NCCN GUIDELINES FOR PATIENTS®

2025

Multiple Myeloma

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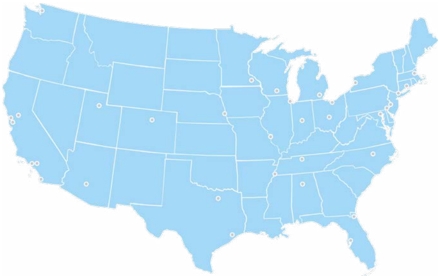
About the NCCN Guidelines for Patients®

National Comprehensive Cancer Network®



Did you know that top cancer centers across the United States work together to improve cancer care? This alliance of leading cancer centers is called the National Comprehensive Cancer Network® (NCCN®).

Cancer care is always changing. NCCN develops evidence-based cancer care recommendations used by health care providers worldwide. These frequently updated recommendations are the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). The NCCN Guidelines for Patients plainly explain these expert recommendations for people with cancer and caregivers.

These NCCN Guidelines for Patients are based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Multiple Myeloma, Version 1.2025 – September 17, 2024.

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NCCN Foundation seeks to support the millions of patients and their families affected by a cancer diagnosis by funding and distributing NCCN Guidelines for Patients. NCCN Foundation is also committed to advancing cancer treatment by funding the nation's promising doctors at the center of innovation in cancer research. For more details and the full library of patient and caregiver resources, visit NCCN.org/patients.

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About multiple myeloma

Multiple myeloma is a rare blood cancer that usually starts in the white blood cells inside the bone marrow. While there isn't a cure yet, new treatments are giving people more hope and more years to live.

What is multiple myeloma?

Multiple myeloma (also simply called myeloma) is a type of blood cancer that begins in bones and spreads to other areas of the body. It results when cancerous cells—called myeloma cells—build up in the bone marrow. Bone marrow is the soft, sponge-like center inside bones where most blood cells are made.

Why you should read this book

Making decisions about cancer care can be stressful. You may need to make tough decisions under pressure about complex choices.

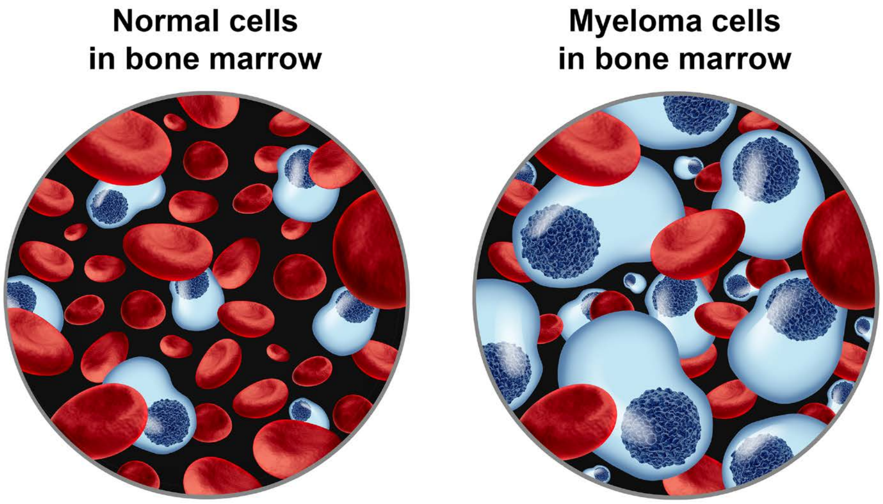
NCCN Guidelines for Patients are trusted by patients and providers. They clearly explain current care recommendations made by respected experts in the field. Recommendations are based on the latest research and practices at leading cancer centers.

Cancer care is not the same for everyone. By following expert recommendations for your situation, you are more likely to improve your care and have better outcomes as a result. Use this book as your guide to find the information you need to make important decisions.

Myeloma cells

Blood in the bone marrow is made up of different blood cells, including white blood cells called plasma cells.

