

# Vitamin D relieves joint, muscle pain for breast cancer patients

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High-dose vitamin D relieves joint and muscle pain for many breast cancer patients taking estrogen-lowering drugs, a new study shows. Credit: Michael C. Purdy

High-dose vitamin D relieves joint and muscle pain for many breast cancer patients taking estrogen-lowering drugs, according to a new study from Washington University School of Medicine in St. Louis.

The drugs, known as aromatase inhibitors, are commonly prescribed to shrink [breast tumors](#) fueled by the [hormone estrogen](#) and help prevent cancer recurrence. They are less toxic than [chemotherapy](#), but for many patients, the drugs may cause severe musculoskeletal discomfort, including pain and stiffness in the hands, wrists, [knees](#), [hips](#), lower back, shoulders and feet.

"About half of patients can experience these symptoms," says Antonella

L. Rastelli, MD, assistant professor of medicine and first author of the study published online in the journal [Breast Cancer Research and Treatment](#). "We don't know exactly why the pain occurs, but it can be very debilitating — to the point that patients decide to stop taking aromatase inhibitors."

Because the drugs reduce cancer recurrence, finding a way to help patients stay on them is important for long-term, relapse-free survival, according to Rastelli. Aromatase inhibitors are prescribed to postmenopausal women for at least five years and often longer after a [breast cancer](#) diagnosis. There is some evidence that patients who experience the drugs' [side effects](#) are less likely to see their cancer return, providing even more incentive to help these patients continue taking them.

It was Rastelli's colleague, Marie E. Taylor, MD, assistant professor of radiation oncology, who first noticed that patients on aromatase inhibitors who experienced this pain found some relief from high doses of [vitamin D](#).

So Rastelli's group recruited 60 patients who reported pain and discomfort associated with anastrozole, one of three FDA-approved aromatase inhibitors. The patients they studied also had low vitamin D levels. Half the group was randomly assigned to receive the recommended daily dose of vitamin D (400 international units) plus a 50,000-unit vitamin D capsule once a week. The other half received the daily dose of 400 units of vitamin D plus a weekly placebo. All subjects received 1,000 milligrams of calcium daily throughout the study.

Patients in the study reported any pain they experienced through three different questionnaires. They were asked to quantify their pain intensity, as well as report how much the pain altered their mood, affected their work and interfered with relationships and daily activities. The results show that patients receiving high-dose vitamin D every week

reported significantly less musculoskeletal pain and also were less likely to experience pain that interfered with daily living.

"High-dose vitamin D seems to be really effective in reducing the musculoskeletal pain caused by aromatase inhibitors," Rastelli says.

"Patients who get the vitamin D weekly feel better because their pain is reduced and sometimes goes away completely. This makes the drugs much more tolerable. Millions of women worldwide take aromatase inhibitor therapy, and we may have another 'tool' to help them remain on it longer."

Like anastrozole used in this study, the other two FDA-approved aromatase inhibitors, letrozole and exemestane, also cause musculoskeletal pain. Given the similar side effects, Rastelli says patients on these drugs may also benefit from high-dose vitamin D.

The vitamin used in this study is a plant-derived type called vitamin D2. Rastelli says it achieves the best results when given weekly because the body metabolizes it within seven to 10 days. Rastelli and her colleagues did not use high-dose vitamin D3, which remains in the body longer.

"This was a very carefully conducted study, and the placebo control makes the findings quite compelling," says Matthew J. Ellis, MD, PhD, the study's senior author and director of the Breast Cancer Program at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine in St. Louis. "We should follow up these findings further to determine the most efficacious and safe approach to vitamin D supplementation in our [breast cancer patients](#)."

Since vitamin D helps the body absorb calcium, too much of it can cause high levels of calcium in the urine, which may increase the risk of kidney stones. Such possible side effects emphasize the importance of

tracking patients' urine calcium levels while taking high-dose vitamin D.

"It's important to monitor the patients, but overall it appears to be very safe," Rastelli says. "Because vitamin D2 is eliminated from the body so quickly, it's very hard to overdose."

In addition to relieving pain, the group wanted to examine whether vitamin D could protect against the bone loss often seen in patients taking [aromatase inhibitors](#). The researchers measured each patient's bone density at the beginning of the study and again after six months.

Perhaps because of its role in calcium absorption, high-dose vitamin D did appear to help maintain bone density at the neck of the femur, the top of the thighbone near the hip joint. Although the result did not reach statistical significance, Rastelli calls the result promising and worth further studies.

"It's great that we have something as simple as vitamin D to help patients alleviate some of this [pain](#)," Rastelli says. "It's not toxic — it doesn't cause major side effects. And if it is actually protecting against bone loss, that's even better."

**More information:** Rastelli AL, Taylor ME, Gao F, Armamento-Villareal R, Jamalabadi-Majidi S, Napoli N, Ellis MJ. Vitamin D and aromatase inhibitor-induced musculoskeletal symptoms (AIMSS): a phase II, double-blind, placebo-controlled, randomized trial. Breast Cancer Research and Treatment. Online June 2011.

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