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# Treating Multiple Myeloma

## Local treatments

Some treatments are called *local therapies*. This means they treat the tumor without affecting the rest of the body. These treatments are more likely to be useful for earlier stage (less advanced) cancers, although they might also be used in some other situations.

- [Surgery for Multiple Myeloma](#)
- [Radiation Therapy for Multiple Myeloma](#)

## Systemic treatments

Multiple myeloma can also be treated using drugs, which can be given by mouth or directly into the bloodstream. These systemic therapies can reach cancer cells anywhere in the body.

- [Drug Therapy for Multiple Myeloma](#)
- [Stem Cell Transplant for Multiple Myeloma](#)
- [Supportive Treatments for Patients With Multiple Myeloma](#)

## Common treatment approaches

Depending on the stage of the cancer, whether or not you are a candidate for a stem cell transplant, and other factors, different types of treatment may be combined at the same time or used after one another.

- [Treatment Options for Multiple Myeloma, by Stage](#)

## Who treats multiple myeloma?

Based on your treatment options, you might have different types of doctors on your treatment team. These doctors could include:

- An **orthopedic surgeon**: a doctor who uses surgery to treat diseases of the bones
- A **radiation oncologist**: a doctor who treats cancer with radiation therapy
- A **medical oncologist**: a doctor who treats cancer with medicines such as chemotherapy or targeted therapy
- A **bone marrow transplant specialist**: A cancer doctor who specializes in performing bone marrow transplants

You might have many other specialists on your treatment team as well, including physician assistants (PAs), nurse practitioners (NPs), nurses, psychologists, nutritionists, social workers, and other health professionals.

- [Health Professionals Associated With Cancer Care<sup>1</sup>](#)

## Making treatment decisions

It's important to discuss all of your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. It's also very important to ask questions if there's anything you're not sure about.

If time permits, it is often a good idea to seek a second opinion. A second opinion can give you more information and help you feel more confident about the treatment plan you choose.

- [Questions to Ask About Multiple Myeloma<sup>2</sup>](#)
- [Seeking a Second Opinion<sup>3</sup>](#)

## 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're 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.

- [Clinical Trials](#)<sup>4</sup>

### **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 harmful.

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.

- [Complementary and Alternative Medicine](#)<sup>5</sup>

### **Help getting through cancer treatment**

People with cancer need support and information, no matter what stage of illness they may be in. Knowing all of your options and finding the resources you need will help you make informed decisions about your care.

Whether you are thinking about treatment, getting treatment, or not being treated at all, you can still get supportive care to help with pain or other symptoms. Communicating with your cancer care team is important so you understand your diagnosis, what treatment is recommended, and ways to maintain or improve your quality of life.

Different types of programs and support services may be helpful, and can be an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services – including rides to treatment, lodging, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

- [Palliative Care](#)<sup>6</sup>
- [Find Support Programs and Services in Your Area](#)<sup>7</sup>

## Choosing to stop treatment or choosing no treatment at all

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it's important to talk to your doctors and you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- [If Cancer Treatments Stop Working](#)<sup>8</sup>

*The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is 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.*

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# Drug Therapy for Multiple Myeloma

## Chemotherapy

Chemotherapy (chemo) is the use of drugs to destroy or control cancer cells. These drugs can be taken by mouth or given in a vein or a muscle. They enter the bloodstream and reach almost all areas of the body.

Chemo drugs used to treat multiple myeloma include:

- Melphalan

- Vincristine (Oncovin)
- Cyclophosphamide (Cytosan)
- Etoposide (VP-16)
- Doxorubicin (Adriamycin)
- Liposomal doxorubicin (Doxil)
- Bendamustine (Treanda)

Often one of these drugs is combined with other types of drugs like corticosteroids and immuno-modulating agents (drugs that will change the patient's immune response). If a [stem cell transplant](#) is planned, most doctors avoid using certain drugs, like melphalan, that can damage bone marrow.

