# Hypercalcemia [1]

**This section has been reviewed and approved by the Cancer.Net Editorial Board [2], 03/2012**

Hypercalcemia is an unusually high level of calcium in the blood. Hypercalcemia can be life threatening and is the most common metabolic disorder associated with cancer, occurring in 10% to 20% of people with cancer. Although most of the calcium in the body is stored in the bones, about 1% of the body's calcium circulates in the bloodstream. Calcium is important for many bodily functions, including bone formation, muscle contractions, and nerve and brain function.

Relieving side effects, also called symptom management, palliative care [3], or supportive care, is an important part of cancer care and treatment. Talk with your health care team about any symptoms you may experience, including any new symptoms or a change in symptoms.

## Symptoms

The symptoms of hypercalcemia often develop slowly and may be very similar to the symptoms of cancer or cancer treatments. The seriousness of symptoms is often unrelated to the actual level of calcium in the blood, and many patients have no symptoms at all. Older patients usually experience more symptoms than younger patients.

Patients and their families should be familiar with the symptoms of hypercalcemia and report any symptoms to their health care team. Treatment not only improves symptoms, but also improves quality of life and may make it easier to complete cancer treatment. However, it is important to understand that unless there is effective treatment for the underlying cancer, hypercalcemia suggests that a patient is approaching the last weeks of life [4].

People with hypercalcemia may experience the following symptoms:

- Loss of appetite
- Nausea and vomiting [5]
- Constipation [6] and abdominal pain
- Increased thirst and frequent urination
- Fatigue [7], weakness, and muscle pain
- Changes in mental status, including confusion [8], disorientation, and difficulty thinking
- Headaches [9]
- Depression [10]

Severe hypercalcemia may lead to kidney stones [a painful condition in which salt and minerals form solid masses (stones) in the kidneys or urinary tract], irregular heartbeat, or heart attack. Potentially severe effects of hypercalcemia include loss of consciousness and coma.

**Causes**

The level of calcium in the blood is controlled by many factors, including parathyroid hormone (a hormone released by the parathyroid glands) and the kidneys (which remove excess calcium from the blood). Cancer can cause high levels of blood calcium in different ways:

- Cancers that affect the bone directly (such as multiple myeloma or leukemia) or cancers that commonly spread to the bone (such as breast cancer) cause the bone to break down, releasing excess calcium into the blood.
- Some tumors produce a protein that acts very similar to parathyroid hormone and causes the bone to release calcium into the blood.
- Some cancers affect the ability of the kidneys to remove excess calcium from the blood.
- Dehydration caused by nausea and vomiting makes it difficult for the kidneys to remove calcium from the blood properly.
- Lack of physical activity can cause bone to break down, releasing calcium into the blood.

The cancers most likely to cause hypercalcemia include breast cancer [11], lung cancer [12], and multiple myeloma [13]. Other cancers that may cause hypercalcemia include some types of lymphoma and leukemia, as well as kidney cancer, head and neck cancers, and gastrointestinal cancers.

**Diagnosis and treatment**

To diagnose hypercalcemia, your doctor will perform a blood test to check the level of calcium. You may also receive other blood tests to check kidney function. Patients with mild hypercalcemia who have no symptoms are treated with extra fluids, usually given through a vein, which help the kidneys remove excess calcium. Patients with moderate or severe hypercalcemia can be treated in different ways:

- Treating the underlying cancer
- Replacing fluids [14] (that were lost through vomiting, frequent urination, etc)
- Administering medications to help stop the breakdown of bone, including bisphosphonates [such as risedronate (Actonel, Atelvia), ibandronate (Boniva), or alendronate (Fosamax), and intravenous bisphosphonates, such as zoledronic acid (Reclast, Zometa) and pamidronate (Aredia)], calcitonin (Miacalcin), plicamycin (Mithracin), and gallium nitrate (Ganite)
- Administering steroid medications, which decrease the breakdown of bone and the uptake of calcium from food in specific cancers, such as lymphoma. However, steroids may increase the risk of osteoporosis and the breakdown of bone in some situations. Talk with your doctor about whether a steroid medication is the best treatment for you.
- Using dialysis (a mechanized filtering process that removes excess waste from the blood) to treat patients with kidney failure

## Patient considerations

In addition to getting treatment from your doctor, the following tips can help prevent hypercalcemia or prevent it from becoming worse:

- Drink fluids
- Control nausea and vomiting
- Walk and be active, which helps prevent bone from breaking down
- Check with your doctor before taking any medications, as some may make hypercalcemia worse

Note: In people with cancer, hypercalcemia is not related to having too much calcium in the diet, so reducing calcium intake by eating fewer dairy products and other high-calcium foods does not help to resolve the condition.

## More Information

Managing Side Effects [15]

End of Life Care [16]

Advanced Cancer Care Planning [17]

## Additional Resources

National Cancer Institute: Hypercalcemia [18]

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**Links:**
[1] http://www.cancer.net/navigating-cancer-care/side-effects/hypercalcemia
[2] http://www.cancer.net/about-us
[3] http://www.cancer.net/node/25282
[4] http://www.cancer.net/node/25279
[5] http://www.cancer.net/node/25052
[6] http://www.cancer.net/node/25246
[7] http://www.cancer.net/node/25048
[8] http://www.cancer.net/node/25050
[9] http://www.cancer.net/node/25253
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[17] http://www.cancer.net/node/25113
[18] http://www.cancer.gov/cancertopics/pdq/supportivecare/hypercalcemia/Patient/page1