINE

Ann Fam Med. 2013 Mar; 11(2): 106–115. PMID: PMC3601385
doi: [10.1370/afm.1466](https://doi.org/10.1370/afm.1466) PMID: 23508596

Long-Term Psychosocial Consequences of False-Positive Screening Mammography

John Brodersen, PhD and Volkert Dirk Siersma, PhD

CONCLUSION False-positive findings on screening mammography causes long-term psychosocial harm: 3 years after a false-positive finding, women experience psychosocial consequences that range between those experienced by women with a normal mammogram and those with a diagnosis of breast cancer.

ANNALS OF FAMILY MEDICINE

Ann Fam Med. 2013 Mar; 11(2): 106–115. PMID: PMC3601385
doi: [10.1370/afm.1466](https://doi.org/10.1370/afm.1466) PMID: 23508596

Long-Term Psychosocial Consequences of False-Positive Screening Mammography

John Brodersen, PhD and Volkert Dirk Siersma, PhD

DISCUSSION

Having a false positive is not harmless and causes undesirable outcomes in the long run. For a period of 3 years after being declared free of suspected cancer, women with false positives consistently reported greater negative psychosocial consequences compared with women with normal findings.

ANNALS OF
FAMILY MEDICINE

Ann Fam Med. 2013 Mar; 11(2): 106–115.
doi: [10.1370/afm.1466](https://doi.org/10.1370/afm.1466)

PMCID: PMC3601385
PMID: 23508596

Long-Term Psychosocial Consequences of False-Positive Screening Mammography

John Brodersen, PhD and Volkert Dirk Siersma, PhD

Elkind, 1990). For example, women should be informed of the procedures (Eardley and Elkind, 1990), the possibility of being recalled (Aro *et al.*, 2000; Austoker and Ong, 1994; Barton *et al.*, 2001; Sandin *et al.*, 2002), and reassured that most women who are recalled do not have cancer

Can Mammogram Radiation Cause Breast Cancer?

What is the risk-benefit ratio of the cancers picked up by mammograms and the cancers caused by mammograms?

CA Cancer J Clin. Author manuscript; available in PMC 2013 Aug 3.
Published in final edited form as: CA Cancer J Clin. 2012 Mar-Apr; 62(2): 75–100.
Published online 2012 Feb 3. doi: [10.3322/caac.21132](https://doi.org/10.3322/caac.21132)

PMCID: PMC3548988
NIHMSID: NIHMS404118
PMID: 22307864

Cancer Risks Associated with External Radiation From Diagnostic Imaging Procedures

Martha S. Linet, MD, MPH,¹ Thomas L. Slovis, MD,² Donald L. Miller, MD, FSIR,³ Ruth Kleinerman, MPH,⁴ Choonsik Lee, PhD,⁵ Preetha Rajaraman, PhD,⁶ and Amy Berrington de Gonzalez, DPhil⁷

1980 Per capita dose

Total ~ 3.0 mSv

2006 Per capita dose

Total ~ 5.6 mSv

Fortsscher Röntgenstr 2015; 187(10): 872-878
DOI: 10.1055/s-0035-1553209

Review

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Radiation Induced DNA Double-Strand Breaks in Radiology

Strahleninduzierte DNA-Doppelstrangbrüche in der Radiologie

M. A. Kuefner, M. Brand, C. Engert, S. A. Schwab, M. Uder

[Author Affiliations](#)

"Radiologic examinations including CT and angiography induce DNA double-strand breaks. Even after mammography a slight but significant increase is detectable in peripheral blood lymphocytes."

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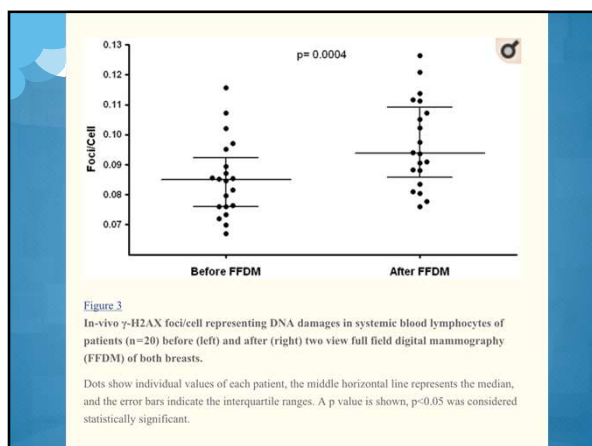
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PLoS One. 2013; 8(7): e70660. PMCID: PMC3723730
Published online 2013 Jul 25. doi: [10.1371/journal.pone.0070660](https://doi.org/10.1371/journal.pone.0070660) PMID: [23936236](https://pubmed.ncbi.nlm.nih.gov/23936236/)

