

# New breast cancer risk model quantifies the impact of risk reduction

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How much can a woman lower her risk of breast cancer by losing weight, drinking less, or exercising more? A study published online June 24 in the *Journal of the National Cancer Institute* describes a new model to estimate the impact of these lifestyle changes on absolute breast cancer risk, suggesting risk reductions that could translate into a substantial number of prevented cancers across an entire population.

Breast cancer risk models are widely used to estimate a woman's chances of developing the disease. These are based on non-modifiable risk factors such as age and family history of [breast cancer](#) and on modifiable [lifestyle factors](#). But there is little information on how much [lifestyle changes](#) would reduce absolute [breast cancer risk](#) in individuals and in the population.

In this study, Elisabetta Petracchi, Ph.D., and Mitchell Gail, M.D., Ph.D., at the National Cancer Institute and colleagues developed the model using data from an Italian case-control study with more than 5,000 women. Their model includes five risk factors that are difficult or impossible to modify (reproductive characteristics, education, occupational activity, family history, and [biopsy](#) history) and three risk factors that are more modifiable ([alcohol consumption](#), leisure physical activity, and [body mass index](#)).

The model predicted that changes in the more modifiable risk factors would reduce the absolute risk of developing breast cancer by quantifiable amounts. The average 20-year reduction in absolute risk

among women aged 65 was 1.6% in the entire population; 3.2% among women with a positive family history of breast cancer; and 4.1% among women with the most non-modifiable risk factors.

The authors note that the results may help in designing programs aimed at encouraging lifestyle changes. For instance, in a general population of 1 million women, even a 1.6% absolute risk reduction amounts to 16,000 fewer cases of cancer. In contrast, a 3.2% reduction in a higher-risk group--postmenopausal women with a family history--amounts to only 2,560 fewer cases, according to the model.

The authors conclude that these results give perspective on the potential public health impact of reducing exposure to such [risk factors](#) and could be useful for designing studies to test the efficacy of prevention programs.

In an accompanying editorial, Kathy J. Helzlsouer, M.D., of Mercy Medical Center in Baltimore writes that the study "provides extremely important information relevant to counseling women on how much risk reduction they can expect by changing behaviors, and also highlights the basic public health concept that small changes in individual risk can translate into a meaningful reduction in disease in a large population." However, she also points out that these estimates are based on optimistic assumptions of changes in behaviors and that the results do not necessarily apply to people in other countries, such as the U.S., where breast cancer rates among older women are much higher than in Italy.

"These differences, however, serve to emphasize the need for models such as these to be created on the basis of local data to provide the best estimates of risk to aid decision making, whether for the individual or the population in public health settings," she writes.

**More information:** [jnci.oxfordjournals.org/](http://jnci.oxfordjournals.org/)

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