



# Is “overdiagnosis” of breast cancer common among women screened by mammography?

**Yes.** This analysis of Surveillance, Epidemiology, and End Results (SEER) data from a 30-year span indicates that nearly one-third of all breast malignancies identified during screening are overdiagnosed—that is, they are unlikely ever to lead to clinical symptoms.

*Bleyer A, Welch HG. Effect of three decades of screening mammography on breast-cancer incidence. N Engl J Med. 2012;367(21):1998–2005.*

► **EXPERT COMMENTARY**

► **Andrew M. Kaunitz, MD**, Professor and Associate Chairman, Department of Obstetrics and Gynecology, University of Florida College of Medicine–Jacksonville. Dr. Kaunitz serves on the OBG MANAGEMENT Board of Editors.

To reduce deaths from cancer, screening should achieve two goals:

- It should lead to earlier detection of tumors likely to be fatal
- It should lead to better outcomes after treatment of these tumors.

In other words, effective screening increases the incidence of cancers identified at an early stage (when they have a better prognosis) as it reduces the incidence of malignancies detected at a late stage.

This study found that although screening does indeed increase the rate of detection of early-stage cancers, it reduces the diagnosis of late-stage malignancies only marginally.

(regional and distant cancers)—among women aged 40 years or older. They also calculated the baseline incidence of breast cancer before screening using data from 1973, the first year that the rate of breast cancer was recorded. Because the incidence of breast cancer that year was “almost certainly spuriously low,” they also incorporated data from 1974 and 1975, when the rate of breast cancer was higher than average following the diagnosis of breast cancer in First Lady Betty Ford.

Bleyer and Welch also took measures to adjust for the higher incidence of breast cancer associated with the use of menopausal hormone therapy. To do so, they estimated the current incidence of breast cancer using data from 2006 through 2008, and they adjusted data for each year that the rate of breast cancer exceeded that figure from 1990 through 2005.

From 1976 through 2008, the rate of detection of early-stage disease more than doubled, increasing from 112 to 234 cancers per 100,000 women, while the detection of late-stage disease incrementally decreased, from 102 to 94 cancers per 100,000 women. Assuming a “constant underlying disease burden,” Bleyer and Welch estimated that only eight of the 122 additional early-stage cancers identified through screening were destined to progress to advanced disease. That means that 114 excess cases of breast cancer were detected per 100,000 women.

## Details of the trial

Using SEER data from 1976 through 2008, Bleyer and Welch looked for trends in the incidence of breast cancer—both early-stage malignancies (ductal carcinoma in situ and localized disease) and late-stage disease

**FAST TRACK**

From 1976 through 2008, the rate of detection of early-stage breast cancer more than doubled, while the detection of late-stage disease incrementally decreased

**ON THE WEB**

▶ Dr. Kaunitz offers tips on counseling women about mammography screening, at [obgmanagement.com](http://obgmanagement.com)

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### WHAT THIS EVIDENCE MEANS FOR PRACTICE

The findings from this recent study make me that much more comfortable following the USPSTF guidelines for screening mammography. For average-risk women in their 40s, I do not push screening but am happy to arrange it if my patient would feel more comfortable being screened. However, if a woman in her 40s is at increased risk (eg, first-degree relative with breast cancer), I encourage her to undergo annual screens.

As for average-risk women in their 50s and older, I find that most of my patients continue to prefer annual screening, but I am supportive of screening every 18 or 24 months in this population.

Some ObGyns may wonder if they could be exposed to medicolegal risk if they do not follow ACOG guidelines. For example, what would happen if a patient in her 40s who has not been screened were diagnosed with breast cancer? I am not an attorney, but I know that the USPSTF guidelines represent a credible (many would say authoritative) resource for guidance related to mammography screening. Speaking of the USPSTF, it is worth pointing out that this body is made up of 16 primary care and public health physicians (including one ObGyn) who have no stake in regard to breast imaging. (See <http://www.uspreventiveservicestaskforce.org/members.htm>.)