Multiple myeloma happens when normal plasma cells turn into abnormal myeloma cells. Myeloma cells multiply and crowd out healthy blood cells. When your body has fewer healthy blood cells, symptoms and organ damage can occur.

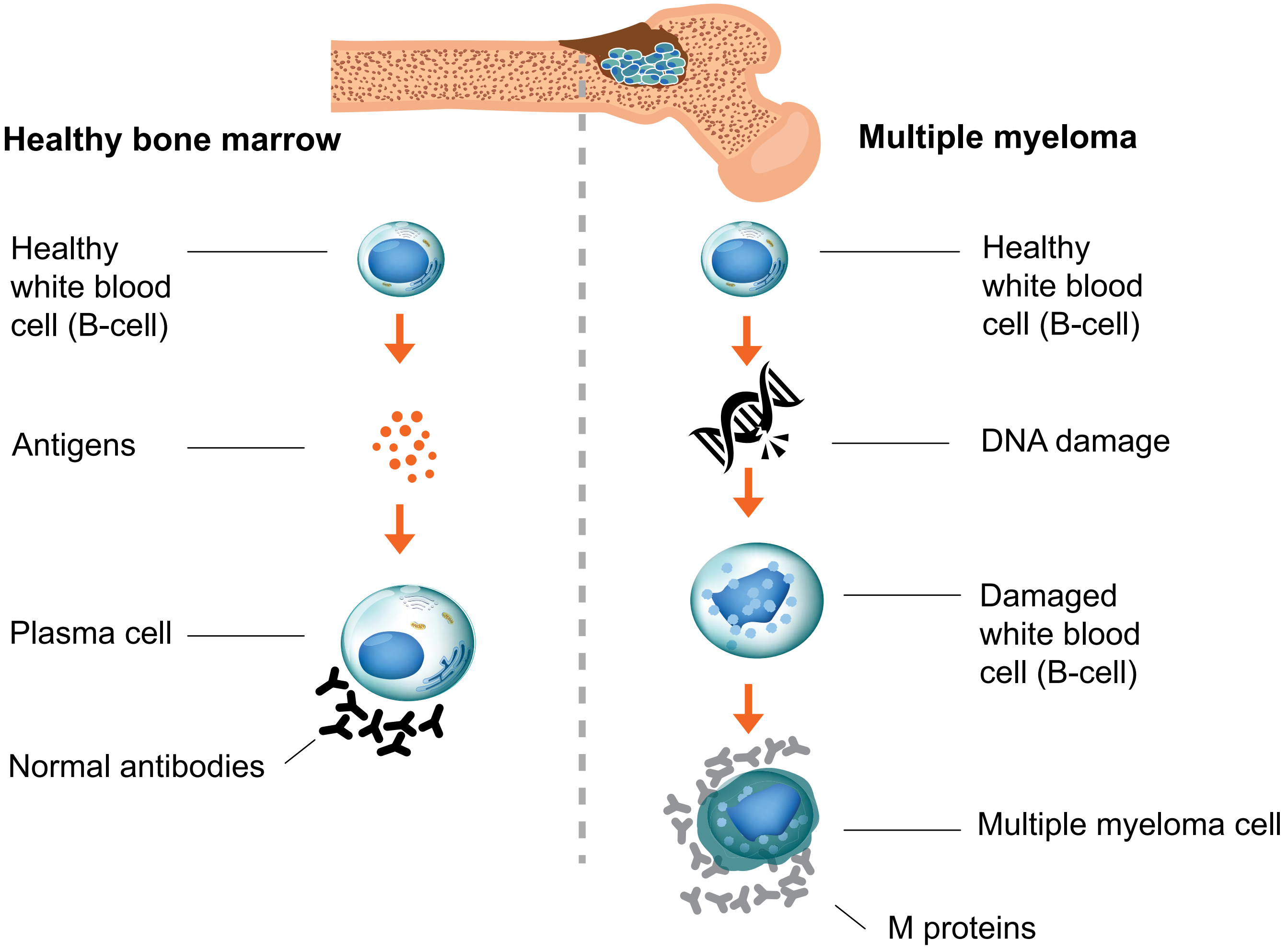


In someone with myeloma, the myeloma cells become so numerous in the bone marrow that they can crowd out healthy blood cells, causing harmful blood-related problems.

