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 is called metastasis. Metastasis can occur when cells break away from a cancerous tumor and travel through the bloodstream or through lymph vessels to other areas 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 begin to grow and form new tumors. When cancer spreads, we say that it metastasizes. If there is 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 by 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.

Sometimes, no metastases are seen when the cancer is first found. Instead, they are found later, after the patient has been treated and was thought to be cancer free. When a cancer has come back after treatment, it’s called recurrence. Recurrence is not the same as metastases – it can also occur at or near the place the cancer started. When it does come back as metastases, it’s called a distant recurrence. For a cancer to recur as metastatic disease, some cancer cells had to have broken off from the primary tumor and survived the initial treatment. These cells traveled through the body and started growing in new places.

Different cancers tend to spread to different sites, but some of the most common sites of distant recurrence include the bones, liver, brain, and lungs.
What does it mean when you have bone metastases?

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

The bone contains 2 main kinds of cells. The osteoblast is the cell that forms new bone, and the osteoclast is the cell that dissolves old bone. New bone is always forming while old bone is dissolving. This helps keep the bones strong.

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.

Although cancer can spread to nearly all tissues of the body, one of the most common sites of cancer spread is the bones. Areas of cancer spread in the bones are called bone metastases.

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 actually much more common than primary bone cancers, especially in adults.

This document is only about bone metastasis. If you would like information on primary bone cancers, see our documents called Bone Cancer, Osteosarcoma, and Ewing Family of Tumors.

Many people with cancer will develop bone metastases at some point in their disease. Bones are often a site of metastases for certain common tumors, such as breast and prostate cancers.

Metastases can occur in any bone in the body, but are most often found in bones near the center of the body. The spine is the most common site of bone metastasis. 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 sites in the body it is rarely able to be cured, but often it can still 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. Other treatments can help prevent or manage cancer symptoms. (See the section called “How are bone metastases treated?”)

What are the key statistics about bone metastases?

Most people who die of cancer will have metastases somewhere in the body. But certain cancers such as breast, prostate, lung, thyroid, and kidney cancers are more likely to spread to bone.
In people with breast and prostate cancer, the bone is often the first distant site of cancer spread. More than 2 out of 3 breast and prostate cancers that spread to other parts of the body spread to the bones.

Of lung, thyroid, and kidney cancers that spread to other parts of the body, about 1 out of 3 will spread to the bones.

**What are the risk factors for bone metastases?**

A risk factor is anything that affects your chance of getting a disease. Simply having cancer is a risk factor for bone metastases. Still, some people with cancer develop bone metastases and others do not. Doctors can’t predict for certain who will develop bone metastases. But they do know that certain kinds of cancer (breast, prostate, lung, thyroid, and kidney cancers) are more likely to spread to bones than others.

Among people with the same kind of cancer, tumors that are larger and have already spread to lymph nodes are generally more likely to spread to bone. For some kinds of cancer, a high grade (where the cancer cells look very abnormal under a microscope) and certain genetic changes make the cancer more likely to spread to bones.

Having a cancer that’s found after it has spread to other organs raises your risk of bone metastases. Finding cancer early (when it’s small) often means it has not yet had a chance to spread. This can give a person a better chance of successful treatment and a lower risk of future metastases.

**Do we know why cancers metastasize to bones?**

**How cancer cells spread**

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

- They have to be able to break away from the original tumor and enter 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 into a new organ.
- They then need to be able to grow and thrive in their new location.

All the while, they 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 they started in.
Where a cancer metastasizes depends on its exact type and where it started in the body. Some cancer cells carry substances on their surfaces that help them stick to different organs. Cancer cells that tend to spread to bone may attach better to the cells and supporting network in bone. The cancer cells may release chemicals that affect how the bone cells work, making it easier for the cancer cells to get a foothold in the bone. The bone cells themselves may also release hormone-like factors that help some cancer cells grow.

Discoveries about the interactions between cancer cells and normal bone cells are being used to develop new ways to treat or even prevent bone metastasis.

**What happens when cancer grows in bones?**

Bones are constantly being remade to keep them strong. Two major kinds of bone cells normally work together to keep bones healthy and strong. The cells that lay down new bone are called *osteoblasts*. The cells that break down old bone are called *osteoclasts*.

Cancer cells can affect bones in 2 ways.

- Often, the cancer cells make substances that turn on the *osteoclasts*. This leads to bone being broken down without new bone being laid down. This weakens the bones. The holes that develop when parts of bones dissolve are called *osteolytic* or *lytic* lesions. Lytic lesions are so weak that they can cause the bone to break with little or no trauma.

