

New breast cancer risk prediction model more accurate current model

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A new breast cancer risk prediction model combining histologic features of biopsied breast tissue from women with benign breast disease and individual patient demographic information more accurately classified breast cancer risk than the current screening standard. Results of a Mayo Clinic study comparing the new model to the current standard, the Breast Cancer Risk Assessment Tool (BCRAT), are published in the *Journal of Clinical Oncology*.

"Physicians routinely perform biopsies to evaluate concerning findings in the breast, either felt on exam or seen on mammogram, for the presence of a breast cancer," says Amy Degnim, M.D., a surgeon at Mayo Clinic and a senior author of the study. "However, about three-quarters of these biopsies prove to be benign and are referred to as benign breast disease (BBD)." Annually, more than a million American [women](#) have a biopsy with a benign finding and are left wondering if they will later develop breast cancer.

Dr. Degnim and her colleagues hypothesized that certain [breast tissue](#) findings, while benign, could help predict which women were at increased risk of developing breast cancer later. "Our [new model](#) more accurately classifies a woman's breast cancer risk after a benign biopsy than the BCRAT," Dr. Degnim says. Developed by the National Cancer Institute and the National Surgical Adjuvant Breast and Bowel Project, BCRAT is currently the most commonly used model for predicting breast [cancer risk](#) in women with BBD.

To test the new model, Dr. Degnim and her colleagues studied a cohort of approximately 10,000 women who had benign breast biopsies at Mayo Clinic and who received long-term follow-up for a later breast cancer occurrence. Using this cohort, researchers determined the age-specific incidence of breast cancer and death, and combined these estimates with a relative risk model derived from 377 patients who later

developed breast cancer and 734 matched controls sampled from the Mayo Clinic BBD cohort. They validated the model using an independent set of women from the Mayo BBD cohort (378 patients with a later breast cancer and 728 matched controls) and compared the risk predictions from the new model with those from the BCRAT.

The concordance statistic from the new model was 0.665 in the model development series and 0.629 in the validation series; these values were higher than those from the BCRAT (0.567 and 0.472, respectively). The BCRAT significantly underpredicted [breast cancer risk](#) after benign biopsy (P .004), whereas predictions derived from the new model were appropriately calibrated to observed cancers (P .247).

"Since women with benign breast disease are at higher risk for breast cancer, optimal early detection is extremely important," Dr. Degnim says. "Ideally, women at increased risk for [breast cancer](#) should be identified so that we can offer appropriate surveillance and prevention strategies. Unfortunately, the BCRAT risk prediction [model](#) does not provide accurate estimates of risk for these women at the individual level."

Provided by Mayo Clinic

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