

# SCIENTIFIC AMERICAN

## A Healthy Lifestyle Reduces Breast Cancer Risk for Women Either with or without a Genetic Predisposition

**Women who followed weight, exercise and alcohol consumption guidelines had about the same lowered risk for getting breast cancer, even if they had a strong family history of the disease**

By Katherine Harmon October 12, 2010

Moderate exercise, little booze intake and holding down one's weight might be key strategies that reduce the odds of getting breast cancer—even if a woman's mother or sister has had the disease.

New data from 85,644 U.S. women, who were followed for an average of about five and a half years as part of the Women's Health Initiative Observational Study, confirms earlier evidence that healthy lifestyle choices can sometimes trump genes and environment when it comes to breast cancer. The results of the study were reported online October 12 in *Breast Cancer Research*.

These findings are important, says Robert Gramling, an associate professor of family medicine and community and preventive medicine at University of Rochester Medical Center and a co-author of the new study, because “particularly with growing awareness of genomics, often those who have a family history of a disease that's quite scary start thinking, ‘There's nothing I can do to prevent it,’” he noted. “We're beginning to find that's not the case.” Breast cancer is responsible for the second-most cancer deaths in women (lung cancer takes the highest toll), killing some 40,170 U.S. women in 2009, according to the American Cancer Society (ACS). About 192,370 new U.S. cases are diagnosed each year.



***EATING BREAST CANCER: Although genes can play a big role in determining breast cancer risk, basic lifestyle choices can boost women's odds of avoiding the disease—even if it runs in the family.***

***Image: ISTOCKPHOTO/LISAFX***

The three lifestyle changes have each been correlated individually with reduced risk of breast cancer, but the new study looked at them as a group. The researchers asked women if they engaged in at least 20 minutes of moderate to vigorous exercise at least five days a week, limited alcohol consumption to seven glasses a week, and maintained a body mass index of 18.5 to 24.9, all of which are similar to recommendations the ACS makes for reducing risk of the disease.

Gramling and his colleagues analyzed information from women, aged 50 to 79, who had not had breast cancer themselves and who also had no close relatives with early-onset breast malignancies (before age 45).

Regardless of whether subjects had a family history of late-onset breast cancer or not, “the amount of risk reduced is exactly the same,” Gramling explains. As a measure of absolute risk, for both groups, making the healthy lifestyle choices eliminated about one case of the disease out of 1,000 each year, he notes.

“This was a very well done study,” says Catherine Carpenter an associate professor of medicine and nursing at the David Geffen School of Medicine at the University of California, Los Angeles, who was not involved in the new research. “The surprising thing was that the protection wasn't stronger in the family history-positive women,” Carpenter says.

By excluding women with a family history of early-onset (before the age of 45) breast cancer from the study, however, the assessment might have played down the role of genetics in many cases, Carpenter notes. Late-onset “breast cancers tend to be less likely to be genetically determined,” she notes, thus leaving them more likely to be affected by lifestyle factors.

She also added that it would be useful to study whether combining these behaviors also reduces risk for women who have a family history of early-onset breast cancer.

Not all of the genetic influences are necessarily linked directly to so-called breast cancer genes. “One of the factors that is heritable and genetically determined is obesity and body mass index,” Carpenter says. “Families could inherit the predisposition to being overweight and that’s what causes breast cancer, not that they’re carrying a gene that enhances genetic susceptibility to breast cancer.”

Carpenter also notes that she is curious to know which of the three lifestyle factors had the strongest influence on preventing breast cancer, as the new study does not make a distinction among the specific behaviors and malignancy risk.

“These are very well-known behaviors that influence breast cancer,” Carpenter says. But as Gramling points out, of the healthy lifestyle recommendations, “not all the things are easy to do.” Only about 7 percent of women in the study reported following all of the lifestyle guidelines all of the time.

Untangling cancer’s roots can be a tricky business. As Carpenter explains, “These folks are more likely to have shared behavioral patterns in the family.” And getting to the bottom of cancer risk “is the major focus of genetic epidemiology in 2010,” Gramling says.

Next-step research will include more interventional studies looking at the influence of exercise and weight on a woman’s breast cancer risk. The hope of the new and the continuing research is “to better characterize how combinations of exposures contribute to women’s risk,” Gramling says, “so you can advise a woman how she can prevent breast cancer for herself.”