X-Ray Induced Formation of γ -H2AX Foci after Full-Field Digital Mammography and Digital Breast-Tomosynthesis

Siegfried A. Schwab,^{1,*} Michael Brand,¹ Ina-Kristin Schlude,¹ Wolfgang Wuest,¹ Martina Meier-Meitinger,¹ Luitpold Distel,² Ruediger Schulz-Wendtlund,¹ Michael Uder,¹ and Michael A. Kuefner¹

Suminori Akiba, Editor



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PLoS One 2013; 8(7): e70660. PMID: PMC3723730
Published online 2013 Jul 25. doi: [10.1371/journal.pone.0070660](https://doi.org/10.1371/journal.pone.0070660) PMID: 23936236

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Suminori Akiba, Editor

ments. However, the female breast has a considerably lower blood volume than abdominal organs or the heart, which reduces the quantity of exposed blood lymphocytes [7,8,10,23]. Additionally the compression of the breast may lead to an expression of blood out of the breast tissue and thus again may reduce the amount of irradiated blood cells at mammography. Moreover, there is an effect of the dilution of the x-ray exposed lymphocytes by non-irradiated blood.

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PLoS One 2013; 8(7): e70660. PMID: PMC3723730
Published online 2013 Jul 25. doi: [10.1371/journal.pone.0070660](https://doi.org/10.1371/journal.pone.0070660) PMID: 23936236

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Suminori Akiba, Editor

ured (median 0.086 vs. 0.094 foci/cell, $p=0.0004$). Due to mixing with unexposed blood, these values underestimate the radiation damage in exposed tissue. In order to assess

Patient Education and Counseling
Volume 84, Issue 2, August 2011, Pages 251-256
ELSEVIER

Risk communication
"There is nothing to worry about":
Gynecologists' counseling on mammography
Odette Wegwarth^{a, b, R. R.}, Gerd Gigerenzer^{a, b}

Mammography works by X-rays. It has been estimated that within a group of 10,000 screened women there will be between one and five additional breast cancer cases caused by X-rays [11].

A screenshot of the Radiology journal website. The top navigation bar includes links for 'Latest Articles', 'Current Issue', 'All Issues', 'For Authors', and 'Diagnosis Please'. Below this, the 'Original Research' section is highlighted, with a sub-link for 'Breast Imaging'. The main article title, 'Risk of Radiation-induced Breast Cancer from Mammographic Screening', is prominently displayed in a large, bold, black font. Below the title, the authors 'Martin J. Yaffe' and 'James G. Mainprize' are listed. A 'Published Online' date of 'Jan 1 2011' and a DOI link are also visible. The background of the page is a light blue gradient.

Radiology

Lifetime Risk of Radiation-induced Breast Cancer and Predicted Total Number of Deaths in 100 000 Women

Screening Regimen	No. of Examinations	No. Of Cancers induced	Total No. Of Deaths due to Induced Cancer
Annually from 40 to 49 years	10	59.0	7.6
Annually from 50 to 59 years	10	26.6	3.1
Biennially from 50 to 59 years	5	13.9	1.6
Annually from 40 to 59 years	20	85.2	10.6
Annually from 40 to 49 years, biennially to 59 years	15	72.6	9.2
Annually from 40 to 55 years, biennially to 74 years	25	86.4	10.6

Radiology

Lifetime Risk of Radiation-induced Breast Cancer for a Single Screening Mammogram

Age at Exposure (y)	No. Of Cancers induced	
	Total	Per Milligray
35	11.19	3.02
40	8.04	2.17
45	5.60	1.51
50	3.81	1.03
55	2.52	0.68

Note. - Lifetime risk in a cohort of 100,000 women following a single mammographic examination with two views per breast, which delivers a 3.7 -mGy radiation dose to both breasts.