### **Chemo side effects**

Chemo drugs kill cancer cells but also can damage normal cells. They are given carefully to avoid or reduce the [side effects](#)<sup>1</sup> of chemotherapy. These side effects depend on the type and dose of drugs given and the how long they are taken. Common side effects of chemotherapy include:

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Low blood counts

Chemotherapy often leads to [low blood counts](#)<sup>2</sup>, which can cause the following:

- [Infection](#)<sup>3</sup>: An increased risk of serious infection (from low white blood cell counts)
- Easy bruising or bleeding (from low blood platelets )
- [Anemia](#)<sup>4</sup>: Feeling excessively tired or short of breath (low red blood cells)

Most side effects are temporary and go away after treatment is finished.

If you have side effects, your cancer care team can suggest steps to ease them. For example, drugs can be given along with the chemo to prevent or reduce nausea and vomiting.

In addition to these temporary side effects, some chemo drugs can permanently damage certain organs such as the heart or kidneys. The possible risks of these drugs

are carefully balanced against their benefits, and the function of these organs is carefully monitored during treatment. If serious organ damage occurs, the drug that caused it is stopped and sometimes replaced with another.

For more information about chemotherapy and its side effects, see [Chemotherapy](#)<sup>5</sup>.

## Corticosteroids (steroids)

Corticosteroids, such as dexamethasone and prednisone, are an important part of the treatment of multiple myeloma. They can be used alone or combined with other drugs as a part of treatment. Corticosteroids are also used to help decrease the nausea and vomiting that chemo might cause.

Common side effects of these drugs include

- High blood sugar
- Increased appetite and weight gain
- Problems sleeping
- Changes in mood (some people become irritable or “hyper”)

When used for a long time, corticosteroids also suppress the immune system. This increases the risk of serious infections. Steroids can also weaken bones.

Most of these side effects go away over time after the drug is stopped.

## Immunomodulating agents

The way immunomodulating agents affect the immune system isn't entirely clear. Three immunomodulating agents are used to treat multiple myeloma. The first of these drugs to be developed, thalidomide, caused severe birth defects when taken during pregnancy. Because the other immunomodulating agents are related to thalidomide, there's concern that they could also cause birth defects. That's why all of these drugs can only be obtained through a special program run by the drug company that makes them.

Because these drugs can increase the risk of serious blood clots, they are often given along with aspirin or a blood thinner.

**Thalidomide (Thalomid)** was first used decades ago as a sedative and as a treatment for morning sickness in pregnant women. When it was found to cause birth defects, it

was taken off the market. Later, it became available again as a treatment for multiple myeloma. Side effects of thalidomide can include drowsiness, fatigue, severe constipation, and painful nerve damage ([neuropathy](#)<sup>6</sup>). The neuropathy can be severe, and might not go away after the drug is stopped. There is also an increased risk of serious blood clots that start in the leg and can travel to the lungs.

**Lenalidomide (Revlimid)** is similar to thalidomide. It works well in treating multiple myeloma. The most common side effects of lenalidomide are thrombocytopenia (low platelets) and low white blood cell counts. It can also cause painful nerve damage. The risk of blood clots is not as high as that seen with thalidomide, but it is still increased.

In patients, where the myeloma is in remission after either a stem cell transplant or initial treatment, lenalidomide may be given for maintenance therapy to prolong the remission.

**Pomalidomide (Pomalyst)** is also related to thalidomide and is used to treat multiple myeloma. Some common side effects include low red blood cell counts (anemia) and low white blood cell counts. The risk of nerve damage is not as severe as it is with the other immunomodulating drugs, but it's also linked to an increased risk of blood clots.

## Proteasome inhibitors

Proteasome inhibitors work by stopping enzyme complexes (proteasomes) in cells from breaking down proteins important for controlling cell division. They appear to affect tumor cells more than normal cells, but they are not without side effects.