This oversupply of myeloma cells also reduces the number of healthy white blood cells in the body, which can increase the risk of infections. In addition, myeloma cells release large amounts of abnormal myeloma proteins,

Where do myeloma cells come from?

When antigens (such as germs) invade the body, healthy white blood cells called plasma cells release germ-fighting antibodies to stop infection and disease. But in multiple myeloma, one or more mutations cause plasma cells to become multiple myeloma cells. Multiple myeloma cells can multiply and spread rapidly. They also produce a lot of abnormal antibodies called M proteins, which can build up in the bone marrow and cause damage.



which can impair bodily functions (like kidney function).

Myeloma cells can also cause bones to break down, leading to weakened bones, bone pain, fractures, and high calcium levels in the blood.

When myeloma cells build up in bone marrow, they can form tumors called plasmacytomas. In most people with this disease, multiple plasmacytomas form in different bones or areas of the body, which is why it's called multiple myeloma.

What causes multiple myeloma?

Many people wonder why they got cancer. We don't know exactly what causes myeloma cells to form. But we do know that myelomas often start with genetic abnormalities (mutations) in certain cells called plasma cells.

Plasma cells are a type of white blood cell that fights infection and disease. Plasma cells do this by making antibodies (also called immunoglobulins, shortened to Ig). Antibodies are proteins released into blood and other body fluids that help your body find and kill germs.

Like other healthy cells, plasma cells grow and then divide to make new cells. When plasma cells grow old or get damaged, they die—a normal and natural process.

But at some point in this process, genetic changes can occur that turn a plasma cell into a myeloma cell.

These mutations occur in the cells' genes. Genes are the instructions that control what a cell does and how long it stays alive. Mutations can change these instructions, and turn normal plasma cells into cancerous myeloma cells.

Cancerous myeloma cells can make millions of new identical myeloma cells that aren't needed and don't die quickly when old or damaged.

The myeloma cells can spread throughout the bone marrow and grow into a clump (plasmacytoma) in one or more spots inside or outside of the bone marrow.

Myeloma cells, like plasma cells, also make antibodies. But the antibodies made by myeloma cells are all copies of a single type of antibody. These antibodies are called monoclonal proteins, or M proteins. (The term monoclonal means "one clone" or "one type").

Unlike normal germ-fighting antibodies, M proteins don't help get rid of infections. In fact, your body can't use M proteins for anything, so they pile up. Too many M proteins in your body can lead to problems like thickened blood and kidney damage. In addition, people with myeloma don't make enough normal antibodies, which raises the risk for infection.

Myeloma mutations aren't typically passed down in families (hereditary mutation). But you may have a higher risk for myeloma if another family member also had myeloma.

Can myeloma be cured?

Currently, myeloma can't be cured, but it can be treated and controlled for a significant amount of time.

New treatments have resulted in more long-term survivors of myeloma now than ever before. For an increasing number of people, myeloma is a chronic medical problem they learn to live with rather than a disease that they die from.