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[Ann Intern Med.](#) Author manuscript; available in PMC 2016 Aug 16. PMCID: PMC4878445
 Published in final edited form as: NIHMSID: NIHMS785975
[Ann Intern Med.](#) 2016 Feb 16; 164(4): 205–214. PMID: 26756460
 Published online 2016 Jan 12. doi: [10.7326/M15-1241](#)

Radiation-Induced Breast Cancer Incidence and Mortality from Digital Mammography Screening: A Modeling Study

[Diana L. Miglioretti](#), PhD,^{1,2,3} [Jane Lange](#), PhD,³ [Jeroen J. van den Broek](#), MSc,⁴ [Christoph I. Lee](#), MD, MSHS,^{5,6,7} [Nicoleen T. van Ravesteijn](#), PhD,⁴ [Dominique Ritley](#), MPH,² [Karla Kertikowske](#), MD,⁸ [Joshua J. Fenton](#), MD, MPH,^{2,9} [Joy Melnikow](#), MD, MPH,^{2,9} [Harry J. de Koning](#), PhD,⁴ and [Rebecca A. Hubbard](#), PhD¹⁰

quency. Our study suggests that women with large breasts or breast augmentation receive greater radiation doses and may have a greater risk for radiation-induced breast cancer and breast cancer death. Radi-

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Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement FREE

Albert L. Siu, MD, MSPH, on behalf of the U.S. Preventive Services Task Force *

for complete breast examination. For biennial screening in women aged 50 to 74 years, the mean LAR of developing breast cancer is an estimated 6 versus 2 cases per 10 000 screened women with and without large breasts, respectively; the mean LAR of breast can-

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Full Paper

Enhanced biological effectiveness of low energy X-rays and implications for the UK breast screening programme

© The British Institute of Radiology

G J Heyes¹, PhD, A J Mill², PhD, and M W Charles², PhD, DSc

¹Department of Medical Physics, University Hospital Birmingham NHS Foundation Trust, Birmingham B15 2TH, ²Radiation Biophysics Group, School of Physics and Astronomy, The University of Birmingham, Birmingham B15 2TT, UK

<https://doi.org/10.1259/bjr/21958628>
Received: April 19, 2005
Accepted: June 24, 2005
Published Online: February 13, 2014

to-induction ratio (DIR)) are given for a range of RBE and DDREF values. It is concluded that great caution is needed if a programme of early regular screening with X-rays is to be used for women with a family history of breast cancer since DIR values are below 10

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Estimated Risk of Radiation-Induced Breast Cancer From Mammographic Screening for Young BRCA Mutation Carriers

Amy Berrington de Gonzalez, Christine D. Berg, Kala Viswanathan, Mark Robson

JNCI: Journal of the National Cancer Institute, Volume 101, Issue 3, 4 February 2009, Pages 205-209.
<https://doi.org/10.1093/jnci/djn440>
Published: 04 February 2009 | [Article history](#)

Volume 101, Issue 3
4 February 2009

"BRCA mutation carriers are recommended to start mammographic screening for breast cancer as early as age 25-30 years."

"Based on this model, the reduction in breast cancer mortality from screening among women with BRCA mutations is not substantially greater than the risk of radiation-induced breast cancer mortality when screening before age 34 years."

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Overdiagnosis of breast cancer in population screening: does it make breast screening worthless?

Nohmat Housami

The risk of radiation-induced cancer from mammography is not negligible, however the potential for mortality benefit is generally considered to outweigh the risk of death from radiation-induced BC attributed to mammography screening².