**Bortezomib (Velcade)** was the first of this type of drug to be approved, and it's often used to treat multiple myeloma. It may be especially helpful in treating myeloma patients with kidney problems. It's injected into a vein (IV) or under the skin, once or twice a week.

Common side effects of this drug include nausea and vomiting, tiredness, diarrhea, constipation, fever, decreased appetite, and lowered blood counts. The platelet count (which can cause easier bruising and bleeding) and the white blood cell count (which can increase the risk of serious infection) are most often affected. Bortezomib can also cause nerve damage (peripheral neuropathy) that can lead to problems with numbness, tingling, or even pain in the hands and feet. The risk of nerve damage is less when the drug is given under the skin. Some patients develop shingles (herpes zoster) while taking this drug. To help prevent this, your doctor may have you take an anti-viral medicine (like acyclovir) while you take bortezomib.

In patients where the myeloma was put into remission after either a stem cell transplant or initial treatment, bortezomib may also be given for maintenance therapy to prolong the remission.

**Carfilzomib (Kyprolis)** is a newer proteasome inhibitor that can be used to treat multiple myeloma in patients who have already been treated with other drugs that didn't work. It's given as an injection into a vein (IV), often in a 4-week cycle. To prevent problems like allergic reactions during the infusion, the steroid drug dexamethasone is often given before each dose in the first cycle.

Common side effects include tiredness, nausea and vomiting, diarrhea, shortness of breath, fever, and low blood counts. The blood counts most often affected are the platelet counts (which can cause easier bruising and bleeding) and the red blood cell count (which can lead to tiredness, shortness of breath, and being pale). People on this drug can also have more serious problems, such as pneumonia, heart problems, and kidney or liver failure.

**Ixazomib (Ninlaro)** is a proteasome inhibitor that is a capsule taken by mouth, typically once a week for 3 weeks, followed by a week off. This drug is usually given after other drugs have been tried.

Common side effects of this drug include nausea and vomiting, diarrhea, constipation, swelling in the hands or feet, back pain, and a lowered blood platelet count (which can cause easier bruising and bleeding). This drug can also cause nerve damage (peripheral neuropathy) that can lead to problems with numbness, tingling, or even pain in the hands and feet.

## **Histone deacetylase (HDAC) inhibitors**

HDAC inhibitors are a group of drugs that can affect which genes are active or turned on inside cells. They do this by interacting with proteins in chromosomes called histones.

**Panobinostat (Farydak)** is an HDAC inhibitor that can be used to treat patients who have already been treated with bortezomib and an immunomodulating agent. It is a capsule, typically taken 3 times a week for 2 weeks, followed by a week off. This cycle is then repeated.

Common side effects include diarrhea (which can be severe), feeling tired, nausea, vomiting, loss of appetite, swelling in the arms or legs, fever, and weakness. This drug can also affect blood cell counts and the blood levels of certain minerals (such as



potassium, sodium, and calcium). Less common but still serious side effects can include bleeding inside the body, liver damage, and changes in heart rhythm, which can sometimes be life threatening.

## Monoclonal antibodies

Antibodies are proteins made by the body's immune system to help fight infections. Man-made versions (monoclonal antibodies), can be designed to attack a specific target, such as proteins on the surface of myeloma cells.

**Daratumumab (Darzalex)** is a monoclonal antibody that attaches to the CD38 protein, which is found on myeloma cells. This is thought to both kill the cancer cells directly and to help the immune system attack them also. This drug is used mainly in combination with other types of drugs, although it can also be used by itself in patients who have already had several other treatments for their myeloma. It's given as an infusion into a vein (IV).

This drug can cause a reaction in some people while it is being given or within a few hours afterward, which can sometimes be severe. Symptoms can include coughing, wheezing, trouble breathing, tightness in the throat, a runny or stuffy nose, feeling dizzy or lightheaded, headache, rash, and nausea.

