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How to Prevent Breast Cancer Pharmacologically

Several preventive medications have been shown to reduce risk.

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Women with a family history of breast cancer, who are statistically at higher risk for breast cancer, may want to consider taking one of several preventive medications, according to an article published in JAMA: The Journal of the American Medical Association.

Breast cancer, the most common non–skin cancer diagnosed in women in the United States, is projected to cause an estimated 42,170 deaths nationally in 2020. It typically first manifests as a change of some kind in the skin of the breast or armpit. Screening via clinical exams, mammograms and MRI scans is key to early detection but is not preventive.

Preventive medications reduce breast cancer incidence by directly or indirectly limiting the amount of estrogen in breast tissue. (Most breast cancers are estrogen sensitive.). These medications currently include the selective estrogen receptor modulators (SERMs) tamoxifen and raloxifene and the aromatase inhibitors (AIs) anastrozole and exemestane. Over five years, SERMs reduce breast cancer risk by about 0.7% and AIs reduce breast cancer risk by about 1.6%, although only SERMs have been approved for prevention by the Food and Drug Administration.

Despite its demonstrated potential for reducing rates of breast cancer diagnoses and deaths, “use of medications for primary prevention of breast cancer has been low,” the authors wrote. “Reasons for low uptake include women’s low perceived need for preventive therapy and their concerns about the harms of treatment.”

Those harms range from the comparatively mild (increased vaginal discharge) to the extremely serious (uterine cancer). In a 2015 study, researchers found that both participants who took tamoxifen and participants who took raloxifene for 10 years reported adverse effects, such as irregular menstruation, sexual dysfunction and venous thromboembolism, or deep-vein blood clotting, though at differing rates. Long-term AI use, meanwhile, correlates with a heightened risk of arthralgias (joint pain), myalgias (muscle aches) and decreased bone density.

Taking these medications for shorter periods of time may prove to be a happy medium between minimizing adverse effect risk and maximizing breast cancer prevention. Their adverse effects last for the duration of treatment, if they occur at all. Their preventive benefits, on the other hand, last

well beyond the duration of treatment. For example, the authors wrote, “Randomized trials have shown that taking tamoxifen for 5 years reduces breast cancer risk for 20 years, but the adverse effects stop after the medication is stopped.”

In many cases, the benefits of taking a preventive medication for breast cancer outweigh the risk of side effects, especially for younger women with a five-year breast cancer risk of 3% or more.

“Starting a risk-reducing medication at a younger age optimizes the risk-benefit trade-off for two reasons,” the authors explained. “First, the risk reduction effect of SERMs extends for at least 15 to 20 years, so younger women may have a longer time to benefit. Second, the incidence of venous thromboembolism and uterine cancer increases with age, so the excess harms due to treatment with SERMs will be lower in younger women. “

Besides a family history, risk factors for breast cancer include the presence of the BRCA1 and BRCA2 gene mutations. Non-pharmacological preventive factors include being physically active and maintaining a healthy weight.

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