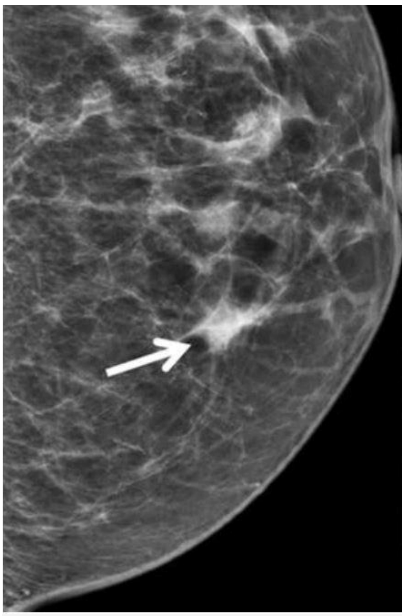
Some Women Avoid Breast Cancer Screening After False-Positive Mammogram Results

October 4, 2024, by Edward Winstead

Some women who receive a false-positive result on a mammogram may not come back for routine mammograms in the future, according to results from a large study.



Abnormal or uncertain results on mammograms (arrow) are common and may lead to additional testing to rule out cancer.
Credit: Current Radiology Reports. January 2018. https://doi.org/10.1007/s40134-018-0266-8. CC BY 4.0.

False positives on a mammogram are apparent abnormalities that, after further evaluation, are found not to be cancer. But the additional testing needed to rule out cancer can be time-consuming, costly, and stressful. Follow-up tests, such as a biopsy of the breast, have risks of their own.

To conduct the study, the researchers analyzed 3.5 million mammograms from about 1 million women who were screened in the United States between 2005 and 2017.

Among women who had a true-negative result, 77% returned to routine screening in the following 30 months. By contrast, 61% of women who had a false-positive result that required a repeat diagnostic mammogram in 6 months (a short-interval follow-up exam) returned to routine screening, as did 67% of women who required a biopsy.

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Women who required additional imaging a few weeks after receiving what turned out to be a false-positive result were only slightly less likely to return to routine screening than those who required no workup (75% did). But only 56% of women who received recommendations for short-interval follow-up on two consecutive screening mammograms came back to screening.

Investigators with the NCI-funded Breast Cancer Surveillance Consortium (BCSC) published the findings September 3 in the *Annals of Internal Medicine*.

"Our results are concerning, because mammography screening is the most important strategy for reducing death from breast cancer," said lead investigator Diana Miglioretti, Ph.D., of the UC Davis Comprehensive Cancer Center and a leader of the BCSC.

There is a misconception, Dr. Miglioretti continued, that a false-positive result reflects an error by the radiologist or poor performance. "That is not the case," she said.

The purpose of screening mammograms is to identify women who are unlikely to have cancer and those who have findings that require further investigation, Dr. Miglioretti explained. "The follow-up process is an essential step in ruling out cancer and is a normal part of screening."

False-positive mammogram results more common among certain groups

Abnormal or uncertain results on mammograms are common. In the United States, about 10% of mammograms lead to a woman being called back for further testing. Of those mammograms, however, only about 7% lead to a diagnosis of cancer, the researchers noted.

False-positive mammogram results are more common among certain groups, including younger women, women with dense breasts, women who have had previous breast biopsies, and women with a family history of breast cancer.

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The chance of receiving a false-positive result increases with the number of mammograms a woman has had. In the United States, more than half of women who are screened annually for 10 years will experience a false-positive result, and many of these women will have a biopsy as part of their follow-up testing.

For some women, the process of determining that an abnormal mammogram finding is not cancer can take 1 to 2 years.

“I have gone through this myself, and it’s quite stressful to have the lingering thought, for such a long time, that you may have cancer,” Dr. Miglioretti said. “When you finally get the all clear, it can feel like all the anxiety and inconvenience were for nothing.”

She added, “But they are not for nothing—they are an important part of the process of detecting breast cancer early.”

Understanding the unexpected consequences of screening

False-positive screening test results can lead to fear, anxiety, and frustration with the health care system, noted Jennifer Croswell, M.D., M.P.H., of NCI’s Division of Cancer Control and Population Sciences, who studies cancer screening but was not involved in the research.

“False-positive results can lead to women having additional imaging or invasive procedures, including biopsies of the breast, which can also have psychological and physical effects for women,” Dr. Croswell said.

The new study was well-conducted, she continued. “It explored the potentially unanticipated and detrimental effects of providing recommended health care, which not enough studies do.”

