Understanding BRCA

Genetic mutation raises the risk of breast, ovarian and prostate cancers.

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BRCA ("BReast CAncer") genes influence susceptibility to cancer. BRCA1 and BRCA2 are known as tumor suppressor genes. Normally, they help prevent cancer by repairing broken DNA. But in people with certain BRCA mutations, DNA damage cannot be fixed, which allows cells to grow out of control.

Women with harmful BRCA mutations have a much higher likelihood of developing breast and ovarian cancer. While about 12 percent of all women will develop breast cancer during their lifetime, this rises to around 70 percent for those with BRCA1 or BRCA2 mutations, according to the American Cancer Society. The risk of ovarian cancer increases from less than 2 percent to over 40 percent for women with BRCA1

Women with BRCA mutations are more likely to develop breast or ovarian cancer at a younger age. Those with BRCA1 mutations also have a higher risk of triple-negative breast cancer, which can be more aggressive and harder to treat because it does not respond to widely used medications. But new drugs called PARP inhibitors work well against BRCA-related cancers.

BRCA mutations also raise the risk of breast and prostate cancer in men. In addition, these mutations increase susceptibility to pancreatic cancer and may play a not-yet-recognized role in triggering other cancers.

BRCA mutations are uncommon in the general population. Less than 1 in 10 women with breast cancer and 15 percent of those with ovarian cancer have these mutations. BRCA1 changes are seen most often in people of Ashkenazi Jewish descent (up to 10 percent). For other groups, the risk is under 5 percent.

BRCA1 and BRCA2 gene mutations are hereditary. If either parent carries a BRCA mutation, there is a 50 percent chance that his or her children will have it too.

BRCA screening is not routinely done for the population as a whole. But people who develop early or aggressive breast, ovarian, prostate or pancreatic cancer may undergo testing to help guide treatment, and their family members can be tested to determine whether they are also at risk. (Click here to learn more about genetic counseling.)

People with a known BRCA mutation should receive breast cancer screenings starting at a younger age—as early as 25—and repeat them more frequently. Experts recommend both MRI imaging and mammograms for high-risk women. Likewise, men with these mutations should consider earlier and more frequent screening for prostate cancer. Unfortunately, no good screening methods are currently available for ovarian cancer.

Prevention options for people with harmful BRCA mutations include prophylactic medications such as tamoxifen to stop the development of hormone-receptor-positive breast cancer. Some women undergo mastectomy (removal of the breasts) or removal of the ovaries and Fallopian tubes before cancer develops. Exercise, eating a balanced diet and maintaining a healthy weight can help prevent cancer in people with or without increased genetic risk.