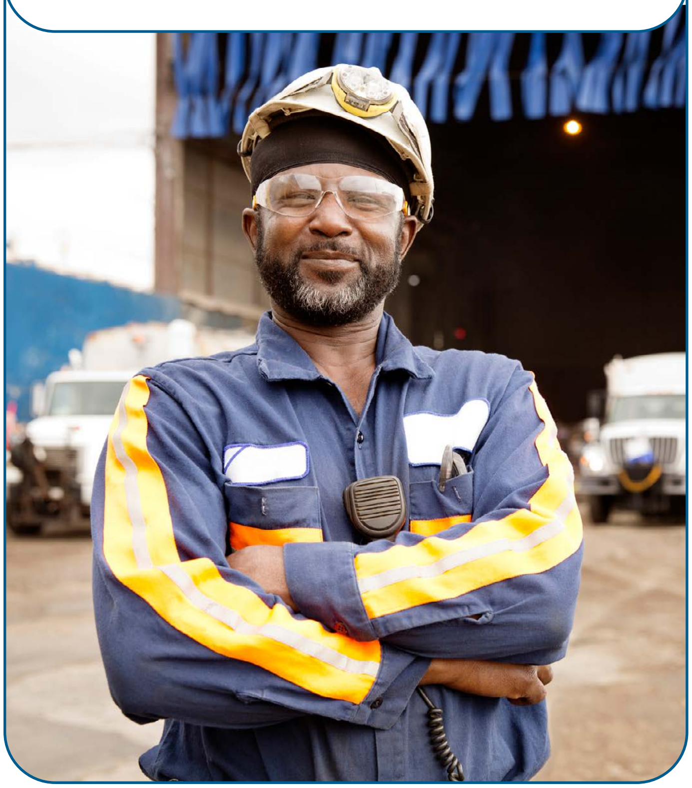
For many people, treatment can keep myeloma under control and reduce or stop symptoms for a long period of time.

Standard treatments for multiple myeloma include targeted drugs, immunotherapy drugs, chemotherapy, chimeric antigen receptor (CAR) T-cell therapy, and hematopoietic cell transplant.

Some treatments may be given as a combination of pills, injections, or an infusion through an IV (intravenous line). Another option is taking part in a clinical trial of a potential new treatment.

Sooner or later, myeloma usually comes back and requires additional treatment. People with longstanding multiple myeloma can eventually become resistant to therapies, which makes the cancer more difficult to treat and more dangerous.

"Be your own advocate. Ask a lot of questions, even the ones you're afraid to ask. You have to ensure you make the best decisions for your particular situation."



What's in this book?

This chapter provides only a brief overview of multiple myeloma. The other chapters in this book explain:

Tests to diagnose the disease – You'll have a variety of tests to identify your specific cancer and determine how advanced the cancer is. Tests are also used to plan treatment, check how well treatment is working, and monitor your health after treatment ends.

Different treatments and what they do – Once your care team knows the extent of your myeloma, you can work together with your team to consider all your available treatment options.

Which treatment is right for you – There are many different kinds of treatment for multiple myeloma. If your first treatment program doesn't reduce the myeloma, you can have a different treatment.

What happens after treatment – Even with the best treatment, multiple myeloma often comes back. So follow-up visits are important. You can also have further treatment.

Care beyond cancer – Side effects and other problems can occur during treatment or arise later. Your care team has ways to relieve symptoms and side effects. They can help you with non-medical issues, too.

Consider going to a cancer specialist, cancer center, or hospital experienced in treating people with multiple myeloma.

What can you do to get the best care?

Advocate for yourself. You have an important role to play in your care. In fact, you're more likely to get the care you want by asking questions and making shared decisions with your care team.

The NCCN Guidelines for Patients will help you understand cancer care. With better understanding, you'll be more prepared to discuss your care with your team and share your concerns. Many people feel more satisfied, confident, and less anxious when they play an active role in their care.

You may not know what to ask your care team. That's common. Each chapter in this book ends with an important section called *Questions to ask*. These suggested questions will help you get more information on all aspects of your care.

Take the next step and keep reading to learn what is the best care for you!

2

Testing for myeloma

If your doctor suspects you have myeloma, you'll need several medical tests before you receive treatment. All of these tests help figure out whether you need treatment and which treatment is best for you.

Not knowing if you have cancer is scary. Having tests for cancer can be scary, too. This chapter will help you know what to expect during these tests. Knowing more about myeloma and what to do about it may reduce some of the fear.

Some tests check your general health. Other tests are for diagnosing your illness, which will help plan your treatment. Not every person with myeloma will receive every test listed here. See **Guide 1**.

General health tests

Medical history

Your medical history includes all the health events in your life and any medications you've taken. A medical history is needed for planning your treatment. You'll be asked about any illnesses, injuries, and health problems you've had. Some health problems run in families. So your doctor may also ask about the health of your blood relatives.

