



Bone Metastasis

Cancer cells that break off from a primary tumor and enter the bloodstream or lymph vessels can reach nearly all tissues of the body. Bones are a common place for these cancer cells to settle and start growing. Tumors that result from these cells entering the bones are called bone metastases.

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Understanding Bone Metastasis

What is metastasis?

When cancer spreads from the part of the body where it started (its primary site) to other parts of the body it's called *metastasis*. Metastasis can happen when cells break away from a cancer tumor and travel through the bloodstream or through lymph vessels to other parts of the body. (Lymph vessels are much like blood vessels, except they carry a clear fluid called *lymph* back toward the heart.) Cancer cells that travel through the blood or lymph vessels can spread to other organs or tissues in distant parts of the body.

Many of the cancer cells that break off from the original tumor die without causing any problems. But some settle in a new area. There, they grow and form new tumors. When cancer spreads, we say that it metastasizes. If there's only a single tumor, it's called a *metastasis* or a *metastatic tumor*. When there are 2 or more metastatic tumors, it's called *metastases*.

Sometimes metastatic tumors are found on tests done when the primary cancer is first diagnosed. In other cases, the metastasis is found first, causing the doctor to look for the place that the cancer started.

Different cancers tend to spread to different sites, but some of the most common sites of metastasis are the bones, liver, brain, and lungs.

What is bone metastasis?

A bone metastasis is an area of bone that contains cancer that spread there from somewhere else.

Cancer can spread to any bone in the body, but metastases are most often found in bones near the center of the body. The spine is the most common site. Other common sites are the hip bone (pelvis), upper leg bone (femur), upper arm bone (humerus), ribs, and the skull.

Once cancer has spread to the bones or to other parts of the body it's rarely able to be cured. Still, it often can be treated to shrink, stop, or slow its growth. Even if a cure is no longer possible, treating the cancer may be able to help you live longer and feel better.

How does bone metastasis cause bone changes and other problems?

Bone is the supporting framework of the body. Bones are made of a network of fibrous tissue called *matrix*, minerals such as calcium that attach to the matrix and give the bone its strength and hardness, and 2 main kinds of bone cells are *osteoblasts* and *osteoclasts*.

Knowing a little about these 2 kinds of cells can help you understand how bone metastases grow, and how some medicines work to treat bone metastases. The **osteoblast is the cell that forms new bone**, and the **osteoclast is the cell that dissolves old bone**. When these cells are both working right, new bone is always forming while old bone is dissolving. This helps keep the bones strong.

Cancer cells can affect the bones by interfering with osteoblasts and osteoclasts:

- **Often, the cancer cells make substances that turn on the osteoclasts.** This leads to bone being broken down without new bone being made. This weakens the

bones. The holes that develop when parts of bones dissolve are called *osteolytic* (OS-tee-oh-lit-ik) or *lytic* (LIT-ik) lesions. Lytic lesions are so weak that they can cause the bone to easily break.

- **Sometimes, the cancer cells release substances that turn on the osteoblasts.** This leads to new bone being made without breaking down the old bone broken down first. This makes areas of the bones harder, a condition called *sclerosis*. The areas of bone where this occurs are called *osteoblastic* or *blastic* lesions. Although these blastic areas are harder, the structure of the bone is not normal and these areas actually break more easily than normal bone.

Bone metastasis can cause other problems as well:

- When cancer spreads to the bones of the spine, it can press on the spinal cord. This can cause nerve damage that may even lead to paralysis if not treated.
- As cancer cells damage the bones, calcium from the bones is released into the blood. This can lead to problems caused by high blood calcium levels (hypercalcemia [HI-per-kal-**SEE**-me-uh]).

Why do cancers metastasize to bones?

For cancer cells to spread to other parts of the body, they have to go through many changes:

- They have to be able to break away from the original (primary) tumor and get into the bloodstream or lymph system, which can carry them to another part of the body.
- At some point they need to attach to the wall of a blood or lymph vessel and move through it, out into a new organ.
- They then need to be able to grow and thrive in their new location.