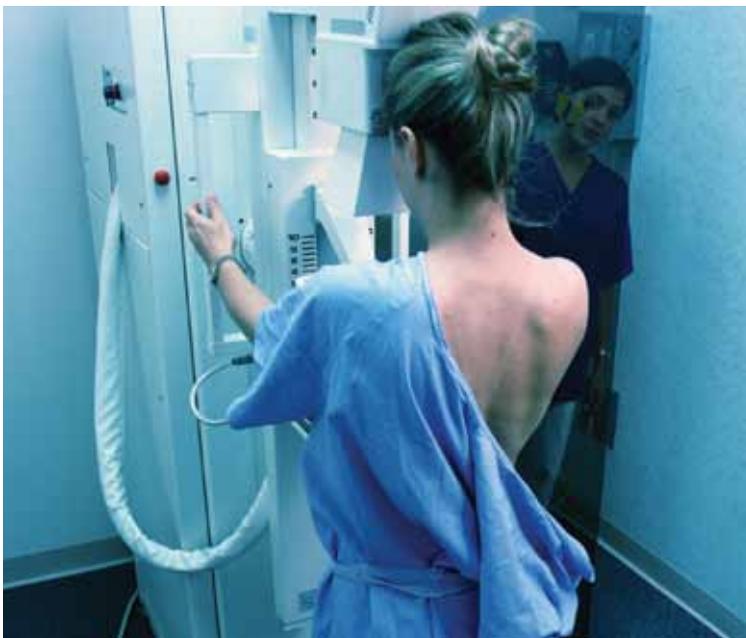
It's my view that radiologists who provide screening breast imaging services can play an important role in educating women about the pros and cons of mammography. Looking to the future, perhaps women checking in for a screening mammogram will be asked to review and sign a document that clearly explains benefits (eg, reducing mortality through early diagnosis) as well as risks (eg, the occurrence and consequences of overdiagnosis: finding cancers that are destined not to not to cause advanced disease).

>>ANDREW M. KAUNITZ, MD

The number of women affected by overdiagnosis: an estimated 1.3 million, including more than 70,000 women in 2008 alone.

During the 30 years covered by this study, breast cancer deaths declined 28% among

women aged 40 years and older (a population in which screening mammography was prevalent); among women younger than age 40 (a population in which screening was not prevalent), breast cancer mortality declined 42%. These declines are thought to be the result, largely, of advances in treatment.



### Harms versus benefits of early detection

There is no question that screening mammography saves lives by promoting early diagnosis of breast cancer. However, as I stated above, the decline in breast cancer deaths identified in this study may be attributable more to improvements in *treatment* than to early diagnosis of breast cancer. This study also suggests that the benefits of screening mammography are overshadowed by the harms (including unnecessary diagnostic imaging, biopsies, surgery, chemotherapy, and radiation therapy) associated with overdiagnosis. From this perspective, a screening strategy for average-risk women

PHOTO: THINKSTOCK

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in which mammography is initiated later, and is performed less frequently, would appear prudent. Accordingly, rather than adhere to guidelines from ACOG and other groups that recommend that screening be initiated earlier and performed annually, it makes more sense in average-risk women to follow the 2009 guidelines from the US Preventive Services Task Force, which recommend:

- biennial screening mammography for women aged 50 to 74 years
- biennial screening mammography before the age of 50 years only if, after counseling about the potential benefits and risks, the patient chooses this option.<sup>1</sup>

### How these findings compare with other data

Three studies shed light on the efficacy of screening mammography in other populations. In an investigation from Norway, Kalager and colleagues examined the breast cancer mortality rate in four groups of women:

- those who lived in counties where screening mammography was performed during the years 1996 through 2005
- those who lived in counties where screening mammography was not performed (1996–2005)
- two historical comparison groups (1986–1995) that mirrored the first two groups.<sup>2</sup>

Their analysis of 40,075 women with breast

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Janelle Yates (Web exclusive; November 2012)

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### » Your age-based guide to comprehensive well-woman care

Robert L. Barbieri, MD (October 2012)

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Andrew M. Kaunitz, MD (Examining the Evidence; December 2011)

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Web exclusive (December 2011)

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cancer suggested that one-third of the reduction in breast cancer deaths during the time periods studied was the direct result of screening, whereas the bulk of the observed reduction in breast cancer mortality was attributed to greater breast cancer awareness, improved diagnostic (as opposed to screening) techniques, and enhancements in treatment.