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Hohmat Housami

ing in a benefit-to-risk ratio in lives of 11.4:1 (87 divided by 7.6) for our risk model. This can be compared with the

Journal of Radiological Protection

Mammography—oncogenicity at low doses

G J Heyes¹, A J Mill² and M W Charles²
 Published 19 May 2009 • IOP Publishing Ltd
[Journal of Radiological Protection, Volume 29, Number 2A](#)

Current radiation risk estimates rely heavily on data from the atomic bomb survivors,

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Full Paper

Enhanced biological effectiveness of low energy X-rays and implications for the UK breast screening programme

© The British Institute of Radiology
 G J Heyes¹, PhD, A J Mill², PhD, and M W Charles², PhD, DSc
¹Department of Medical Physics, University Hospital Birmingham NHS Foundation Trust, Birmingham B15 2TH. ²Radiation Biophysics Group, School of Physics and Astronomy, The University of Birmingham, Birmingham B15 2TT, UK
<https://doi.org/10.1259/bjr/21958828>
 Received: April 19, 2005
 Accepted: June 24, 2005
 Published Online: February 13, 2014

"Recent radiobiological studies have provided compelling evidence that the low energy X-rays as used in mammography are approximately four times – but possibly as much as six times – more effective in causing mutational damage than higher energy X-rays."

Cancer Biology & Medicine

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Overdiagnosis of breast cancer in population screening: does it make breast screening worthless?

Behmat Houssemi

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Dose hysteria and concern about radiation exposure should not prevent women from undergoing life-saving mammography screening

Per Skaane

First Published December 1, 2014 | Editorial

<https://doi.org/10.1177/0284185114530547>

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“concern about radiation exposure should not prevent [a woman] from undergoing life-saving mammography screening.”

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CORRESPONDENCE

Potential Hazards of Mammography

Carl D. Atkins

"No trial has ever shown an overall mortality benefit from screening mammography. Thus, if there is a detrimental effect of radiation exposure from mammography, even a small effect could offset any benefit of mammography."

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Conclusion: Why Mammograms Don't Appear to Save Lives

- "Early" detection is actually really late. Without mammograms, breast cancer may not be caught for an average of 22.8 years, but with mammograms, breast cancer may only grow and spread for 21.4 years.

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CORRESPONDENCE

Effect of Screening Mammography on Breast Cancer Incidence

This article has no abstract; the first 100 words appear below.

To the Editor: As Bleyer and Welch report (Nov. 22 issue),¹ screening mammography has had a limited effect on breast cancer mortality in the United States; over the course of 30 years, age-adjusted incidence rates of late-stage cancers have decreased by only 8%, and no significant change is noticeable in the incidence rates of cancers diagnosed after they have metastasized to distant organs. Similar studies in the United Kingdom, the Netherlands, Italy, Switzerland, Norway, and Australia have shown limited decreases, if any, in the incidence of advanced breast cancers after 15 to 20 years of follow-up.² Thus, it is clear that screening leads to tremendous harm, whereas it has not been shown that screening increases women's longevity.³ We agree with the former