All the while, the cancer cells need to be able to avoid attacks from the body's immune system. Going through all these steps means the cells that start new tumors may no longer be exactly the same as the ones in the tumor where they started, But they will still be called the same name. For instance, breast cancer that spreads to the bone is called metastatic breast cancer, not bone cancer.

What's the difference between primary bone cancer and bone metastasis?

Some cancers start in the bone, rather than spreading to the bones from somewhere

else. Cancers that start in the bone are called *primary bone cancers*. These cancers are very different from bone metastases. **Bone metastasis is much more common than primary bone cancers, especially in adults.**

Information on primary bone cancers, can be found in [Bone Cancer](#), [Osteosarcoma](#), and [Ewing Family of Tumors](#).

- [References](#)

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Signs and Symptoms of Bone Metastasis

Many of the symptoms listed here can also be caused by something other than the spread of cancer to the bones. Still, it's very important for you to tell your cancer care team about any new symptoms you have. Finding and treating bone metastasis early can help prevent problems later on.

Pain

Bone pain is often the first symptom of cancer that has spread to the bone. The pain may come and go at first. It tends to be worse at night and may get better with movement. Later on, it can become constant and may be worse during activity.

It's important to tell your doctor right away about any new pain that might be coming from a bone. The bone might be so weakened that it will break. This can often be prevented if the bone metastasis is found early. Keep in mind that other diseases, such

as bone infections, arthritis, or just being very active can also make bones hurt.

Fractures

Bones weakened from metastatic cancer may break or fracture. The fracture can happen with a fall or injury, but a weak bone can also break during everyday activities. These fractures often cause sudden, severe pain. The pain may keep you from moving.

The most common fractures are in the long bones of the arms and legs and the bones of the spine. Sudden pain in the middle of the back, for example, is a common symptom of a bone in the spine breaking and collapsing from cancer.

Spinal cord compression

Cancer growth in the bones of the spine can press on the spinal cord. This is called *spinal cord compression* and is very serious. The spinal cord has nerves that allow you to move and feel what happens to your body. Some of these nerves also control other functions such as bowel and bladder control.

One of the very earliest symptoms of spinal cord compression is pain in the back or neck. Pressure on the spinal cord can damage the nerves in the spinal cord, leading to symptoms like numbness and weakness in the area of the body below the tumor.

If a spinal cord compression isn't treated right away, the person can become paralyzed. Most often this affects the legs (so that the person can't walk) but if the tumor is pressing on the spinal cord in the neck, both the arms and the legs can be affected.

Sometimes the first symptom you may have of spinal cord pressure is trouble urinating because nerves from the spinal cord control the bladder. You may also feel more constipated (because nerves from the spine help you move your bowels).

High blood calcium levels

When cancer spreads to the bones, calcium from the bones can be released into the bloodstream. This can lead to high levels of calcium in the blood called *hypercalcemia* (HI-per-kal-**SEE**-me-uh). This can cause problems such as constipation, nausea, loss of appetite, and extreme thirst. The high calcium also causes you to make more urine, leading to dehydration. It can make you feel very tired and weak, too. You may be sleepy or even confused. If hypercalcemia is not treated, you can even go into a coma.

- [References](#)

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How Are Bone Metastases Diagnosed?

Bone metastases are sometimes found because they cause problems, but in some cases, they're found before you have any symptoms. Your doctor may do lab tests and imaging tests (like x-rays or bone scans) to see if and/or how far the cancer has spread. These tests may show bone metastases.

Imaging tests to find bone metastases

Imaging tests use x-rays, magnetic fields, or radioactive substances to create pictures of the inside of the body. Imaging tests may be done before, during, and after cancer treatment for a number of reasons, including to help find out if cancer has spread to the bones (or any other part of the body). People who are suspected of having bone metastases often have one or more of these tests.

X-rays

Regular x-rays may show signs of the cancer's spread to the bones. X-rays are often among the first tests done if a person with cancer is having bone pain or other symptoms.

