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Implications of multigene testing for hereditary breast cancer in primary care

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Abstract

Approximately 1 in 8 women will develop breast cancer during their lifetime and the risk factors include age, family history, and reproductive factors. In women with a family history of breast cancer, there is a proportion in which a gene mutation can be the cause of the predisposition for breast cancer. A careful assessment of family and clinical history should be performed in these women in order to determine if a genetic counseling referral is indicated. In cases of hereditary breast cancer, genetic testing with a multigene panel can identify specific genetic mutations in over 100 genes. The most common genes mutated in hereditary breast cancer are the high-penetrance *BRCA1* and *BRCA2* genes. In addition, other mutations in high-penetrance genes in familial cancer syndromes and mutations in DNA repair genes can cause hereditary breast cancer. Mutations in low-penetrance genes and variants of uncertain significance (VUS) may play a role in breast cancer development, but the magnitude and scope of risk in these cases remain unclear, thus the clinical utility of testing for these mutations is uncertain. In women with high-penetrance genetic mutations or lifetime risk of breast cancer >20%, risk-reducing interventions, such as intensive screening, surgery, and chemoprevention, can decrease the incidence and mortality of breast cancer.

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