In a look at breast cancer mortality within three pairs of European countries, Autier and colleagues concluded that screening did not directly contribute to the observed reduction in mortality.<sup>3</sup> The country pairs were:

- Northern Ireland and the Republic of Ireland
- the Netherlands and Belgium/Flanders
- Sweden and Norway.

Each pair of countries offered comparable health-care services, had a similar prevalence of risk factors for breast cancer mortality, and experienced a similar reduction in breast cancer mortality from 1989 to 2006. However, implementation of mammography screening in these paired countries differed by approximately 10 to 15 years.

Last, in a meta-analysis from the United Kingdom, where women 50 to 70 years old are invited to be screened every 3 years, an

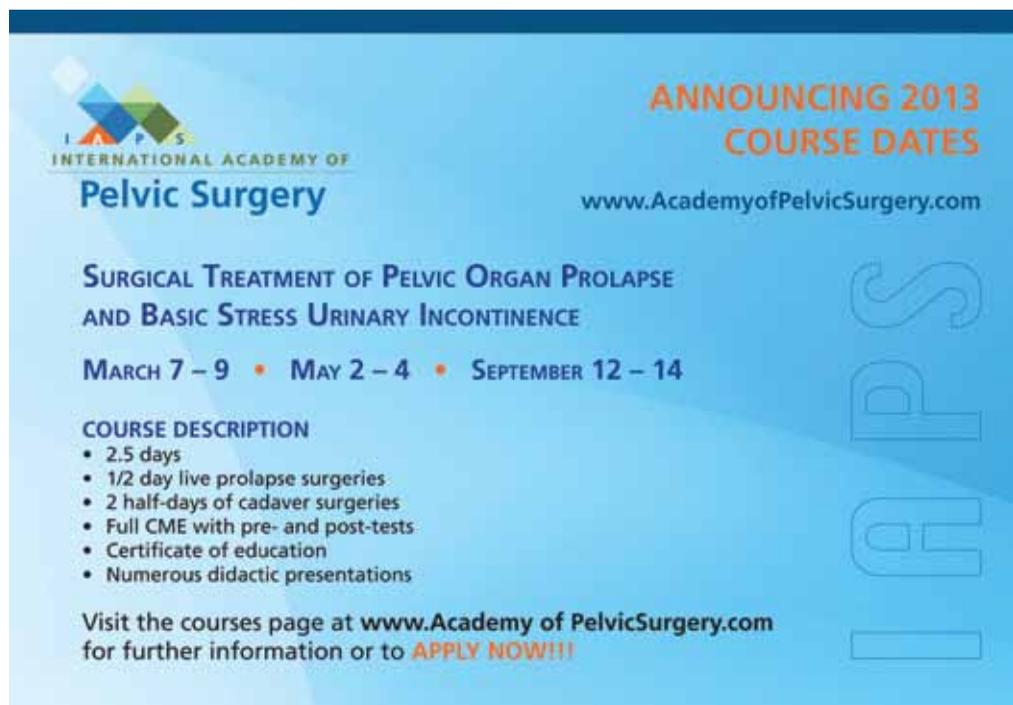
independent panel concluded that mammography reduced breast cancer deaths but also led to overdiagnosis.<sup>4</sup> Although the analysis included studies “with many limitations,” its findings suggest that one breast cancer death would be prevented for every three cases of overdiagnosis.

### Improvements are expected

Thanks to a recent analysis of the breast cancer genome, in the future it may become possible to identify which breast tumors are likely to progress. Such an advance would allow clinicians to recommend treatment strategies in a highly selective fashion.<sup>5</sup> 

### References

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2. Kalager M, Zelen M, Langmark F, Adami H-O. Effect of screening mammography on breast-cancer mortality in Norway. *N Engl J Med*. 2010;363:1203–1210.
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