In *osteolytic* (OS-tee-oh-lit-ik) or *lytic* (LIT-ik) metastases, the cancer cells dissolve the bone, making part of it less dense. If the cancer has destroyed enough of the bone, these changes look like a darker hole in the gray-white bone seen on the x-ray.

Osteoblastic or *blastic* metastases cause an area of the bone to look denser or *sclerotic*. On x-rays, these metastases show up as spots that are whiter than the bone around them.

Often, bone metastases have both lytic and blastic features.

X-rays can also show fractures (breaks) in bones that have been weakened by metastases.

Bone scan

This test shows the entire skeleton, and can sometimes show a bone metastasis that's not yet causing symptoms. It's best at showing metastases that are blastic (where bone is denser).

[Bone scans](#) can usually find metastases much earlier than regular x-rays. Bone scans can also be repeated over time to track how the metastases respond to treatments.

Sometimes bone scans fail to find cancer that has spread to the bones. Bone scans have a harder time detecting metastases that are purely osteolytic (where bone is less dense).

Computed tomography (CT)

The [CT scan](#) makes detailed cross-sectional images of your body. Sometimes, a CT scan can help tell if the cancer has spread into your bones. It may be used when bone metastases are likely to be osteolytic, since these metastases sometimes don't show up well on bone scans. CT scans are also good for judging the size and shape of a tumor in the bone and for assessing how stable a bone containing a tumor is (how likely it is to break).

CT-guided needle biopsy: CT scans can also be used to guide a biopsy needle into a suspected area of bone metastasis deep in the body. You stay on the CT scanning table while a doctor guides the needle through your skin and toward the suspicious area. CT scans are repeated until the needle has reached the right place. A fine needle biopsy sample (tiny piece of tissue) or a core needle biopsy sample (a thin cylinder of tissue) is then taken out and checked in the lab to see if there are cancer cells in it.

Magnetic resonance imaging (MRI)

[MRI scans](#) use radio waves and strong magnets instead of x-rays to make very detailed pictures of parts of the body. Like a CT scan, MRI produces detailed cross-sectional slices of the body.

Because an MRI scan is very useful for looking at the spine and spinal cord, it's the standard test used if spinal cord compression is suspected. MRIs are also good at finding problems in bones and joints. Often an MRI scan is done to better define a bone mass seen on an x-ray. MRI scans can usually tell if the mass is likely to be a tumor, an infection, or some type of bone damage from other causes.

Positron emission tomography (PET)

For a [PET scan](#), you are injected with a slightly radioactive form of sugar, which collects mainly in cancer cells. A special camera is then used to create a picture of areas of radioactivity in the body.

This test can sometimes find tumors that are too small to see on other imaging tests. PET scans look at the whole body at once, so they are sometimes used when your doctor thinks the cancer has spread but doesn't know where.

PET scans can give useful information, but they aren't very detailed. If an area on the scan looks like it could be cancer, other tests such as MRI or CT scans can be used to check it out further. Special machines can combine PET and CT scans (PET/CT scanners) to give more details on areas of cancer spread.

Lab tests

Blood tests

When cancer spreads to the bones, certain substances that can be found by routine lab tests might be released into the blood. For example:

- **Calcium:** Bone metastases can dissolve the bones, leading to a high blood calcium level (called *hypercalcemia* [HI-per-kal-**SEE**-me-uh]). Problems other than bone metastases can cause high calcium levels, but if a person with cancer has a high blood calcium level, tests are often done to look for bone metastases.
- **Alkaline phosphatase:** When the bones dissolve, the levels of alkaline phosphatase or ALP may increase. Alkaline phosphatase is also made by the liver, so high ALP levels can mean liver problems. (They don't always mean bone

metastases.)

Urine tests

Several substances can be released into urine when bone is damaged. One substance that can be measured is called *N-telopeptide*.

Biopsies used to find bone metastases

In most cases, cancer is diagnosed by removing a piece of body tissue and looking at it under a microscope. This procedure is called a *biopsy*.