Myeloma often causes symptoms, and it's important that your doctor knows if you have them. Symptoms may result from a shortage of healthy blood cells. Or they may result from damage to the bones and kidneys, or from myeloma cells collecting in certain parts of the body.

The most common symptoms of multiple myeloma are bone pain (often in the back), fatigue, and frequent infections. However, some people may have few or no symptoms at all.

Guide 1
Common tests for multiple myeloma

General health tests

- Medical history
- Physical exam

Blood tests

- Complete blood count with differential
- Immunoglobulin levels
- M proteins in blood
- Free light chain assay
- Blood chemistry

Urine tests

- Total protein in urine
- M proteins and light chains in urine

Bone tissue tests

- Bone marrow biopsy and aspiration
- Lab tests

Imaging tests

- PET/CT scan
- Low-dose CT scan
- Bone survey
- MRI scan

Other tests used in certain cases

Physical exam

Doctors typically perform a physical exam along with taking a medical history. A physical exam is a “hands on” review of your body for signs of disease.

During this exam, your doctor will listen to your lungs, heart, and gut. Parts of your body will likely be felt to see if organs are of normal size, are soft or hard, or cause pain when touched. Your doctor will also look for signs of other problems such as bruising, swollen glands, muscle weakness, or numbness/tingling/pain in your hands or feet (neuropathy).

Blood tests

Your blood can tell doctors a lot about your health. Blood tests and other tests help confirm (diagnose) myeloma.

Blood is made of red blood cells, white blood cells, and platelets. It also has many proteins and other chemicals. Different types of blood tests are used to measure these different substances in the blood.

Some blood tests are used to assess the extent or amount of cancer in your body. This is referred to as the tumor burden. Other tests are used to check the health of your bones, kidneys, and other organs. Blood tests may be repeated to find out how well cancer treatment is working and to check for side effects.

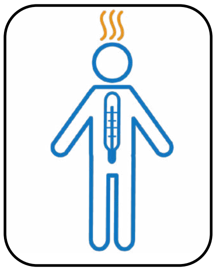
For a blood test, a needle is inserted into your vein to remove a sample of blood. The blood sample is then sent to a lab for testing. At the lab, a specialist called a pathologist will look at the blood sample under a microscope.

Common symptoms of multiple myeloma

Bone damage and pain

Fatigue and weakness

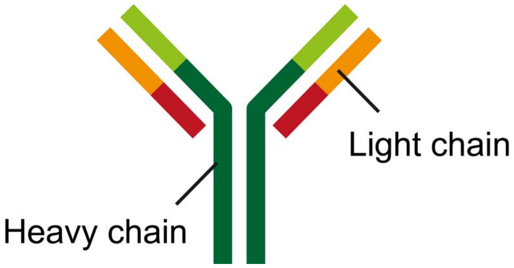
Frequent infections and fever



Bruising or bleeding easily

Thirst and frequent urination

What are antibodies?



Understanding antibodies can help you understand your multiple myeloma diagnosis.

Antibodies (also called immunoglobulins, or Ig) are part of the immune system. They're made by plasma cells to fight infection. Antibodies identify harmful bacteria and viruses, and help the immune system to get rid of them.

Each plasma cell releases only one type of antibody. Like snowflakes, antibodies are similar but no two are alike. Each antibody has a different role. The type of antibody made is meant to attack the specific germ causing an infection or illness.

Antibodies are made up of two pairs of protein "chains" that are bound together in a Y shape. This includes two identical "heavy" protein chains and two identical "light" protein chains.

- **Heavy chains** – There are five types of heavy chains: IgG, IgA, IgM, IgD, and IgE.
- **Light chains** – There are two types of light chains: kappa and lambda.

The five different types of heavy chains can bond with either of the two types of light chains. Together, they form antibody subtypes such as IgG kappa, IgG lambda, IgA kappa, IgA lambda, and so forth.

