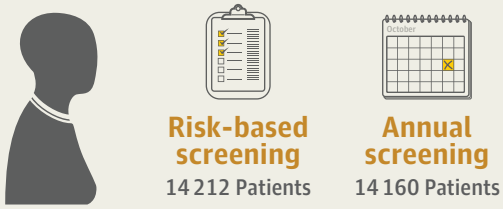
JAMA Research Summary

Risk-Based vs Annual Breast Cancer Screening

This trial aimed to assess whether risk-based screening is as safe, less morbid, and as acceptable to women as annual screening for breast cancer detection.

Why Does This Clinical Trial Matter?

Breast cancer is a leading cause of cancer death for women worldwide. Annual screening may overburden low-risk women and be inadequate for higher-risk women. Personalizing screening based on individual risk could better allocate resources and improve outcomes.



Who Was Involved?

- **Participants Analyzed:** 28 372 Women randomized
- **Type:** Women aged 40 to 74 years
- **Age (mean):** 54 years
- **Sex:** Female
- **Location:** Recruited from all 50 US states, virtual setting
- **Eligibility:** Women with no prior breast cancer, ductal carcinoma in situ, or prophylactic bilateral mastectomy

How Was the Trial Done?

- **Trial Type:** Parallel-group, pragmatic, multicenter randomized clinical trial
- **Randomization:** By individual participant, 1:1 randomization

Interventions

- Annual or risk-based screening using a personalized model
- **Intervention Details:** Annual group: yearly mammograms starting at age 40 years; risk-based group: screening tailored by genetic risk (pathogenic variants and polygenic risk scores) and clinical model; recommendations included no screening before age 50 years, biennial or annual mammography, or alternating mammograms and magnetic resonance imaging every 6 months
- **Mode of Delivery:** Screening recommendations communicated online; imaging delivered per standard practice; risk-based group given online education tool and offered counseling in elevated and high-risk groups
- **Timing of Outcome Assessment:** Median follow-up, 5.1 years; coprimary end points assessed throughout follow-up

What Was Found?

Primary Outcomes

- Stage ≥IIB cancer rates in the risk-based group were noninferior compared with the annual group (21 vs 31 cases; rate difference, -18.0 per 100 000 person-years)
- Biopsy rates were not significantly different between groups (1029 vs 943; rate difference, 98.7 per 100 000 person-years)

Secondary Outcomes

- Incidence of stage ≥IIA cancers was also noninferior
- Fewer mammograms occurred in the risk-based group, especially for low-risk women
- Cancer, biopsy, mammogram, and magnetic resonance imaging rates increased with rising risk
- Uptake of preventive therapy nearly doubled among highest-risk women

Rate of stage ≥IIB cancers per 100 000 person-years

Risk-based screening	Annual screening
30.0 (95% CI, 16.3-43.8)	48.0 (95% CI, 30.1-65.5)

What This Means

Findings suggest that risk-based breast cancer screening is a safe alternative to annual screening for women aged 40 to 74 years. Screening intensity matched individual risk, potentially reducing unnecessary imaging.

Limitations and Knowledge Gaps

Adherence to assigned screening was suboptimal. The majority of participants were college educated and non-Hispanic White, limiting broad generalizability. Reliance on self-report and variable screening may have affected outcome accuracy; further research is needed in diverse populations.

Citation: Esserman LJ, Fiscalini AS, Naeim A, et al. Risk-based vs annual breast cancer screening: the WISDOM randomized clinical trial. *JAMA*. Published online December 12, 2025. doi:10.1001/jama.2025.24784
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