If you've been diagnosed with cancer or have had cancer in the past, your doctor may be able to tell if you have bone metastasis based on the results of imaging tests such as a bone scan. If any of your blood test results also suggest bone metastasis, this makes the diagnosis even more certain. When this is the case, your doctor might not need to get a tissue sample. But if it's not clear from tests if the cancer has spread to the bones, your doctor might take a sample from the changed bone to find out if it's cancer.

- [References](#)

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Treating Bone Metastases

Treatment options for people with bone metastases depend on many things:

- What kind of primary cancer you have
- Which bones (and how many) the cancer has spread to
- Whether any bones have been weakened or broken
- Which treatments you have already had
- Your symptoms
- Your general state of health

Treatments can often shrink or slow the growth of bone metastases and can help with any symptoms they are causing. But they usually do not make the metastases go away completely.

Systemic (which go through the whole body) and local (treat cancer in the bone) treatments are the 2 main types of treatment for bone metastases. Depending on the extent and location of the cancer, one or both of these types of treatment may be used.

Systemic treatments for bone metastases

Systemic treatments affect the whole body. In many cases, especially if the cancer has spread to many bones, systemic treatments are used because they can reach cancer cells that have spread throughout the body.

Systemic therapies include chemotherapy, hormone therapy, or other medicines that are taken by mouth or injected into the blood. These treatments are not aimed specifically at bone metastases, but they often help treat them. Other systemic treatments, such as radiopharmaceuticals and bisphosphonates, are aimed more specifically at cancer that has reached the bones. Sometimes both of these types of treatments are used at the same time.

Chemotherapy

Chemotherapy (chemo) uses anti-cancer drugs injected into a vein or taken by mouth. These drugs enter the bloodstream and can reach cancer that has spread. Chemo is used as the main treatment for many types of metastatic cancer. Chemo can often shrink tumors, which can reduce pain and help you feel better, but it doesn't make them go away and stay away. It's sometimes used with local treatments such as radiation.

Chemo drugs kill cancer cells but also damage some normal cells, which causes side effects. Side effects depend on the type of drugs, the amount taken, and the length of treatment. Some common chemo side effects include:

- Nausea and vomiting

- Loss of appetite
- Hair loss
- Mouth sores
- Diarrhea
- Increased chance of infection (from a shortage of white blood cells)
- Bleeding or bruising (from a shortage of platelets)
- Feeling weak, short of breath, or tired (from too few red blood cells)

If you'll be getting chemo, ask your cancer care team about the drugs being used and what side effects to expect. Most side effects go away once treatment is stopped.

Be sure to tell your doctor or nurse if you do have side effects, as there are often ways to help with them. For example, drugs can be given to prevent or reduce nausea and vomiting.

To learn more about chemo, see the [Chemotherapy](#) section of our website.

Hormone therapy

Hormones in the body drive the growth of some common cancers. For example, the female hormone estrogen promotes growth of some [breast](#) and [uterus](#) cancers. Likewise, male hormones (androgens such as testosterone) promote growth of most [prostate cancers](#). One of the main ways to treat some of these cancers is to stop certain hormones from affecting the cancer cells. This might be done by lowering hormone levels and/or by blocking the hormone's action at the cancer cell.

Side effects of hormone treatments depend on the type of treatment used. A common side effect for many of these treatments is hot flashes. Drugs that lower testosterone levels can lead to anemia, weight gain, loss of sex drive, breast development, weak bones, and other effects. Drugs that lower estrogen levels can lead to weak bones and body aches.

To learn more about hormone treatment for a certain type of cancer, see our information about that cancer (like [Breast Cancer](#) or [Prostate Cancer](#)).

Targeted therapy

Targeted therapy drugs are designed to go after the cancer cells' inner workings – the programming that sets them apart from normal, healthy cells. These drugs tend to have different side effects from standard chemo drugs.

Targeted therapy can be combined with other treatments, including chemo and hormone therapy. For some types of cancer, like [kidney cancer](#), they are used alone as the main treatment for advanced disease.