Other side effects can include fatigue, nausea, back pain, fever, and cough. This drug can also lower blood cell counts, which can increase the risk of infections and bleeding or bruising.

**Elotuzumab (Empliciti)** is a monoclonal antibody that attaches to the SLAMF7 protein, which is found on myeloma cells. This is thought to help the immune system attack the cancer cells. This drug is used mainly in patients who have already had other treatments for their myeloma. It's given as an infusion into a vein (IV).

This drug can cause a reaction in some people while it is being given or within several hours afterward, which can sometimes be severe. Symptoms can include fever, chills, feeling dizzy or lightheaded, rash, wheezing, trouble breathing, tightness in the throat, or a runny or stuffy nose.

Other common side effects with this drug include fatigue, fever, loss of appetite, diarrhea, constipation, cough, nerve damage resulting in weakness or numbness in the hands and feet (peripheral neuropathy), upper respiratory tract infections, and pneumonia.

## Nuclear export inhibitor

The nucleus of a cell holds most of the cell's genetic material (DNA) needed to make the proteins the cell uses to function and stay alive. A protein called XPO1 helps carry other proteins from the nucleus to other parts of the cell.

**Selinexor (Xpovio)** is a drug known as a *nuclear export inhibitor*. It works by blocking the XPO1 protein. When the myeloma cell cannot transport proteins from its nucleus, the cell dies.

This drug is used with dexamethasone, typically for people whose myeloma has been treated with and no longer responds to at least 5 other myeloma drugs, including proteasome inhibitors, immunomodulatory drugs, and a monoclonal antibody to CD38.

It is a pill that is taken on the first and third day of each week.

Common side effects include low platelet counts, low white blood cell counts, diarrhea, nausea, vomiting, not feeling hungry, weight loss, low blood sodium levels, and infections like bronchitis or pneumonia.

## Using these drugs together to treat multiple myeloma

Although a single drug may be used to treat multiple myeloma, it is preferable to use at least 2 or 3 different kinds of drugs in combination because the cancer responds better. For example:

- Lenalidomide (or pomalidomide or thalidomide) and dexamethasone
- Carfilzomib (or ixazomib or bortezomib), lenalidomide, and dexamethasone
- Bortezomib (or carfilzomib), cyclophosphamide, and dexamethasone
- Elotuzumab (or daratumumab), lenalidomide, and dexamethasone
- Bortezomib, liposomal doxorubicin, and dexamethasone
- Panobinostat, bortezomib, and dexamethasone
- Elotuzumab, bortezomib, and dexamethasone
- Melphalan and prednisone (MP), with or without thalidomide or bortezomib
- Vincristine, doxorubicin (Adriamycin), and dexamethasone (called VAD)
- Dexamethasone, cyclophosphamide, etoposide, and cisplatin (called DCEP)
- Dexamethasone, thalidomide, cisplatin, doxorubicin, cyclophosphamide, and etoposide (called DT-PACE), with or without bortezomib

The choice and dose of drug therapy depend on many factors, including the stage of the cancer, the age and kidney function of the patient as well as how frail the patient may be. If a stem cell transplant is planned, most doctors avoid using certain drugs, like melphalan, that can damage the bone marrow.

## Bisphosphonates for bone disease

Myeloma cells can weaken and even break bones. Drugs called bisphosphonates can help bones stay strong by slowing down this process. They can also help reduce pain in the weakened bone(s). Sometimes, pain medicines such as NSAIDs or narcotics will be given along with bisphosphonates to help control or lessen the pain. Bone pain can be a difficult symptom to treat during and after treatment for myeloma.

The standard for treating bone problems in people with myeloma are **pamidronate (Aredia)**, **zoledronic acid (Zometa)** and **denosumab (Xgeva, Prolia)**. These drugs are given intravenously (IV or into a vein). Most patients are treated once a month at first, but they may be able to be treated less often later on if they are doing well. Treatment with a bisphosphonate helps prevent further bone damage in multiple myeloma patients.