Myeloma cells also make antibodies, which are called M proteins. Like normal antibodies, M proteins are made up of a pair of heavy chains and a pair of light chains. Myeloma cells make very large numbers of M proteins, which are usually all of one subtype. (The most common is IgG kappa.)

Sometimes, the myeloma cells only produce light chains, either kappa or lambda. This results in extra light chains circulating in the blood. These are called free light chains. Some people with myeloma have high levels of free light chains found in their blood or urine.

Knowing your M protein subtype will help you to better understand your test results. You can follow your M protein level to see if it's decreasing, stable, or increasing, which reflects the response to your treatment.

Pathologists are experts in examining cells for disease. They may be able to observe myeloma cells and detect myeloma proteins in the blood.

Blood tests used for myeloma include:

CBC with differential

A complete blood count (CBC) is a test that measures the number of blood cells in a blood sample. It includes the number of white blood cells, red blood cells, and platelets. The CBC should include a differential. The differential measures the different types of white blood cells in the sample.

Immunoglobulin levels

This test measures the amount of antibodies (IgA, IgG, IgM, and sometimes IgD and IgE) in the blood. It shows if the level of any type of antibody is too high or too low. Abnormal levels of antibodies could indicate multiple myeloma.

M proteins in blood

You'll have two tests to check the M proteins in your blood:

Serum protein electrophoresis (SPEP) is a test that measures the amount of M proteins in the blood. This test is used for both diagnosis and monitoring.

Serum immunofixation electrophoresis (SIFE) identifies which type of M proteins are in the blood. It finds the type by showing which forms of heavy chains (IgG, IgA, etc.) and light chains (kappa or lambda) are present.

Free light chain assay

This test measures the amount of free light chains in the blood. It's useful for diagnosing myeloma in certain cases where myeloma cells produce only light chains (light chain myeloma). Free light chain assay is also used for monitoring myeloma.

Blood chemistry

Blood chemistry tests measure the levels of different chemicals in your blood. Chemicals in your blood come from your liver, bone, and other organs and tissues. Abnormal levels of certain chemicals in the blood may be a sign that an organ isn't working well. These abnormal levels can be caused by cancer or other health problems.

Urine tests

Besides blood, urine also reveals signs of disease. Urine tests can be used to diagnose myeloma, assess if your kidneys are working well, and check the results of cancer treatments. Urine tests are also used to assess the tumor burden—the extent or amount of myeloma in your body.

Total protein in urine

Total protein is a test that measures the total amount and type of protein in urine. For this test, urine is collected over a 24-hour period. Testing 24-hour urine for protein helps to measure the tumor burden in people with myeloma. This test can also show if you're losing albumin, an important protein, through your kidneys.

M proteins and light chains in urine

Urine protein electrophoresis (UPEP) measures the amount of M proteins, albumin, and light chains in the urine. Low levels of albumin may be a sign of advanced myeloma or another health condition. High levels of light chains in the urine indicate a greater risk for kidney damage in people with myeloma. The UPEP test may be repeated after treatment to check how your treatment is working.

Urine immunofixation electrophoresis (UIFE) is a test that identifies the type of M proteins and light chains present in urine. UIFE is done along with other initial tests when myeloma is first found. UIFE is also used to check how well your treatment is working.

Bone tissue tests

To confirm you have cancer, a sample of tissue or fluid must be removed from your body for testing. This is called a biopsy. A biopsy is generally a safe test and can often be done in about 30 minutes.

Bone marrow biopsy and aspiration

Myeloma cells are often found in the bone marrow, so that's where people with myeloma are biopsied. The sample is usually taken out of the pelvic bone (near the hip), which contains a large amount of bone marrow and is close to the surface of the body.

This is a two-part test that results in two samples. A bone marrow biopsy removes a small core of bone containing the bone marrow. An aspiration removes a small amount of liquid bone marrow from inside the bone.

You may be given a light sedative before the test. Your provider will then clean the area of skin where the biopsy will be done. Next, you'll receive local anesthesia to numb the area of skin and bone beneath.