To learn more about targeted therapy drugs used for a certain type of cancer, see our information on that type of cancer. General information about targeted therapy and its side effects can be found in [Targeted Therapy](#).

Immunotherapy

Immunotherapy is a systemic therapy that boosts the body's immune system or uses man-made versions of immune system proteins to kill cancer cells. Several types of immunotherapy are used to treat patients with metastatic cancer.

For more information about immunotherapy for a certain cancer, see our information on that cancer (such as [Prostate Cancer](#), [Melanoma Skin Cancer](#), or [Kidney Cancer](#)). More on how immunotherapy works can be found in [Immunotherapy](#).

Radiopharmaceuticals

Radiopharmaceuticals are a group of drugs that carry radioactive elements. These drugs are injected into a vein and settle in areas of bone with active turnover (like those containing cancer spread). Once there, the radiation they give off kills cancer cells.

If cancer has spread to many bones, radiopharmaceuticals work better than trying to aim external beam radiation at each affected bone. In some cases, radiopharmaceuticals may be combined with external beam radiation aimed at the most painful bone metastases. (See "Radiation therapy")

Some of the radiopharmaceuticals approved for use in the United States include:

- Strontium-89 (Metastron[®])
- Samarium-153 (Quadramet[®])
- Radium-223 (Xofigo[®])

Treatment with a radiopharmaceutical can often reduce pain from bone metastases for several months. Re-treatment is possible when the pain returns, although the pain might not be reduced for as long as it was with the first treatment.

These drugs work best when the metastases are blastic, meaning the cancer has stimulated certain bone cells (osteoblasts) to form new areas of bone.

The major side effect of this treatment is lower blood cell counts (mainly white cells and platelets), which could put you at increased risk for [infections](#) or bleeding. This is more of a problem if your counts are already low before treatment. Another possible side effect is a so-called “flare reaction,” in which the pain gets worse for a short time before it gets better.

Bisphosphonates

Bisphosphonates (bis-**FAHS**-fun-ATES) are a group of drugs that may be used to treat cancer that has spread to the bones. These drugs work by slowing down the action of osteoclasts. These bone cells normally dissolve small bits of bones to help remodel them and keep them strong. But osteoclasts are often overactive when cancer spreads to the bones, which can cause problems.

Bisphosphonates can help with cancer that has spread to the bones by:

- Reducing bone pain
- Slowing down bone damage caused by the cancer
- Reducing high blood calcium levels (hypercalcemia)
- Lowering the risk of broken bones

Bisphosphonates tend to work better when x-rays show the metastatic cancer is thinning and weakening the bone (lytic metastases). They don't work as well for treating blastic metastases, where the bones become denser.

The most common side effects of bisphosphonates are fatigue, fever, nausea, vomiting, anemia (a low red blood cell count), and bone or joint pain. But other drugs or the cancer itself can cause many of these effects, too. These drugs can lower calcium levels, so they can't be given to someone whose calcium levels are already low. Bisphosphonates can cause kidney damage and often can't be given to people with poor kidney function.

Medication-related osteonecrosis of the jaw

A rare but very serious side effect of bisphosphonates is osteonecrosis (OS-tee-o-nuh-**CROW**-sis) of the jaw or ONJ. In ONJ, part of the jaw bone loses its blood supply and dies. This can lead to tooth loss and infections or open sores of the jaw bone that won't heal and are hard to treat.

ONJ is very hard to treat and prevention is very important. ONJ sometimes seems to be triggered by having a tooth pulled while on a bisphosphonate. Many cancer doctors advise patients to get a dental check-up and have any tooth or jaw problems treated

before they start taking a bisphosphonate. Maintaining good oral hygiene by flossing and brushing, making sure that dentures fit properly, and having regular dental check-ups might also help prevent ONJ.

Denosumab

Denosumab is another drug that can help when cancer spreads to bone. Like the bisphosphonates, this drug keeps osteoclasts from being turned on, but it does so in a different way, by blocking a substance called *RANKL*.