These treatments can have a rare but serious side effect called osteonecrosis of the jaw (ONJ). Patients complain of pain and doctors find that part of the jaw bone has died. This can lead to an open sore that doesn't heal. It can also lead to tooth loss in that area. The jaw bone can also become infected. Doctors aren't sure why this happens or how best to prevent it, but having jaw surgery or having a tooth removed can trigger this problem. Avoid these procedures while you are taking a bisphosphonate. Many doctors recommend that patients have a dental checkup before starting treatment. That way, any dental problems can be taken care of before starting the drug. If ONJ does occur, the doctor will stop the bisphosphonate treatment.

One way to avoid these dental procedures is to maintain good oral hygiene by flossing, brushing, making sure that dentures fit properly, and having regular dental checkups. Any tooth or gum infections should be treated right away. Dental fillings, root canal procedures, and tooth crowns do not seem to lead to ONJ.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)
2. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts.html)
3. [www.cancer.org/treatment/treatments-and-side-effects/treatment-](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-)

- [types/chemotherapy/chemotherapy-side-effects.html](#)
4. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/anemia.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/anemia.html)
  5. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html)
  6. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/peripheral-neuropathy.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/peripheral-neuropathy.html)

Last Medical Review: February 28, 2018 Last Revised: July 15, 2019

## Radiation Therapy for Multiple Myeloma

Radiation therapy uses high-energy rays or particles to kill cancer cells. Radiation may be used to treat areas of bone damaged by myeloma that have not responded to chemotherapy and/or other drugs and are causing pain or may be near breaking. It's also the most common treatment for solitary plasmacytomas.

If myeloma severely weakens the vertebral (back) bones, these bones can collapse and put pressure on the spinal cord and spinal nerves. Symptoms include a sudden change in sensation (such as numbness or tingling), sudden weakness of leg muscles, or sudden problems with urination or moving the bowels. This is a medical emergency; patients with these symptoms should call their doctor right away. Prompt treatment with radiation therapy and/or surgery is often needed to prevent paralysis.

The type of radiation therapy most often used to treat multiple myeloma or solitary plasmacytoma is called external beam radiation therapy. The radiation is aimed at the cancer from a machine outside the body. Having radiation therapy is much like having a diagnostic x-ray except that each treatment lasts longer, and the course of treatment can continue for several weeks.

[Side effects](#)<sup>1</sup> of radiation can include:

- Skin changes in the area being treated, which can range from redness to blistering and peeling
- Fatigue (tiredness)
- Nausea
- Diarrhea (if the belly or pelvis is being treated)

- Low blood counts

These symptoms improve once treatment is over.

## More information about radiation therapy

To learn more about how radiation is used to treat cancer, see [Radiation Therapy](#)<sup>2</sup>.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)<sup>3</sup>.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)
2. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation.html)
3. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)

Last Medical Review: February 28, 2018 Last Revised: February 28, 2018

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# Surgery for Multiple Myeloma

Surgery is sometimes used to remove single plasmacytomas, but it's rarely used to treat multiple myeloma. When spinal cord compression causes paralysis, severe muscle weakness, or numbness, emergency surgery may be needed. Surgery to attach metal rods or plates can help support weakened bones and may be needed to prevent or treat fractures.

Last Medical Review: February 28, 2018 Last Revised: February 28, 2018

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# Stem Cell Transplant for Multiple

# Myeloma

In a stem cell transplant, the patient gets high-dose chemotherapy to kill the cells in the bone marrow. Then the patient receives new, healthy blood-forming stem cells. When stem cell transplants were first developed, the new stem cells came from bone marrow, and so this was known as a bone marrow transplant. Now, stem cells are more often collected from blood (a peripheral blood stem cell transplant).