- Sometimes, the cancer cells release substances that turn on the *osteoblasts*. This leads to new bone being laid down without old bone broken down first. This makes areas of the bones harder, a condition called *sclerosis*. The areas in bones where this occurs are called *osteoblastic* or *blastic* lesions. Although these blastic areas are harder, the structure of the bone is abnormal and these areas actually break more easily than normal bone.

Both lytic and blastic types of bone metastases can cause pain. Bone metastasis is one of the most frequent causes of pain in people with cancer.

When cancer spreads to the bones of the spine, it can press on the spinal cord. This can cause nerve damage that may even progress 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*).

Bone metastasis can also cause other problems that can make it hard to keep up your usual activities and lifestyle.

**Can bone metastases be prevented?**

Doctors don’t know how to prevent all bone metastases. But it may be possible to prevent many cases of bone metastasis if cancers are found and treated effectively before they
have had a chance to spread. This is especially true for cancers that tend to spread to the
bones, such as breast and prostate cancers.

Some cancers, such as breast cancer, can often be found early with screening tests, before
they have a chance to spread. But many cancers cannot reliably be found early by any of
the tests we have now, and some cancers may have already spread before they are found.

There are ways to reduce your risk of getting cancer in the first place, such as not
smoking, staying at a healthy weight, getting regular physical activity, and eating a
healthy diet (including limiting alcohol).

Researchers are studying ways to prevent metastasis in people who already have cancer,
but at this time the best way to do this is to treat the cancer before it has spread.

**Signs and symptoms of bone metastases**

Sometimes bone metastases are found in people without symptoms when tests are done to
look for cancer spread.

Many of the symptoms mentioned 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 doctors and
nurses about any new symptoms such as these. 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 often
comes and goes at first. It tends to be worse at night and may be relieved by 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. Your doctor will want to x-ray the painful
area and may use other imaging tests to look for changes. 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 (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 much at
all. In some cases, a fracture is the first sign of bone metastasis.

The most common sites of fractures are 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 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 it isn’t treated, 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).

Spinal cord compression is an emergency that must be treated right away to prevent permanent damage to the spinal cord and paralysis.

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), which can cause problems such as constipation, nausea, loss of appetite, and extreme thirst. The high calcium causes you to make more urine, leading to dehydration. It can also make you feel very tired and weak. You may be sleepy or even confused. If hypercalcemia is not treated, you can even go into a coma.

How are bone metastases diagnosed?

If you are diagnosed with cancer, bone metastases may sometimes be found before they have a chance to cause any symptoms. Your doctor may order lab tests and imaging tests (such as x-rays or bone scans) to see how far the cancer has spread. This may be done before, during, and after treatment. These tests may show bone metastases.

In other cases, a symptom such as bone pain may be the first sign of bone metastases. Imaging tests or other tests may then be done to confirm this is what is causing your symptoms.

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 for a number of reasons, including to help find out if cancer has spread to the bones. 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 ordered if a person with cancer is having bone pain or other symptoms.

There are 2 types of bone metastases.

In osteolytic or lytic metastases, the cancer cells dissolve some of the minerals in the bone, making an area of the bone less dense. If the cancer has destroyed enough of the bone, these changes appear on x-rays as a darker hole in the gray-white bone image.

Osteoblastic or blastic metastases cause an area of the bone to appear denser or sclerotic. On x-rays, these metastases show up as spots that are whiter than the bone around them. This is seen more commonly in certain cancers, such as prostate cancer and some breast cancers.

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 can help show if a cancer has spread to bones. This test shows the entire skeleton, and it can sometimes show bone metastasis that is not yet causing symptoms.

For a bone scan, a small amount of low-level radioactive material is injected into a vein. The substance settles in areas of damaged bone throughout the entire skeleton over the course of a couple of hours. You then lie on a table for about 30 minutes while a special camera detects the radioactivity and creates a picture of the skeleton.

Areas of active bone changes appear as “hot spots” on the skeleton because they attract radioactivity. These areas may suggest the presence of cancer, but other bone diseases can also cause the same pattern. To know exactly what’s causing the hot spots, other imaging tests such as plain x-rays or MRI scans, or even a bone biopsy might be needed.

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. This happens most often if the metastases are purely osteolytic (where bone is less dense). In some patients, the scan may show no radioactivity in areas of bone that the cancer has already destroyed.

