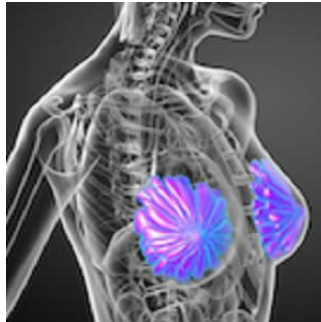


## Breast cancer screening: performance of supplemental ultrasonography



New research shows that for women at low, intermediate, and **high breast cancer risk**, there were significantly higher short-interval follow-up and **biopsy** recommendation rates with screening mammography plus **same-day ultrasonography** compared with **mammography** alone. However, no significant increase in cancer detection or decrease in interval cancer rates was observed. These results suggest that the benefits of supplemental ultrasonography screening may not outweigh associated harms, according to the study published in JAMA Internal Medicine.

**Whole-breast ultrasonography** has been advocated to supplement screening mammography to improve outcomes in women with dense breasts. As the number of states with breast density notification laws continues to increase, postlegislation reports indicate small but significantly increased use of supplemental ultrasonography and magnetic resonance imaging (MRI), among women with mammographically dense breasts, with a greater observed increase in ultrasonography use compared with MRI.

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However, accurate information on the effectiveness of screening ultrasonography is needed to provide guidance on whether widespread use of screening breast ultrasonography with screening mammography would be a beneficial strategy.

For this JAMA study, researchers conducted a retrospective analysis of prospectively collected data – 1 January 2000 to 31 December 2013 – in two Breast Cancer Surveillance Consortium (BCSC) registries. The aim was to assess use of screening ultrasonography in community practice and to investigate the performance of screening mammography plus ultrasonography compared with screening mammography alone in women across the spectrum of breast cancer risk.

A total of 6,081 screening mammography plus same-day screening ultrasonography examinations in 3,386 women were propensity score matched 1:5 to 30,062 screening mammograms without screening ultrasonography in 15,176 women from a sample of 113,293 mammograms. Exclusion criteria included a personal history of breast cancer and self-reported breast symptoms.

### The researchers reported these key findings:

- Screening mammography with vs. without ultrasonography examinations was performed more often in women with dense breasts (74.3% [n = 4,317 of 5,810] vs. 35.9% [n = 39,928 of 111,306] in the overall sample), in women who were younger than 50 years (49.7% [n = 3,022 of 6,081] vs. 31.7% [n = 16,897 of 112,462]), and in women with a family history of breast cancer (42.9% [n = 2,595 of 6,055] vs. 15.0% [n = 16,897 of 112,462]).

- While 21.4% (n = 1,154 of 5,392) of screening ultrasonography examinations were performed in women with high or very high ( $\geq 2.50\%$ ) BCSC 5-year risk scores, 53.6% (n = 2,889 of 5,392) had low or average ( $< 1.67\%$ ) risk.

- Comparing mammography plus ultrasonography with mammography alone, the cancer detection rate was similar at 5.4 vs. 5.5 per 1,000 screens (adjusted relative risk [RR], 1.14; 95% CI, 0.76-1.68), as were interval cancer rates at 1.5 vs. 1.9 per 1000 screens (RR, 0.67; 95% CI, 0.33-1.37).

The research team also found that the false-positive biopsy rates were significantly higher at 52.0 vs. 22.2 per 1,000 screens, as was short-interval follow-up at 3.9% vs. 1.1%. The positive predictive value (PPV) of biopsy recommendation was significantly lower at 9.5% vs. 21.4%.

These results of increased biopsy recommendation rates and false-positive biopsy recommendation rates and decreased specificity and PPV of supplemental screening ultrasonography are consistent with findings from multiple studies conducted in the United States, Europe, and Asia, according to the research team led by Janie M. Lee, MD, MSc, Department of Radiology, University of Washington in Seattle.

Additionally, the results reflect real-world clinical practice in the U.S. for women across the spectrum of breast cancer risk who received same-day, supplemental ultrasonography screening, adding information about the incremental performance and outcomes of supplemental screening with ultrasonography compared with mammography alone. As shown in this study, supplemental ultrasonography screening was used not only in women with dense breasts: 25.7% of women receiving it had nondense breasts.

Source: JAMA Internal Medicine  
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