Stem cell transplant is commonly used to treat multiple myeloma. Before the transplant, drug treatment is used to reduce the number of myeloma cells in the patient's body. (See [Drug Therapy for Multiple Myeloma](#).)

Stem cell transplants (SCT) can be autologous or allogeneic.

## Autologous transplants

For an autologous stem cell transplant, the patient's own stem cells are removed from his or her bone marrow or peripheral blood before the transplant. The cells are stored until they are needed for the transplant. Then, the person with myeloma gets treatment such as high-dose chemotherapy, sometimes with radiation, to kill the cancer cells. When this is complete, the stored stem cells are given back to the patient into their blood through a vein.

This type of transplant is a standard treatment for patients with multiple myeloma. Although an autologous transplant can make the myeloma go away for a time (even years), it doesn't cure the cancer, and often the myeloma returns.

Some doctors recommend that patients with multiple myeloma have 2 autologous transplants, 6 to 12 months apart. This approach is called **tandem transplant**. Studies show that this may help some patients more than a single transplant. The drawback is that it causes more side effects and as a result can be riskier.

## Allogeneic transplants

In an allogeneic stem cell transplant, the patient gets blood-forming stem cells from another person – the donor. The best treatment results occur when the donor's cells are closely matched to the patient's cell type and the donor is closely related to the patient, such as a brother or sister. Allogeneic transplants are much riskier than autologous transplants, but they may be better at fighting the cancer. That's because transplanted (donor) cells may actually help destroy myeloma cells. This is called a **graft vs. tumor**

**effect.** In studies of multiple myeloma patients, those who got allogeneic transplants often did worse in the short term than those who got autologous transplants. At this time, allogeneic transplants are not considered a standard treatment for myeloma, but may be done as a part of a [clinical trial](#)<sup>1</sup>.

### Side effects

The early [side effects](#)<sup>2</sup> from a stem cell transplant (SCT) are similar to those from chemotherapy and [radiation](#), only more severe. One of the most serious side effects is low blood counts, which can lead to risks of serious infections and bleeding.

The most serious side effect from allogeneic transplants is **graft-versus-host disease** (or GVHD). This occurs when the new immune cells (from the donor) see the patient's tissues as foreign and attack them. GVHD can affect any part of the body and can be life threatening.

For more information about stem cell transplants, including details about the processes and side effects, see [Stem Cell Transplant for Cancer](#)<sup>3</sup>.

### Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html](http://www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html)
2. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)
3. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html)

Last Medical Review: February 28, 2018 Last Revised: February 28, 2018

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# Supportive Treatments for Patients With Multiple Myeloma

## Intravenous immunoglobulin (IVIG)

Patients with multiple myeloma often have low levels of the normal antibodies (immunoglobulins) needed to fight [infection](#)<sup>1</sup>. This can lead to problems with lung and/or sinus infections that keep coming back. The level of antibodies in the patient's blood

can be tested, and if it's low, antibodies from donors can be given into a vein (IV) to raise the levels and help prevent infections. The antibodies given are called IVIG or intravenous immunoglobulin. IVIG is often given once a month at first, but may be able to be given less often based on blood tests of antibody levels.

## Treatment for low blood cell counts

Some patients develop low red blood cell counts ([anemia](#)<sup>2</sup>) from multiple myeloma or its treatment. They might feel tired, lightheaded, or short of breath while walking. Anemia that's causing symptoms can be treated with blood transfusions. These are often given on an outpatient basis.

Epoetin (Procrit) and darbepoetin (Aranesp) are drugs that can help improve low red blood cell counts and reduce the need for blood transfusions in some patients who are getting [chemotherapy](#). But these drugs are used much less often because they have been linked to poorer survival in some patients with lymphoid cancers, such as multiple myeloma.

## Plasmapheresis

Plasmapheresis can be used to remove myeloma protein from the blood. It's helpful when certain myeloma proteins build up, thicken the blood, and interfere with circulation (called hyperviscosity).