Common side effects include nausea, diarrhea, and feeling weak or tired. Like the bisphosphonates, denosumab can cause osteonecrosis of the jaw (ONJ), so doctors recommend taking the same precautions (such as having tooth and jaw problems treated before starting the drug). Unlike the bisphosphonates, this drug is safe to give to patients with kidney problems.

Local treatments for bone metastases

Local treatments, including radiation therapy, surgery and other techniques, are directed at a single area instead of at the entire body.

Local treatments can be useful if the cancer has spread to only one bone, or if there are areas of cancer spread that are worse than others and need to be treated right away. These treatments can help relieve pain or other symptoms caused by one or a few bone metastases.

Sometimes, local treatments such as surgery are used to stabilize a bone that's in danger of breaking because it's been weakened by cancer. It's much easier to keep a damaged bone from breaking than to try and fix it after it has broken.

External radiation therapy

Radiation therapy uses high-energy rays or particles to destroy cancer cells or slow their growth. When a cancer has spread to a small number of spots in bones, radiation can be used to help relieve symptoms such as pain. If the bone is treated with radiation before it gets too weak, it may also help prevent a later fracture.

The most common way to give radiation for bone metastasis is to focus a beam of radiation from a machine outside the body. This is called *external beam radiation*. Special types of external beam radiation therapy are able to focus the radiation more

precisely to lower some side effects. These include *3D-conformal radiation* and *intensity modulated radiation therapy*. See our [radiation therapy information](#) to learn more.

Radiation therapy for bone metastasis can be given as 1 or 2 large doses or in smaller amounts over 5 to 10 treatments that result in a somewhat larger total dose. Both schedules give the same degree of pain relief. The major advantage of the 1- or 2-dose treatment is that fewer trips are needed for treatment. The advantage of more treatments is that patients are less likely to need re-treatment because of the pain coming back.

Stereotactic body radiation therapy (SBRT): This is a special kind of external beam radiation that gives high doses of radiation therapy very precisely. Instead of giving small doses of radiation each day for several weeks, SBRT gives very focused beams of high-dose radiation on one or a few days. Several beams are aimed at the tumor from different angles. To focus the radiation precisely, the person is put in a specially designed body frame for each treatment. Like other forms of external radiation, the treatment itself is painless.

Side effects

Common side effects of radiation therapy include

- Extreme tiredness (fatigue)
- Loss of appetite
- Skin changes where the radiation passes through, which can range from redness to blistering and peeling
- Low blood counts

Other side effects depend on what area is treated. For example, radiation to the pelvis can lead to diarrhea because the intestines can be affected.

Ablation techniques

Putting a needle or probe right into a tumor and using heat, cold, or a chemical to destroy it is called *ablation*. It may be used if only 1 or 2 bone tumors are causing problems.

Radiofrequency ablation (RFA) is a common type. It uses a needle that carries an electric current. The tip of the needle is put into the bone tumor. CT scans may be used to be sure the needle is in the right place. Electric current sent through the needle heats the tumor to destroy it. RFA is usually done while the patient is under general anesthesia (deeply asleep and not able to feel pain).

In another type of ablation, called *cryoablation*, a very cold probe is put into the tumor to freeze it, killing the cancer cells. Other methods use alcohol to kill the cells or other ways to heat the tumor (such as laser-induced interstitialthermotherapy). After the cancer tissue is destroyed, the space left behind may be filled with bone cement. (See below.)

Bone cement

Another option to strengthen and/or stabilize a bone is to use injections of quick-setting bone cement or glue called PMMA (polymethyl methacrylate).

When PMMA is injected into a spinal bone it's called *vertebroplasty* (**VUR**-tuh-bro-PLASS-tee) or *kyphoplasty* (**KI**-foe-PLASS-tee). This helps stabilize the bone and relieves pain in most people. Vertebroplasty often reduces pain right away and can be done in an outpatient setting.

When the bone cement is injected to strengthen bones other than the spine, it's called *cementoplasty* (suh-**MEN**-toe PLASS-tee). Sometimes, it's used along with surgery, radiation, radiofrequency ablation, or other treatments.