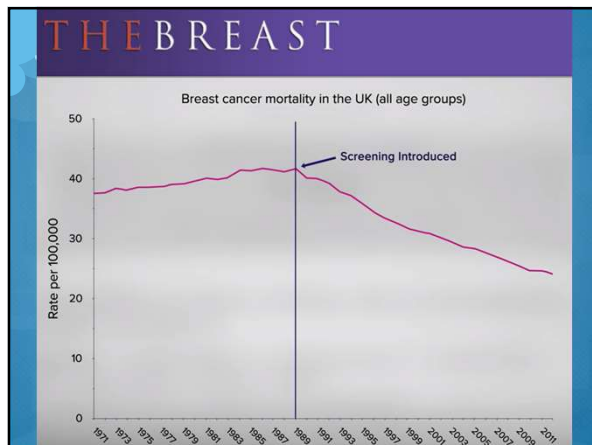
February 14, 2013
N Engl J Med 2013; 368:677-679
DOI: 10.1056/NEJMc1215494
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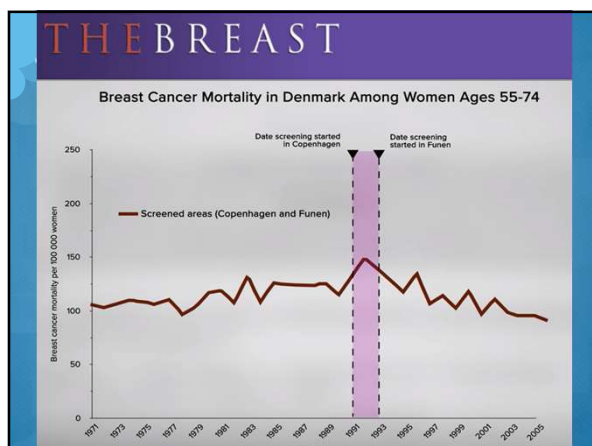
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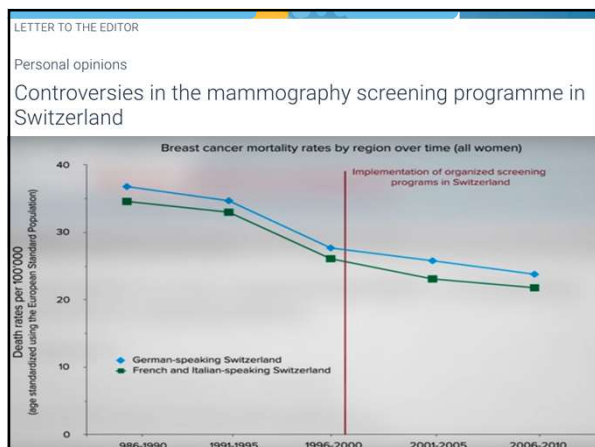
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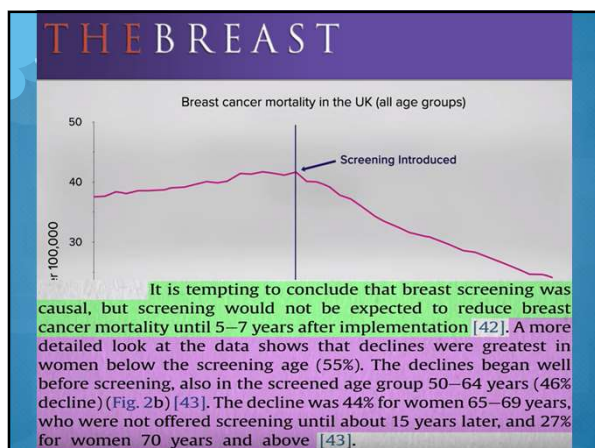
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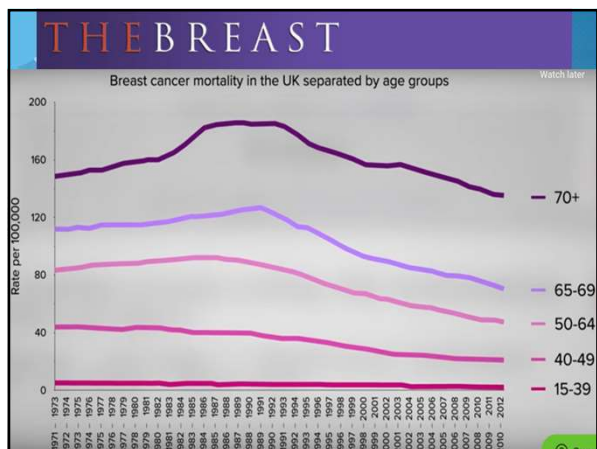
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 Publication Date: 24.04.2014
 Swiss Med Wkly. 2014;144:w13969

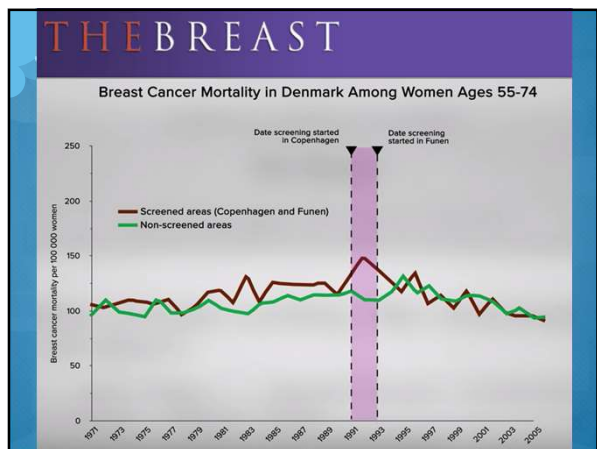
Pierre Vassilakos^a, Rosa Catarino^b, Michel Boulvain^b, Patrick Petignat^b