Computed tomography (CT)

The CT scan is an x-ray test that produces detailed cross-sectional images of the body. Instead of taking one picture, like a regular x-ray, a CT scanner takes many pictures as it rotates around you. A computer then combines these pictures into images of slices of the
part of your body being studied. A CT scan creates detailed images of both the bones and the soft tissues in the 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 in 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).

Before the scan, you may be asked to drink 1 to 2 pints of a liquid called oral contrast. This helps outline the intestine so that certain areas are not mistaken for tumors and so isn’t needed if the scan is just to look at the bones. You may also get an IV (intravenous) line through which a different kind of contrast dye is injected. This helps better outline structures in your body. The injection may cause some flushing (a feeling of warmth, especially in the face). Some people are allergic and get hives. Rarely, more serious reactions like trouble breathing or low blood pressure can occur. Be sure to tell the doctor if you have any allergies or have ever had a reaction to any contrast material used for x-rays.

You will need to lie still on a table while they are being done. During the test, the table slides in and out of the scanner, a ring-shaped machine that goes around the table. Some people feel a bit confined by the ring they move through while the pictures are being taken.

If a suspected area of bone metastasis is deep in the body, a CT scan is sometimes used to help get a sample of tissue. For this procedure, called a CT-guided needle biopsy, you stay on the CT scanning table while a radiologist guides the biopsy 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 fragment of tissue) or a core needle biopsy sample (a thin cylinder of tissue) is then removed and looked at under a microscope.

**Magnetic resonance imaging (MRI)**

MRI scans use radio waves and strong magnets instead of x-rays. The energy from the radio waves is absorbed by the body and then released in a pattern formed by the type of body tissue and by certain diseases. A computer translates the pattern of radio waves given off by the tissues into a very detailed picture of parts of the body. Like a CT scan, MRI produces detailed cross-sectional slices of the body. Less often, a contrast material might also be used in MRI scans.

MRI scans may take up to an hour. For this test, you lie on a table that slides inside a long, narrow tube, which is confining and can be distressing for some people. Special open MRI machines can help with this, but the test still requires staying still for long periods of time. The machines also make buzzing and clicking noises that may be disturbing.
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, a form of radioactive sugar (known as *fluorodeoxyglucose* or *FDG*) is injected into the blood. The amount of radioactivity used is very low. Because cancer cells in the body grow quickly, they absorb large amounts of the sugar. After about an hour, you will lie on a table in the PET scanner for about 30 minutes while a special camera creates a picture of areas of radioactivity in the body. The picture is not finely detailed like a CT or MRI scan, but it gives helpful information about the whole 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 detailed on the location of the areas of cancer spread.

**Lab tests**

**Tumor markers**

Some types of cancer release certain substances called *tumor markers* into the bloodstream. Patients with these types of cancer may have blood tests at regular intervals to see if levels of these markers are rising. An increase in tumor marker levels can mean that the cancer has spread, but it doesn’t mean that the cancer has spread to the bones. Other tests will be needed to show if the metastases are in the bone or somewhere else in the body.

Prostate-specific antigen (PSA) is an example of a tumor marker. PSA levels are usually higher than normal in a man with prostate cancer, but they should become very low after treatment. If they start to rise again, it might suggest that the cancer has come back. If the levels are very high, it could mean the cancer has spread to the bones and more tests are often ordered.

For information about tumor markers that may be useful for your cancer, see our document about that kind of cancer.
Other 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). Although problems other than bone metastases can cause high calcium levels, 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 may increase. Alkaline phosphatase is also made by the liver, so high alkaline phosphatase levels can mean liver problems (they don’t always mean bone metastases).

Newer types of blood tests are being studied that may be able to detect bone metastases earlier. (See the section, “What’s new in bone metastasis research and treatment?” for more on this.)

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 have 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 abnormal area to find out if it’s cancer.

Needle biopsy

There are 2 main types of needle biopsies.

**Fine needle biopsy or aspiration**: With fine needle aspiration (FNA), a very thin, hollow needle is used to take a small amount of fluid and small pieces of tissue from the tumor. The biopsy is done after numbing the area. It may be uncomfortable, but is not usually painful.

If the suspicious area can be seen or felt near the surface of the body, the doctor can aim the needle right into the area. If the suspicious area cannot be felt or seen because it’s deep inside the body, the doctor may use CT scans to guide the needle. This is called a
CT-guided needle biopsy. Sometimes, ultrasound may be used to aim the needle instead of CT.