Surgery

Surgery used to treat a bone metastasis is done to relieve symptoms and/or stabilize the bone to prevent fractures (breaks).

Bone metastases can weaken bones, leading to fractures that tend to heal very poorly. An operation can be done to place screws, rods, pins, plates, cages or other devices to make the bone more stable the bone and help prevent fractures. If the bone is already broken, surgery can often relieve pain quickly and help the patient return to their usual activities.

Sometimes a person can't have surgery because of poor general health, other complications of the cancer, or side effects of other treatments. If doctors can't surgically reinforce a bone that has metastasis, a cast or splint may help stabilize it to reduce pain so the person can move around.

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-

the art cancer treatment. In some cases, they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials. You can also call our clinical trials matching service at 1-800-303-5691 for a list of studies that meet your medical needs, or see [Clinical Trials](#) to learn more.

Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn't mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor's medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be dangerous.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision. See [Complementary and Alternative Medicine](#) to learn more.

Treating Problems Caused by Bone Metastases

Pain

There are many ways to treat pain caused by cancer spread to bone. Almost any of the local or systemic treatments commonly used for bone metastases can be helpful in treating pain.

Pain medicines are also very helpful. There are many different kinds of pain medicines used to treat cancer pain. There are also a lot of ways the medicines can be taken, such as pills, patches, sprays, and pumps that let you put the medicine into your body when

you need it.

You should never accept pain as a normal part of having cancer. All pain can be treated, and most pain can be controlled or relieved. Talk to your cancer care team or contact us to learn more about [managing cancer pain](#).

High calcium levels (hypercalcemia)

As cancer cells damage the bones, calcium from the bones is released into the blood. This can lead to problems caused by high blood calcium levels. The medical word for high calcium levels is hypercalcemia (HI-per-kal-**SEE**-me-uh).

Early symptoms of having too much calcium in the blood include:

- Constipation
- Passing urine very often
- Feeling sluggish or sleepy
- Feeling thirsty all the time and drinking large amounts of fluid

Late signs and symptoms can include muscle weakness, muscle and joint aches, confusion, coma, and kidney failure.

High calcium levels affect the kidneys, which can cause you to pass too much urine and become dehydrated. The dehydration gets worse as the calcium level goes up. Because of this, giving large amounts of intravenous (IV) fluids is a main part of the treatment for hypercalcemia.

Bisphosphonate (bis-**FAHS**-fun-ATE) drugs are also used to bring blood calcium levels down quickly. These drugs are given into the vein by IV infusion and may be repeated monthly. Other drugs can be used if these don't work.

Once the calcium level is back to normal, treating the cancer can help keep the calcium level from getting too high again.

Broken bones

When cancer moves into bones, it can make them weak and more likely to break (fracture). The leg bones near the hip often fracture because these bones support most of your weight, but other bones can fracture too.

Cancer in the bone may cause severe pain for a while before the bone actually breaks. If an x-ray is taken at that time, it may show that the bone is likely to break. When possible, your doctor will try to prevent the fracture. For arm and leg bones, a metal rod is put through the weak part of the bone to help support it. This surgery is done while you're under general anesthesia (in a deep sleep and unable to feel pain).

If the bone has already broken, then something else will be done to support the bone. Usually surgery is done to put a steel support over the fractured area of the bone.

Radiation treatments may be given after surgery to try to prevent any more damage. The radiation will not make the bone stronger, but it may stop further damage.

Bones of the spine (the vertebrae [VER-tuh-bray]) can also fracture. If this happens, vertebroplasty (**VUR**-tuh-bro-PLASS-tee) may be used to support them. In this procedure a type of bone cement is injected into the damaged bones.

Medicines you take or the cancer itself may make you confused, dizzy, or weak. This can lead to falls and accidents. Falls can cause fractures, especially in bones weakened by cancer. Talk with your cancer care team about safety equipment you can use at home, such as shower chairs, walkers, or handrails.