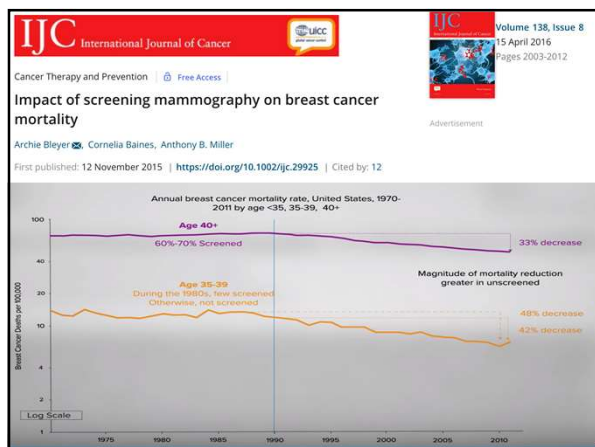


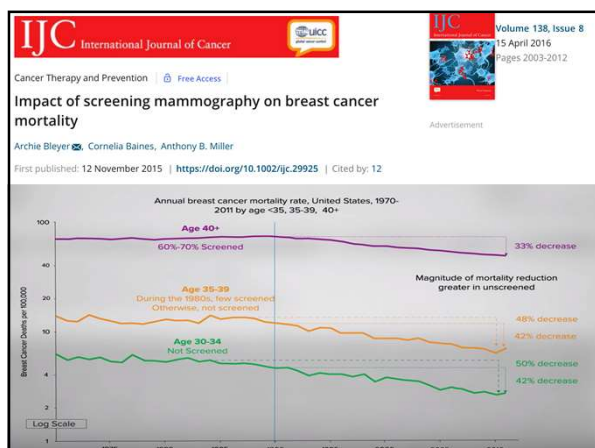












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CORRESPONDENCE

Effect of Screening Mammography on Breast Cancer Incidence

February 14, 2013
N Engl J Med 2013; 368:677-679
DOI: 10.1056/NEJMc1215494
Metrics

This article has no abstract; the first 100 words appear below.

To the Editor: As Bleyer and Welch report (Nov. 22 issue),¹ screening mammography has had a limited effect on breast cancer mortality in the age.⁶ In other words, there was a larger relative reduction in mortality among women who were not exposed to screening mammography than among those who were exposed. We are left to conclude, as others have,^{17,18} that the good news in breast cancer — decreasing mortality — must largely be the result of improved treatment, not

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J R Soc Med. 2015 Sep; 108(9): 341–345. PMCID: PMC4582264
doi: 10.1177/0141076815602452 PMID: 26359135

Mammography screening is harmful and should be abandoned

Peter C. Gøtzsche¹⁰

Percentages of women participating in screening mammography in each country.

Change in national breast cancer mortality rate relative to country's mean rate during 1980-1985.

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J R Soc Med. 2015 Sep; 108(9): 341–345. PMCID: PMC4582264
doi: 10.1177/0141076815602452 PMID: 26359135

Mammography screening is harmful and should be abandoned

Peter C. Gøtzsche¹⁰

10–15 years apart¹⁶ found no relation at all between start of screening and the reduction in breast cancer mortality. The fall in breast cancer mortality started

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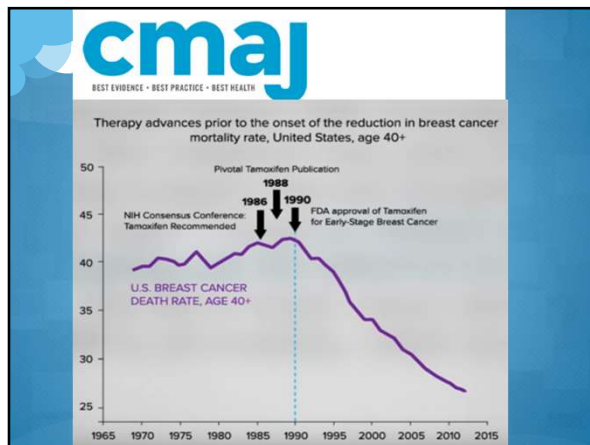
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Commentary

Time to stop mammography screening?

Peter C. Goltzsche
CMAJ November 22, 2011 183 (17) 1957-1958; DOI: <https://doi.org/10.1503/cmaj.111721>

The declines began before the start of organized screening programs in many countries and are more likely explained by the introduction of tamoxifen.



