

Bone Health and Breast Cancer

Breast cancer can have dramatic consequences for bone health. These effects are often hidden until a broken bone occurs.

If you or a loved one has been diagnosed with breast cancer, it's important to know how breast cancer and its treatments can affect the bones. Then you can work with your health care provider to make a bone health plan alongside your cancer treatment plan.



HOW ARE CANCER AND BONE HEALTH CONNECTED?

Hypercalcemia

Calcium is an important building block of bone. Cancer cells release a hormone that can speed up the rate at which bones release calcium. This causes a serious condition called hypercalcemia, which means a high level of calcium in the blood. Hypercalcemia is treatable and should be dealt with when diagnosed. Symptoms of hypercalcemia in cancer patients include nausea, loss of appetite, thirst, frequent urination, constipation, irregular heartbeat, excessive sleepiness, confusion and, in rare cases, coma.

Vitamin D deficiency

The body needs enough [vitamin D](#) to absorb calcium. Many cancer survivors have vitamin D deficiency. Vitamin D deficiency contributes to muscle pain and fatigue and interferes with normal production of proteins necessary for cell division and growth.

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Treatment-related bone loss

Some breast cancer therapies, such as aromatase inhibitors and steroids, can lead to bone loss, which increases fracture risk.

Other breast cancer treatments may cause low estrogen or early menopause, which can then lead to bone loss. These treatments include:

- Ovarian suppression, which is a shutting down or removal of the ovaries.
- Hormone therapy (LHRH analogs): Zoladex® (goserelin) and Lupron® (leuprolide).
- Various chemotherapy medicines, which can cause ovarian failure resulting in early menopause.

Your health care provider should monitor your bone health during treatment and may consider giving you a bisphosphonate medicine or denosumab to reduce fracture risk.

Bone metastasis

When breast cancer spreads beyond the breast, it is called metastatic breast cancer. “Metastasize” means “spread.” Bone is the most common site for breast cancer metastasis.

Tumors on the bones called bone metastases or “bone mets” can cause serious bone complications such as bone fractures, bone pain, and spinal cord compression. These complications are also called “skeletal-related events” (SREs). The most common sites for bone metastases include the spine, skull, ribs, pelvis, and long bones in the arms and legs.

Breast cancer spreading to the bones also may cause hypercalcemia.

Your health care provider may prescribe bone-strengthening medicines to protect your bones and reduce the risk of SREs.

Use of these medicines can:

- Lower the risk of bone fractures related to bone metastases.
- Help reduce pain caused by bone metastases.
- Prevent or treat tumor-related hypercalcemia.
- Reduce the need for radiation therapy and surgery related to bone fractures and bone pain.

Other treatments may include:

- Radiation to control bone pain.
- Surgery to prevent or repair broken bones.

AROMATASE INHIBITORS

- Arimidex® (anastrozole)
- Aromasin® (exemestane)
- Femara® (letrozole)

BONE-STRENGTHENING MEDICINES

- Bisphosphonates: Aredia® (pamidronate), Zometa® (zoledronic acid)
- RANK Ligand (RANKL) inhibitor: Xgeva® (denosumab)

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Osteonecrosis of the jaw (ONJ)

ONJ is a rare dental condition found mostly among cancer patients. ONJ occurs most often after a major dental procedure in which the bone in the jaw does not heal after eight weeks of appropriate dental care. While there is no definitive proof, there are links between ONJ and cancer patients treated with high doses of intravenous bisphosphonates (most often, pamidronic acid and zoledronic acid). These medicines are used to help prevent cancer-related breakdown of bone.

WHAT YOU CAN DO



- Ask your health care provider for blood tests to measure calcium and 25-hydroxyvitamin D to ensure your levels are normal.
 - 25-hydroxyvitamin D should be higher than 30 ng/ml but lower than 80 ng/ml.
 - Calcium should be higher than 8.58 mg/100 ml but lower than 10.5 mg/100ml.
- Get a bone density test before starting treatment and every one to two years during treatment.
- Get a routine dental examination prior to starting a bisphosphonate medicine or denosumab. Maintain good oral hygiene and be alert for symptoms including mouth discomfort, mouth sores, loose teeth, and poor healing after getting a tooth pulled or dental surgery. If possible, avoid invasive dental procedures such as extractions, implants, and jaw or gum surgery during bisphosphonate therapy. Dentures should be well-fitted. If invasive dental procedures are required, they should be done prior to starting treatment with bisphosphonates. It is extremely important that patients with potential symptoms or signs of ONJ be evaluated by an oral surgeon as soon as possible. You may need to stop taking bisphosphonate medicines.
- Don't smoke. Limit alcohol to no more than one drink per day.
- Give your bones the nutrition they need. That includes 3-4 servings a day of calcium-rich foods. Take a vitamin D supplement, if your healthcare provider recommends it. Make sure you get enough protein in your diet. Find more information [here](#).
- Get plenty of exercise. Do activities that challenge your bones with different weights and movements. Weight-bearing exercise can stimulate bone building. Exercise safely with good posture and proper body mechanics. Try to avoid activities that include forward bending or twisting.

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Cancer has many effects on bone health. Health care professionals are still learning about this complicated relationship. As a cancer survivor, you need to advocate for yourself to be sure your treatment plan includes steps to protect your bones. To help start a conversation with your health care provider, download our publication, [“Talking with Your Doctor about Bone Health for Breast Cancer Survivors.”](#)



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 - Endocrine Society. "Oral Complications Are Rare in Older Women Treated for Osteoporosis." *Endocrine News*, Feb 201
 - Stella D'Oronzo, Robert Coleman, Janet Brown, Francesco Silvestris. Metastatic bone disease: Pathogenesis and therapeutic options: Up-date on bone metastasis management. *Journal of Bone Oncology*. Volume 15, 2019, 100205, ISSN 2212-1374, <https://doi.org/10.1016/j.jbo.2018.10.004>.