Most often, this procedure is done through a large catheter (tube) placed in a vein in the neck, under the collarbone, or in the groin. This catheter is hooked up to a machine, and blood flows into the machine. The machine separates the blood cells from the blood plasma (liquid part of the blood), and then returns the blood cells to the patient, along with either salt solution or donor plasma. The plasma that's removed, which contains the abnormal antibody protein made by the myeloma cells, is discarded.

Although plasmapheresis lowers the abnormal protein level and can relieve symptoms for a time, it does not kill the myeloma cells. That means that without further treatment, the protein will just build up again. For this reason, plasmapheresis is often followed by [chemotherapy or some other type of drug treatment](#) to kill the cells that make the protein.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-)



[blood-counts/infections.html](#)

2. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/anemia.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/anemia.html)

Last Medical Review: February 28, 2018 Last Revised: February 28, 2018

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# Treatment Options for Multiple Myeloma, by Stage

## Solitary plasmacytomas

These are often treated with radiation therapy. If the plasma cell tumor is not in a bone, it may be removed with surgery. Chemotherapy (chemo) is only used if multiple myeloma develops.

## Smoldering multiple myeloma

Smoldering myeloma patients can do well for years without treatment. For many patients, starting treatment early does not seem to help them live longer. These patients are watched closely without starting chemo or other treatments for myeloma.

Based on how abnormal the plasma cells look under the microscope and the levels of immunoglobulins, some patients with smoldering multiple myeloma have a high risk of progressing to active myeloma. In one study, treating these patients with lenalidomide (Revlimid) and dexamethasone before they developed symptoms or problems helped them live longer.

## Active (symptomatic) myeloma

Patients with active myeloma or [light chain amyloidosis](#)<sup>1</sup> are often given a combination of 2 or 3 drugs. The drugs chosen depend on the patient's health (including their kidney function) and whether a [stem cell transplant](#) is planned.

Often, a combination containing bortezomib, lenalidomide, and dexamethasone is used. Combinations containing bortezomib are especially helpful in patients with kidney

problems and those whose myeloma cells contain certain high-risk chromosome abnormalities.

Many other combinations may be considered as well. For more on these drugs and some of the more common combinations used, see [Drug Therapy for Multiple Myeloma](#).

Treatment for bone disease (bisphosphonates) is often started along with chemo. If the areas of damaged bone continue to cause symptoms, radiation therapy may be used.

Patients with multiple myeloma also receive [supportive treatments](#), such as transfusions to treat low blood cell counts, and antibiotics and sometimes intravenous immunoglobulin (IVIG) for infections.

A stem cell transplant may be part of treatment. Options for stem cell transplant are discussed in [Stem Cell Transplant for Multiple Myeloma](#).

Some patients are given additional cycles of treatment after transplant. This is called **consolidation treatment** and increases the chance of a complete response (where signs and symptoms of the disease go away).

Some patients (even some who didn't have a stem cell transplant) may be given long-term treatment with lenalidomide or bortezomib. This is known as **maintenance treatment**, and helps delay the return of the myeloma, but it can cause serious side effects.

Many drug combinations can be useful in treating myeloma. If one drug combination stops working (or the myeloma comes back), others can be tried.

## Hyperlinks

1. [www.cancer.org/cancer/multiple-myeloma/about/what-is-multiple-myeloma.html](http://www.cancer.org/cancer/multiple-myeloma/about/what-is-multiple-myeloma.html)

Last Medical Review: February 28, 2018 Last Revised: May 9, 2018

## Written by

The American Cancer Society medical and editorial content team  
([www.cancer.org/cancer/acs-medical-content-and-news-staff.html](http://www.cancer.org/cancer/acs-medical-content-and-news-staff.html))

Our team is made up of doctors and oncology certified nurses with deep knowledge of

cancer care as well as journalists, editors, and translators with extensive experience in medical writing.

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