Review

October 20, 2015

Benefits and Harms of Breast Cancer Screening

A Systematic Review

Evan R. Myers, MD, MPH^{1,2}; Patricia Moorman, PhD^{1,3}; Jennifer M. Gierisch, PhD, MPH^{1,4,5}; et al

» Author Affiliations
JAMA. 2015;314(15):1615-1634. doi:10.1001/jama.2015.13183

'Conclusions and Relevance For women of all ages at average risk, screening was associated with a reduction in breast cancer mortality of approximately 20%'

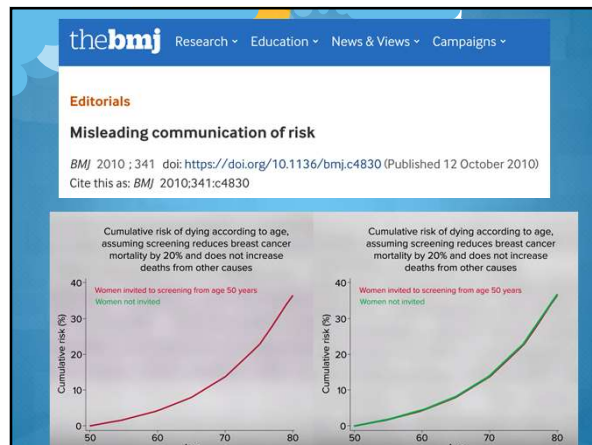
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Editorials

Misleading communication of risk

BMJ 2010 ; 341 doi: <https://doi.org/10.1136/bmj.c4830> (Published 12 October 2010)
Cite this as: BMJ 2010;341:c4830

"Accordingly, health pamphlets, websites, and invitations broadcast a 20% (or 25%) benefit.³ Did the public know that this impressive number corresponds to a reduction from about five to four in every 1000 women, that is, 0.1%?"



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If we take into account the cardiac and lung cancer deaths caused by radiotherapy and rather generously assume that screening reduces breast cancer mortality by 20% and results in 20% overdiagnosis, in accordance with the Independent UK Panel,⁴ there appears to be no mortality benefit.²¹ This result can be dis-

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Commentary: Screening: a seductive paradigm that has generally failed us 

PC Getzsche

International Journal of Epidemiology, Volume 44, Issue 1, 1 February 2015, Pages 278–280,
<https://doi.org/10.1093/ije/dyu267>
Published: 14 January 2015

Volume 44, Issue 1
February 2015

“Screening healthy people has face value and great public and political appeal. It looks so simple, and yet screening is fraught with difficulties.”

“These start already with the terminology, and common slogans like, ‘Catch the disease early, before it has produced any symptoms!’ are misleading on two counts.”

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again a good example. If we assume that the growth rate for a particular cancer is constant, then the women have harboured the cancer for 21 years on average before it is large enough to be detected by mammography screening.¹

Cancer Causes & Control

January 2012, Volume 23, Issue 1, pp 15–21 | [Cite as](#)

Why mammography screening has not lived up to expectations from the randomised trials

Authors [Authors and affiliations](#)

Peter C. Gotzsche , Karsten Juhl Jørgensen, Per-Henrik Zahl, Jan Møhlen

tumours (length bias), i.e. those that are oldest. It is therefore misleading to say that cancers are caught ‘early’ with screening. They are caught very late, even though our

Journal of Women's Health, Vol. 24, No. 11 | Commentary 

Four Principles to Consider Before Advising Women on Screening Mammography

John D. Keen  and Karsten J. Jørgensen

Published Online: 10 Nov 2015 | <https://doi.org/10.1089/jwh.2015.5220>

"Again disregarding overdiagnosis, the time difference between U.S. screen-detected (21.4 years old) and clinically detected (22.8 years old) tumors (or two doublings) would be at most 520 days."

Cancer Medicine 

Commentary |   

Screening mammography: sparing the emperor's blushes

Saroj Niraula 

Volume 5, Issue 10
October 2016
Pages 3018-3020

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Whereas some breast cancers are slow-growing and may disseminate linearly, others will have (at least microscopically) involved distant organs before they are detected in the breast—identification of such cancers with screening mammogram is either not possible or is unhelpful.