It can be hard to get a fine needle into a bone, so this type of biopsy is done only if the bone is weakened or if the cancer has spread into the soft tissue around the bone.

Core needle biopsy: This type of biopsy is much like FNA except it uses a larger needle. The needles used for a core biopsy remove a small cylinder of tissue.

Surgical bone biopsy

Sometimes needle biopsies don’t provide an answer, and a surgical biopsy is needed. In this procedure, the surgeon cuts into the bone to remove a small part of the tumor. This is also called an incisional biopsy. It’s rarely needed to diagnose bone metastases.

How are bone metastases treated?

This information represents the views of the doctors and nurses serving on the American Cancer Society’s Cancer Information Database Editorial Board. These views are based on their interpretation of studies published in medical journals, as well as their own professional experience.

The treatment information in this document is not official policy of the Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It’s intended to help you and your family make informed decisions, together with your doctor.

Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don’t hesitate to ask him or her questions about your treatment options.

General treatment information

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

• What kind of 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

Other factors may also be considered, such as features of the cancer cells (for instance, in the case of breast cancer whether they contain estrogen receptors).

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

Systemic treatments can 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.

**Local treatments**

Local treatments are directed at a single area. These treatments can be useful if the cancer has spread to only one bone, or if there is one or a few areas of cancer spread that are more advanced than others and need to be treated right away.

Local treatments include external radiation therapy, surgery, and related techniques. 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 has 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.

**Systemic treatments for bone metastases**

This section describes the types of systemic treatments used for cancers that have spread to bones. These treatments can reach cancer cells anywhere in the body.

Of course, cancers can also spread to other parts of the body. For more detailed information about treating a specific type of metastasis (such as breast cancer metastasis), please see our information on that type of cancer.

Some systemic treatments, such as chemotherapy, hormone therapy, targeted therapy, and immunotherapy, are used to treat cancer cells anywhere in the body. 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.

If you’d like more information on a drug used in your treatment or a specific drug mentioned in this section, see our Guide to Cancer Drugs, or call us with the names of the medicines you’re taking.

**Chemotherapy**

Chemotherapy (chemo) uses anti-cancer drugs that are usually 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, although it does not usually make them go away completely 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
- Loss of hair
- Mouth sores
- Diarrhea

Chemo can also damage the blood-producing cells of your bone marrow, which may lead to low blood cell counts. This can cause:

- Increased chance of infection (caused by a shortage of white blood cells)
- Problems with bleeding or bruising (caused by a shortage of blood platelets)
- Feeling weak or tired (caused by low red blood cell counts, called anemia)

Most side effects go away once treatment is stopped. Things can be done to help prevent or control many of the side effects of chemo. For example, drugs can often prevent or reduce nausea and vomiting.

For more information about the chemo used for a certain type of cancer, see our document about that type of cancer (like Breast Cancer, Colorectal Cancer, Non-Small Cell Lung Cancer). To learn more about chemo in general, please see A Guide to Chemotherapy or go to the treatment section on 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. The main ways of doing this are lowering hormone levels and/or blocking the hormone’s action at the cancer cell.

One way to lower hormone levels is to surgically remove organs that make the hormones. For a woman with breast cancer, removing the ovaries lowers estrogen levels. Men with prostate cancer can be treated by removing the testicles to lower testosterone levels.

Another way which is used more often to lower hormone levels, is to give drugs to keep the hormones from being made. This is a common approach to hormone therapy for
prostate cancer. Men can be given drugs such as luteinizing hormone-releasing hormone (LHRH) agonists or antagonists, which, in men, stop the testicles from making testosterone. The same drugs can be given to women to stop the ovaries from making estrogen.

Other drugs can be helpful in lowering hormone levels further in patients whose ovaries or testicles aren’t making hormones.

Another approach is to block the hormone’s action on the cancer cell. Drugs that do this include anti-androgens, selective estrogen receptor modulators, and anti-estrogens. For instance, tamoxifen blocks the effects of estrogen on breast cancers.

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.

For more information about hormone treatment for a specific type of cancer, see our document about that cancer (like Breast Cancer or Prostate Cancer).

**Targeted therapy**

Although any drug used to treat cancer can be considered chemotherapy, drugs that work differently from traditional chemo drugs are often grouped separately. Some of these are called targeted therapy drugs. Targeted therapy drugs often go after the cancer cells’ inner workings – the programming that sets them apart from normal, healthy cells. These drugs tend to have different (and sometimes less severe) side effects from standard chemotherapy drugs. Targeted therapy drugs 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.

