Population-Wide BRCA Testing Could Prevent Many Deaths From Breast and Ovarian Cancers

Screening would be especially cost effective in high-income nations.

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Large-scale BRCA screening of women in the United States and around the world would help prevent a great many deaths from breast and ovarian cancers. In high-income and upper-middle-income countries, testing would be highly cost effective, according to a modeling study published in Cancers.

“General population BRCA testing can bring about a new paradigm for improving global cancer prevention,” author Ranjit Manchanda, MD, PhD, of the Queen Mary University of London, said in a press release.

Approximately 10% to 20% of ovarian cancers and 6% of breast cancers are attributable to heritable BRCA1/BRCA2 mutations. Women with harmful BRCA mutations have a 17% to 44% risk of developing ovarian cancer and a 69% to 72% risk of breast cancer before age 80. With several prevention options available, many of these cancers can be kept at bay. But for a variety of reasons, few women access BRCA testing. In the United States, only 20% of eligible women have been tested.

Currently, BRCA testing is guided purely by family history or clinical symptoms, which may leave out numerous carriers of the harmful gene. Manchanda and his colleagues sought to determine the cost effectiveness of universal BRCA testing in women from different nations with varying health systems.

The team compared lifetime costs and the impact of BRCA1/BRCA2 testing of the general female population with testing based on family health and clinical symptoms. They stratified different countries in the study according to income:

1. High-income countries such as the United States, Netherlands and United Kingdom
2. Upper-middle-income countries such as China and Brazil
3. Lower-middle-income countries such as India

The research team included all women who were at least 30 years of age and modeled various scenarios of population-wide testing from the viewpoints of both the payer and society for countries in different income brackets.

The researchers found that population-based BRCA testing was cost saving in high-income countries and cost effective in upper-middle-income countries but not in lower-middle-income countries. In order to be cost effective in countries such as India, BRCA testing costs would need to fall below $172 per test. Further, from a payer perspective, population-based BRCA testing was highly cost effective in high- and upper-middle-income countries but not in lower-middle-income countries.

Moreover, the team reported that population-based testing would prevent an additional 2,319 to 2,666 breast cancer cases and 327 to 449 ovarian cancer cases per million women compared with the current testing plan.

“With increasing use of telehealth and a transformed health care system that guarantees health insurance for every American without discrimination, then we may achieve the promise of genomics to improve population health in the U.S.,” Olufunmilayo Olopade, MD, of the University of Chicago, who was not involved in the study, told MedPage Today. However, universal screening is not practical in the United States given the current state of the health care system.

“Strategies and pathways for population testing must be developed to enable population genomics to achieve its potential for maximizing early detection and cancer prevention,” Manchanda said.

Click here to read the study in Cancers.

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