THE LANCET

CORRESPONDENCE | VOLUME 358, ISSUE 9299, P2166, DECEMBER 22, 2001

Screening for breast cancer with mammography

Jayant S Vaidya

Published: December 22, 2001 • DOI: [https://doi.org/10.1016/S0140-6736\(01\)07195-1](https://doi.org/10.1016/S0140-6736(01)07195-1)

Removal of the primary can provoke local angiogenesis from surgical trauma easier. Absence of benefit from screening may actually point to a very fundamental hidden biological clue. Judah Folkman² has elegantly shown that tumours cannot grow beyond 200 µm without stimulating their own blood supply. Thus, many primary


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Public Knowledge of Benefits of Breast and Prostate Cancer Screening in Europe

Gerd Gigerenzer, Jutta Mata, Ronald Frank

JNCI: Journal of the National Cancer Institute, Volume 101, Issue 17, 2 September 2009, Pages 1216–1220, <https://doi.org/10.1093/jnci/djp237>

Published: 02 September 2009 [Article history](#)

Volume 101, Issue 17
2 September 2009

Ninety-two percent of women overestimated the mortality reduction from mammography screening by at least one order of magnitude or reported that they did not know.

Eighty-nine percent of men overestimated the benefits of PSA screening by a similar extent or did not know.


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Among all participants, only 1.5% of women (range across different countries: 0.8%–2.9%) chose the best estimate for reduction in mortality due to breast cancer screening, that is, one woman for every 1000 screened

Frequent consulting of physicians ($r = .07$, 95% confidence interval [CI] = 0.05 to 0.09) and health pamphlets ($r = .06$, 95% CI = 0.04 to 0.08) tended to increase rather than reduce overestimation.



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BMJ. 1989 Nov 4; 299(6708): 1153–1155. **PMCID: PMC1838018**
PMID: 2513031

Breast screening: time for a rethink?

[M. M. Roberts](#)

Dr M. Maureen Roberts, clinical director of the Edinburgh Breast Screening Project since 1979, died of breast cancer on 9 June. We publish below her reflections on the care and welfare of women with the disease in Britain today, written shortly before her death. The list of references was added by the editor.

I am in reflective mood as I lie here in the sunshine at the end of my life. Breast cancer has caught up with me, after eight good years. It seems a common disease

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Breast screening: time for a rethink?

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know how often to carry it out. We can no longer ignore the possibility that screening may not reduce mortality in women of any age, however disappointing this may be.

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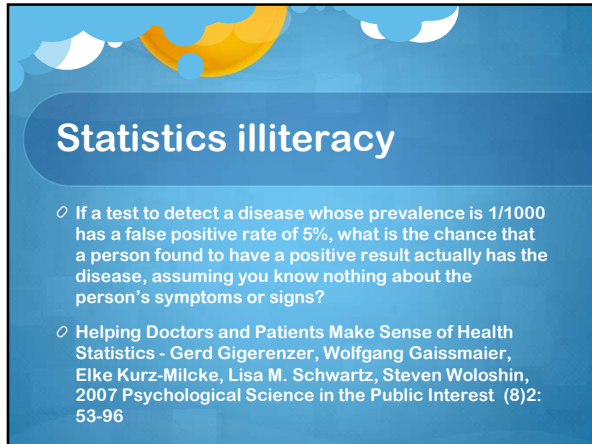
Breast screening: time for a rethink?

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being done. Are we brainwashing ourselves into thinking that we are making a dramatic impact on a serious disease before we brainwash the public? Many

Dr. Gregorio Maldini
General Surgery, Straub

VOMIT Syndrome



Statistics illiteracy

- If a test to detect a disease whose prevalence is $1/1000$ has a false positive rate of 5%, what is the chance that a person found to have a positive result actually has the disease, assuming you know nothing about the person's symptoms or signs?
- Helping Doctors and Patients Make Sense of Health Statistics - Gerd Gigerenzer, Wolfgang Gaissmaier, Elke Kurz-Milcke, Lisa M. Schwartz, Steven Woloshin, 2007 Psychological Science in the Public Interest (8)2: 53-96