More research is needed to develop strategies to identify and

address these kinds of unanticipated effects, Dr. Croswell added.

Assessing false-positive mammogram results by the type of follow-up testing

The new study was the largest to evaluate the association between false-positive results and the probability of returning to screening in the United States.

Whereas previous studies have surveyed women about whether they would return to screening after a false-positive result, the new study was able to determine whether women actually returned to routine screening.

The BCSC investigators used medical records to assess whether women in the study had a screening mammogram within 9 to 30 months of receiving a true-negative or a false-positive result.

Of the 3.5 million screening mammograms they analyzed, about 3.2 million were true negatives and 345,000 were false positives. Overall, 76% of women in the study returned for routine breast cancer screening.

When the investigators evaluated the probability of returning to screening by type of false-positive result, they expected that women who underwent a biopsy—the most invasive type of follow-up procedure—would be the least likely to return to screening.

BI-RADS Abnormal Finding Scores	Recommended Follow-Up
0 – Need additional imaging because result is incomplete/unclear	Follow-up mammogram within a few weeks
3 – Probably benign	Mammogram in 6 months
4 – Suspicious abnormality	May require a breast biopsy
5 – Highly suggestive of cancer	Breast biopsy

But 67% of the women who received a biopsy returned to

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screening, compared with 61% of women who were recommended to have a short-interval follow-up.

With a short-interval follow-up, women typically return in 6 months for a repeat mammogram. They may then be asked to come back in another 6 months, and maybe a year later, for more follow-up to ensure that nothing has changed.

Among racial and ethnic groups in the study, Asian and Hispanic/Latinx women had the largest decreases in the likelihood of returning after a recommendation for short-interval follow-up or biopsy, versus a true negative.

A potential limitation of the study is that some women could have returned to screening at a non-BCSC facility. "However, our overall rates of re-screening were similar to other reports, so we do not think this is a large concern," Dr. Miglioretti said.

Why did some women stop routine screening?

Although the study was not designed to capture the reasons participants discontinued screening, Dr. Croswell had some ideas.

"We know in the short-term, at least, a false-positive mammogram is associated with a higher degree of anxiety and mental strain for women," she said.

And for some women, she continued, the experience of resolving a false-positive result is "so unpleasant that it is no longer worth it for them to potentially experience the same thing again, even with the known potential benefit of finding a breast cancer earlier."

False positives and future cancer risk

Previous studies have suggested that having a false positive on a mammogram is associated with an increased cancer risk in the future. But why? According to Dr. Miglioretti, there

The results highlight the need to improve discussions between women and health care providers, both before screening begins and during any follow-up testing, Michelle Beth Nadler, M.D., and Neha Pathak, M.D., both of the Princess Margaret Cancer Centre and the University of Toronto, wrote in an accompanying editorial.

"Clear health care information on the benefits and harms of breast cancer screening, including false-positive results and their implications, should be provided to all women," they wrote, adding that this could "lead to better, individualized decisions regarding their own health."

New recommendations for breast cancer screening

The data used in the study were collected before the U.S. Preventive Services Task Force (USPSTF) began to recommend that all women get screened for breast cancer every other year starting at age 40 and continuing through age 74. Previously, the USPSTF recommendation had been to start screening at age 50, with screening between ages 40-49 based on personal choice.

With the change in guidelines, more women are likely to start

might be biological factors that raise the risk of breast cancer and of abnormal or uncertain findings on mammograms.

"Inflammation, for instance, could increase a woman's chances of having calcifications in the breast and increase breast cancer risk," she explained.

Because breast cancer risk increases with age and a false positive may also boost risk, Dr. Miglioretti urged women who have had false-positive results to continue screening every 1 to 2 years until age 74.

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screening at age 40. And because breast density tends to be higher prior to menopause, there is a higher chance of false positives in women aged 40–49, Drs. Nadler and Pathak noted.

The new findings raise concerns "that the higher incidence of false positives from 40 to 49 years could discourage screening at older ages," they wrote.

The BCSC researchers said that offering some women immediate, same-day follow-up of abnormal mammography results could help address some of the issues raised by the current study.

As a next step, they are exploring whether artificial intelligence could be used to help reduce the incidence of false-positive results or to identify findings that require additional testing and those for which it's likely to be unnecessary.

"The idea would be to interpret abnormal findings while the woman waits and do the follow-up diagnostic workup during the same visit," Dr. Miglioretti said. "This approach might help reduce the anxiety and inconvenience associated with having to return for a second visit."

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