For information about targeted therapy drugs used for a specific type of cancer, see our document about that type of cancer. General information about targeted therapy and its side effects can be found in our document 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, including cytokines, monoclonal antibodies, and even a tumor vaccine. For more information about immunotherapy for a certain cancer, see our document about that cancer (such as Prostate Cancer, Melanoma Skin Cancer, or Kidney Cancer). More information about how immunotherapy works can be found in our document called Immunotherapy.
Radiopharmaceuticals

Radiopharmaceuticals are a group of drugs that have 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” in the “Local treatments” section.)

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

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

All of these have been shown to help with the pain caused by bone metastases. When given to patients with prostate cancer that has spread to the bones, radium-223 has also been shown to help patients live longer.

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. Blastic metastases happen most often in prostate cancer that has spread to bone. They are found less often in breast cancers and are uncommon in most other cancers.

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.

Radioactive iodine

Radioactive iodine (I-131) can also be considered a radiopharmaceutical. Unlike the other drugs discussed in this section, it does not concentrate in areas of bone with active turnover. It concentrates in thyroid tissue, and is used to treat thyroid cancer spread in bones and elsewhere in the body. This is discussed in more detail in our document, Thyroid Cancer.

Bisphosphonates

Bisphosphonates (bis-FAHS-fun-ates) are a group of drugs that are useful in treating cancer that has spread to the bones. These drugs work by slowing down the action of
Bone cells called osteoclasts. These 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.

Some bisphosphonates are taken by mouth, but most of those used as treatment for cancer are given by vein (IV), usually every 3 to 4 weeks. The most commonly used drugs are zoledronate (zoledronic acid or Zometa®) and pamidronate (Aredia®). People given these drugs are usually advised to take a supplement containing calcium and vitamin D to prevent problems with low calcium levels.

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 cannot be given to people with poor kidney function.

A rare but very serious side effect of bisphosphonates is osteonecrosis (os-tee-o-nuh-CROW-sis) of the jaw (ONJ). In this condition, 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 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 (Xgeva®, Prolia®) 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.

Studies have shown that it can help prevent or delay problems like fractures in patients with bone metastases at least as well as zoledronate. It also can be helpful when zoledronate is no longer working.
This drug is injected under the skin every 4 weeks. Patients given this drug may need to take a supplement containing calcium and vitamin D to prevent problems with low calcium levels.

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 focus on treating one or a few bone metastases.

**External radiation therapy**

This type of treatment 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. The most common way to give radiation for a bone metastasis is to focus a beam of radiation from a machine outside the body. This is known as 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. You can learn more about these in *Understanding Radiation Therapy: A Guide for Patients and Families.*

If a bone is so weak that there’s a risk of a bone fracture, radiation is not likely to help. Instead the bone must be stabilized with surgery (see below). But if the bone is treated with radiation before it gets too weak, it may help prevent a later fracture.

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. Most radiation oncologists (doctors who specialize in radiation therapy) prefer to give radiation over several sessions. 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.

External radiation therapy is much like getting an x-ray, but the radiation is more intense. To reduce the risk of side effects, doctors figure out the exact dose and aim the beam carefully to hit the target. The procedure itself is painless. Each actual treatment lasts only a few minutes, although the set-up time – getting you into place for treatment – usually takes longer.

**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.

External beam radiation might be a good option if you have 1 or 2 areas of cancer spread in the bone that are causing symptoms. But if you have many metastases scattered throughout your bones, treatment with a radiopharmaceutical is more likely to be helpful.

**Side effects**

Common side effects of radiation therapy include

- Fatigue (tiredness)
- 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.

If you would like more information about radiation therapy, see our document called *Understanding Radiation Therapy: A Guide for Patients and Families*.

**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.

A common type of ablation, *radiofrequency ablation* (RFA) 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 delivered 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 interstitial thermotherapy*). After the cancer tissue is destroyed, the space left behind may be filled with bone cement (discussed below).

**Surgery**

Although surgery to remove a primary bone tumor (one that started in the bone) is often done to try and cure the cancer, the purpose of surgically treating a bone metastasis is 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.

**Bone cement**

Another option to strengthen and stabilize a bone is to use injections of quick-setting bone cement or glue called *polymethyl methacrylate* (PMMA). 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. When the bone cement is injected to strengthen bones other than the spine, it’s called *cementoplasty*. Sometimes, it’s used along with surgery, radiation, radiofrequency ablation, or other treatments, depending on the person’s medical situation. A person with spinal cord compression, an infection, or in poor health might not do well with this treatment.