Spinal cord compression: When cancer threatens to paralyze, it's an emergency

If the cancer spreads to a bone in the spine, sometimes it can grow large enough to press against and squeeze (compress) the spinal cord. This can show up in different ways:

- Back pain (sometimes with pain going down one or both legs)
- Numbness of the legs or belly
- Leg weakness or trouble moving the legs
- Loss of control of urine or stool (incontinence) or problems passing urine

If you notice symptoms like these, call your doctor right away or go to the emergency room. If not treated right away, spinal cord compression can lead to life-long paralysis (inability to walk or even move).

If the cancer is just starting to press on the spinal cord, treatment can help prevent paralysis and help relieve the pain. Radiation is often used as part of the treatment, often along with a type of drug called a steroid or corticosteroid. Often the radiation is started within the first 12 to 24 hours.

If the spinal cord is already showing signs of damage (such as weakness in the legs), immediate surgery followed by radiation may be the best treatment. This may allow a patient to walk and function better than if they get radiation alone. People with very advanced cancer or other serious medical problems may not be able to have this kind of surgery.

Talking to Your Doctor About Bone Metastases

Questions to ask your doctor

It's important to have open and honest talks with your doctor. Your doctor and the rest of your cancer care team want to answer all of your questions and help you make decisions that are best for you. You may want to consider asking these questions:

- How do you know that this is the same cancer I had before and not a new cancer?
- Which bones has the cancer spread to?
- Which treatments do you recommend, and why?
- What's the goal of treatment? To cure the cancer? Help me live longer? Relieve or prevent some of the symptoms of the cancer?
- What are my chances of treatment working?
- What can I expect to feel like?
- What side effects are likely with the treatment(s) you recommend, and what can I do to help reduce these side effects?
- Are there any problems I might notice that you need to know about right away?
- How would treatment affect my daily activities?
- What treatment options do I have for relieving bone pain or other symptoms?
- What can I do to help prevent broken bones?
- What would we do if a bone breaks?
- Are there clinical trials that may be right for me?
- How do I get help after hours or on weekends?

Other things to think about

Palliative care

[Palliative or supportive treatment](#) is treatment that helps relieve symptoms and make you feel better, but it's not expected to cure the disease. You've probably had palliative (PAL-ee-uh-tiv) care before, such as when you were given pain medicine or anti-nausea drugs during cancer treatment. Palliative care an important part of treating bone metastases.

Bone metastases usually cannot be cured, but palliative radiation may help shrink an area of bone metastasis and keep the bone from breaking. The goal at this time is for you to be as comfortable and well as possible.

Sometimes the palliative care treatments you get to control your symptoms are the same as the treatments used to treat cancer, such as radiation to relieve bone pain or chemo to shrink a tumor and keep it from blocking the bowel or pressing on nerves. But this is not the same as getting treatment to try to cure the cancer.

Talk to your cancer care team about what can be done to make sure you have the best possible quality of life.

Plans you may want to make

It's important to have an idea of what your prognosis might be – how long you might have. Your doctor can't say for sure, but should be able to give a general time frame. Sometimes doctors don't talk about [end of life](#) issues and you might have to bring it up. This will help you plan for personal, [legal](#), and/or medical concerns you want to take care of while you can. Making your wishes known to your family and health care team can give you peace of mind. It also can ease stress on your loved ones if the time comes that you aren't able to tell them what you want.

At some point, you may do better on [hospice care](#). Most of the time, this is given at home. Your cancer may be causing symptoms or problems that need attention, and hospice focuses on your comfort. You should know that getting hospice care doesn't mean you can't have treatment for the problems caused by your cancer or other health conditions. It just means that the focus of your care is on living life as fully as possible and feeling as well as you can at this difficult stage of your cancer.

Again, including you cancer care team and the people you care about in these discussions can help you decide what needs to be done and when to do it.

- [References](#)

National Cancer Institute. Planning the Transition to End-of-Life Care in Advanced Cancer–Patient Version (PDQ®). November 24, 2015. Accessed at

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