**Pain medicines for bone metastases**

There are many ways to relieve pain caused by bone metastasis. Some treatments are directed at the cancer cells to kill them, slow their growth, or reduce bone damage. Still, these treatments might not relieve the pain right away or stop it completely.

If your treatment does not relieve your pain, tell your doctor or nurse right away. Don’t be afraid to use pain medicines or other treatments, including complementary therapies, to help with your pain. Getting effective pain relief will help you feel better. It will make it easier for you to focus on the things that make you happy and that are important in your life.

Medicine taken by mouth is the most common way to treat pain. Often 2 or more drugs are used together. Your doctor may start with drugs like acetaminophen (Tylenol®) or non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (Motrin®). These drugs can be very helpful in treating bone pain. If these aren’t helping, you probably will be given an opioid (a pain medicine related to morphine). Commonly used opioids include codeine, hydrocodone, morphine, or oxycodone. Opioids are considered the best drugs for helping cancer patients control their pain. Sometimes an opioid is combined with acetaminophen or an NSAID in a single pill or capsule.

You may worry about becoming addicted to opioids, but this is almost never a problem if the drug is being used as directed to treat cancer pain. Side effects such as drowsiness and constipation are likely, but are usually manageable. Constipation requires treatment with other drugs, and drowsiness usually gets better with time. Being free of pain can help you
focus on what’s most important to you. These are just some of the reasons you shouldn’t hesitate to ask for pain medicines.

If you are in pain and have been given prescription pain medicines, you should take them on a regular schedule as directed. It’s often easier to prevent pain than to treat it once it starts. Keep your cancer team informed about how the medicines are working, and whether you can get around and take care of yourself. If the medicines you are on are not working, your cancer team may need to try other medicines or other ways to control your pain. For more information on managing pain, please see our document, Guide to Controlling Cancer Pain.

Clinical trials for bone metastases

You may have had to make a lot of decisions since you’ve been told you have cancer. One of the most important decisions you will make is choosing which treatment is best for you. You may have heard about clinical trials being done for your type of cancer. Or maybe someone on your health care team has mentioned a clinical trial to you.

Clinical trials are carefully controlled research studies that are done with patients who volunteer for them. They are done to get a closer look at promising new treatments or procedures.

If you would like to take part in a clinical trial, you should start by asking your doctor if your clinic or hospital conducts clinical trials. You can also call our clinical trials matching service for a list of clinical trials that meet your medical needs. You can reach this service at 1-800-303-5691 or on our website at www.cancer.org/clinicaltrials. You can also get a list of current clinical trials by calling the National Cancer Institute’s Cancer Information Service toll-free at 1-800-4-CANCER (1-800-422-6237) or by visiting the NCI clinical trials website at www.cancer.gov/clinicaltrials.

There are requirements you must meet to take part in any clinical trial. If you do qualify for a clinical trial, you must decide whether or not to enter (enroll in) it.

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 only way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

You can get a lot more information on clinical trials in our document called Clinical Trials: What You Need to Know. You can read it on our website or call our toll-free number to have it sent to you.

Complementary and alternative therapies for bone metastases

When you have cancer you are likely to hear about ways to treat your cancer or relieve symptoms that your doctor hasn’t mentioned. Everyone from friends and family to Internet groups and websites will offer ideas on what might help you. These methods can
include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

What are complementary and alternative therapies?

Not everyone uses these terms the same way, and they are used to refer to many different methods, so it can be confusing. We use complementary to refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor’s medical treatment.

**Complementary methods:** Most complementary treatment methods are not offered as cures for cancer. Mainly, they are used to help you feel better. Some methods that are used along with regular treatment are meditation to reduce stress, acupuncture to help relieve pain, or peppermint tea to relieve nausea. Some complementary methods are known to help, while others have not been tested. Some have been proven to not be helpful, and a few have even been found harmful.

**Alternative treatments:** Alternative treatments may be offered as cancer cures. These treatments have not been proven safe and effective in clinical trials. Some of these methods may pose danger, or have life-threatening side effects. But the biggest danger in most cases is that you may lose the chance to be helped by standard medical treatment. Delays or interruptions in your medical treatments may give the cancer time to grow and make it less likely that treatment will help.

Finding out more

It’s easy to see why people with cancer think about alternative methods. You want to do all you can to fight the cancer, and the idea of a treatment with few or no side effects sounds great. Sometimes medical treatments like chemotherapy can be hard to take, or they may no longer be working. But the truth is that most of these alternative methods have not been tested and proven to work in treating cancer.

As you consider your options, here are 3 important steps you can take:

- **Look for “red flags” that suggest fraud.** Does the method promise to cure all or most cancers? Are you told not to have regular medical treatments? Is the treatment a “secret” that requires you to visit certain providers or travel to another country?

- **Talk to your doctor or nurse about any method you are thinking about using.**

- **Contact us at 1-800-227-2345 to learn more about complementary and alternative methods in general and to find out more about the specific methods you are looking at. You can also check them out on the *Complementary and Alternative Medicine* page of our website.**
The choice is yours

Decisions about how to treat or manage your cancer are always yours to make. If you want to use a non-standard treatment, learn all you can about it and talk to your doctor about it. With good information and the support of your health care team, you may be able to safely use the methods that can help you while avoiding those that could be harmful.

Treating problems caused by bone metastases

Pain

There are many ways to treat pain caused by cancer spread to bone. Almost any of the treatments mentioned in earlier sections can be helpful in treating pain.

Pain medicines are often very helpful. Treating the cancer, such as with chemotherapy (chemo) or hormone therapy, can also help. Radiopharmaceuticals may be a good choice if the cancer is widespread in the bones (these were discussed in the section about systemic treatments). If there’s only one or a few areas of cancer causing bone pain, local treatments like radiation therapy or ablation can give pain relief. If the pain is caused by a broken bone, treating the fracture with surgery helps a lot. Keeping the bones strong with bisphosphonates (zoledronic acid/Zometa or pamidronate/Aredia) or denosumab/Xgeva can also help.

Hypercalcemia

Early symptoms of having too much calcium in the blood (hypercalcemia) 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, leading to patients passing too much urine and becoming dehydrated. The dehydration worsens the high calcium levels. That is why giving large amounts of intravenous (IV) fluids is a main part of the treatment for hypercalcemia. Bisphosphonate drugs like pamidronate or zoledronic acid 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 (with chemo, hormone therapy, targeted therapy, etc.) 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 as well. 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 is done while you are 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 a steel support is put over the fractured area of the bone.

Radiation treatments may be given after surgery to try to prevent any more damage. Usually about 10 treatments are needed, but some doctors give the total dose of radiation in only 1 or 2 treatments. 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 occurs, vertebroplasty ([VUR-tuh-bro-plass-tee] discussed in the section “Local treatments for bone metastases”) may be used to support them. In this procedure a type of bone cement is injected into the damaged bones. The area is numbed first and an imaging scan, such as a CT scan, is used to guide the needle to the right place. Vertebroplasty often reduces pain right away and can be done in an outpatient setting.

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. Some things that you might find helpful are shower chairs, walkers, and handrails.

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

Sometimes the cancer will spread to a bone in the spine. The cancer can grow large enough to press against the spinal cord, causing the spinal cord to be squeezed (compressed). This can show up in different ways:

- Back pain (with pain that may go down one or both legs)
- Numbness of the legs or belly
- Leg weakness or trouble moving the legs
- Incontinence (loss of control of urine or stool) or problems urinating
If you notice symptoms like these, call your doctor right away or go to the emergency room. If not treated right away, they 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 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.

More treatment information about bone metastases

For more details on treatment options – including some that may not be addressed in this document – the National Comprehensive Cancer Network (NCCN) and the National Cancer Institute (NCI) are good sources of information.

The NCCN develops guidelines for doctors to use when treating patients. The NCCN does not have a specific treatment guideline for bone metastasis. But bone metastasis is discussed as part of several guidelines on various cancer types, and in some of the supportive care guidelines. These are available on the NCCN website (www.nccn.org).

The NCI provides treatment guidelines via its cancer information center (1-800-4-CANCER) and its website (www.cancer.gov).

What should you ask your doctor about bone metastases?

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. You may want to consider asking these questions:

- 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?
- Which treatments do you recommend, and why?
- Is the treatment you recommend intended to cure the cancer, help me live longer, or relieve or prevent some of the symptoms of the cancer?
- What side effects are likely with the treatment(s) you recommend, and what can I do to help reduce these side effects?
• How would treatment affect my daily activities?

• Are there clinical trials that may be right for me?

Other things to consider

Treatment can often help shrink bone metastases and relieve symptoms, but bone metastases usually are not curable. At some point, treatment directed at the cancer may no longer work. But there are other treatments that can relieve your symptoms and make you feel better. The goal at that time is for you to be as comfortable as possible. Make sure you are asking for and getting treatment for any symptoms you might have, such as pain or constipation. This type of treatment is called palliative or supportive treatment.

Palliative treatment helps relieve symptoms, but it’s not expected to cure the disease. Its main purpose is to improve your quality of life. Sometimes the 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. For more information on palliative treatment, see our document called Advanced Cancer.

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. Please see Hospice Care to learn more about this kind of medical care.

Remember also that maintaining hope is important. Your hope for a cure may not be as bright, but there is still hope for good times with family and friends – times that can be filled with happiness and meaning. In a way, pausing at this time in your cancer treatment gives you the chance to refocus on the most important things in your life. Now is the time to do things you’ve always wanted to do and to stop doing the things you no longer want to do.

Taking care of yourself

During and after treatment, you may be able to quicken your recovery and improve your quality of life by taking a more active role. Learn about the pros and cons of each of your treatment options. Ask questions if there’s anything you do not understand. Learn about and look out for side effects of treatment. Report these to your cancer care team right away so they can take steps to lessen them or stop them.

Remember that your body is as unique as your personality and your fingerprints. You might have special strengths such as a history of good nutrition and physical activity, a strong family support system, and close friendships. For some people, prayer, meditation,
or other practices may help them deal with ups and downs. There are also cancer support groups, professionals in mental health, social work, and pastoral services who may help you cope with your illness.

If you are being treated for cancer, be aware of the battle that is going on in your body. Radiation treatments and chemotherapy add to the fatigue caused by the disease itself. Rest as much as you need to so that you will feel better as time goes on. Ask your cancer care team whether your cancer or its treatments might limit your ability to exercise or do other activities. If not, find out what kind of exercise would be best for you.

Cancer and its treatment are major life challenges that affect you and everyone who cares for you. Before you get to the point where you feel overwhelmed, think about going to a local support group meeting. Many groups provide emotional support, friendship, and understanding. Your health care team can suggest other organizations that might help you. If you need individual help or want to see a mental health professional, contact your hospital’s social service department or call us (1-800-227-2345) for help in finding counselors or other services.

**Additional resources for bone metastases**

**More information from your American Cancer Society**

Here is more information you might find helpful. You also can order free copies of our documents from our toll-free number, 1-800-227-2345, or read them on our website, www.cancer.org.

**Dealing with diagnosis**

Talking With Friends and Relatives About Your Cancer (also in Spanish)

Talking With Your Doctor (also in Spanish)

Helping Children When a Family Member Has Cancer: Understanding Psychosocial Support Services

Advanced Cancer (also in Spanish)

**More on cancer treatment**

Clinical Trials: What You Need to Know (also in Spanish)

A Guide to Chemotherapy (also in Spanish)

Understanding Radiation Therapy: A Guide for Patients and Families (also in Spanish)

Understanding Cancer Surgery: A Guide for Patients and Families (also in Spanish)

Guide to Controlling Cancer Pain (also in Spanish)
Insurance and financial issues

Health Insurance and Financial Assistance for the Cancer Patient (also in Spanish)
Financial Guidance for Cancer Survivors and Their Families: Advanced Illness

For caregivers

Caring for the Patient With Cancer at Home: A Guide for Patients and Families (also available in Spanish)
What It Takes to Be a Caregiver
What You Need to Know as a Cancer Caregiver

If cancer progresses

Hospice Care
Nearing the End of Life (also in Spanish)

Books

Your American Cancer Society also has books that you might find helpful. Call us at 1-800-227-2345 or visit our bookstore online at www.cancer.org/cancer/bookstore to find out about costs or to place an order.

National organizations and websites*

Along with the American Cancer Society, other sources of information and support include:

**National Cancer Institute (NCI)**
Toll-free number: 1-800-4-CANCER (1-800-422-6237)
TTY: 1-800-332-8615
Website: www.cancer.gov

Their “Cancer Information Service” offers a wide variety of free, accurate, up-to-date information about cancer to patients, their families, and the general public; also can help people find clinical trials in their area

**CancerCare**
Toll-free number: 1-800-813-HOPE (1-800-813-4673)
Website: www.cancercare.org

Provides free professional support services to anyone affected by cancer: people with cancer and their loved ones, caregivers, and the bereaved through phone counseling and online support groups; also offers a wide variety of cancer information as well as specialized programs and workshops
No matter who you are, we can help. Contact us anytime, day or night, for information and support. Call us at 1-800-227-2345 or visit www.cancer.org.

**References: Bone Metastases**