Once numb, a hollow needle will be inserted into your skin and then pushed into the bone to remove the liquid bone marrow with a syringe.

Then the needle will be inserted into the bone to remove the solid bone marrow core sample. You'll notice a feeling of pressure as this is happening and you might feel some pain while the samples are being removed. Afterward, your skin may be bruised for a few days. There's a small risk of bleeding or infection, but these aren't common.

Lab tests

After the biopsied tissue samples are collected, they'll be sent to a lab for testing. A pathologist will view the samples under a microscope to look for myeloma cells. The pathologist may also perform other tests on the samples. It often takes several days before the test results are known. The lab tests that may be performed on the tissue samples are:

Immunohistochemistry

This test is used to identify the number and the type of myeloma cells in the bone marrow. A diagnosis of myeloma can be made when at least 10% of cells (1 out of every 10 cells) in the bone marrow sample are abnormal plasma cells.

Flow cytometry

This test can identify abnormal plasma cells in the bone marrow by detecting certain characteristic proteins on the outer surface of the cells. Flow cytometry isn't always done at diagnosis—it might be done after treatment to check for traces of myeloma.

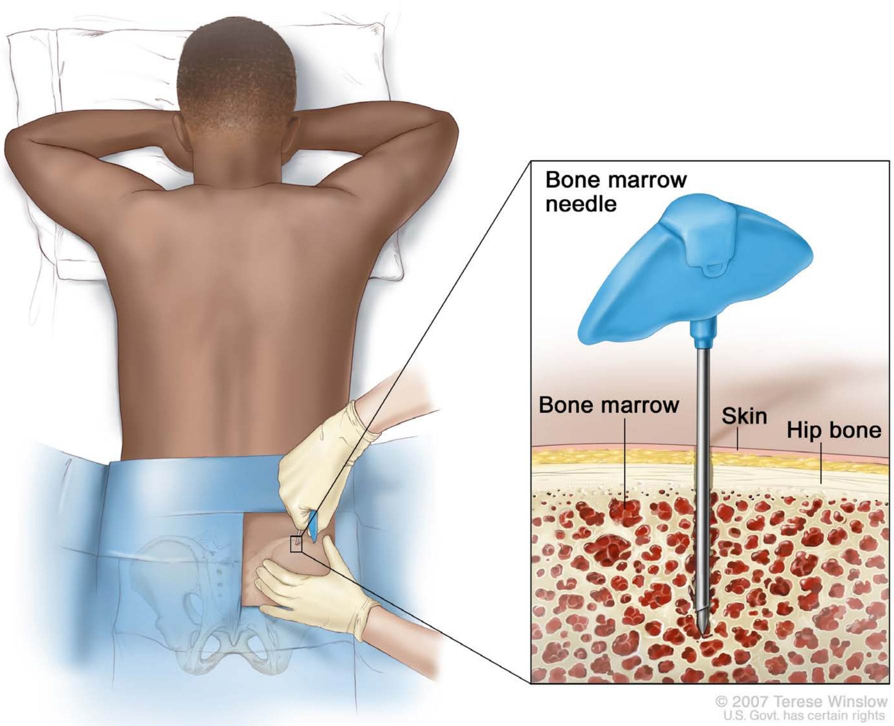
FISH

Fluorescence in situ hybridization (FISH) testing looks for abnormal changes in the chromosomes of myeloma cells. Chromosomes are long strands of genes inside each cell that carry DNA—the body's "instruction manual." Identifying abnormal genetic changes in chromosomes can help your treatment team better understand your diagnosis and prognosis, and more precisely plan your treatment.

Abnormal genetic changes include deletions and additions to chromosomes, as well as translocations (swapping) of parts between chromosomes. To that end, FISH helps determine whether someone's myeloma might be at higher risk for coming back quickly (relapse) or not get better while on treatment (progression).

Bone marrow biopsy and aspiration

Doctors use a bone marrow biopsy and aspiration to remove samples of solid bone marrow and liquid bone marrow for testing. These samples are often removed at the same time from the pelvic bone.



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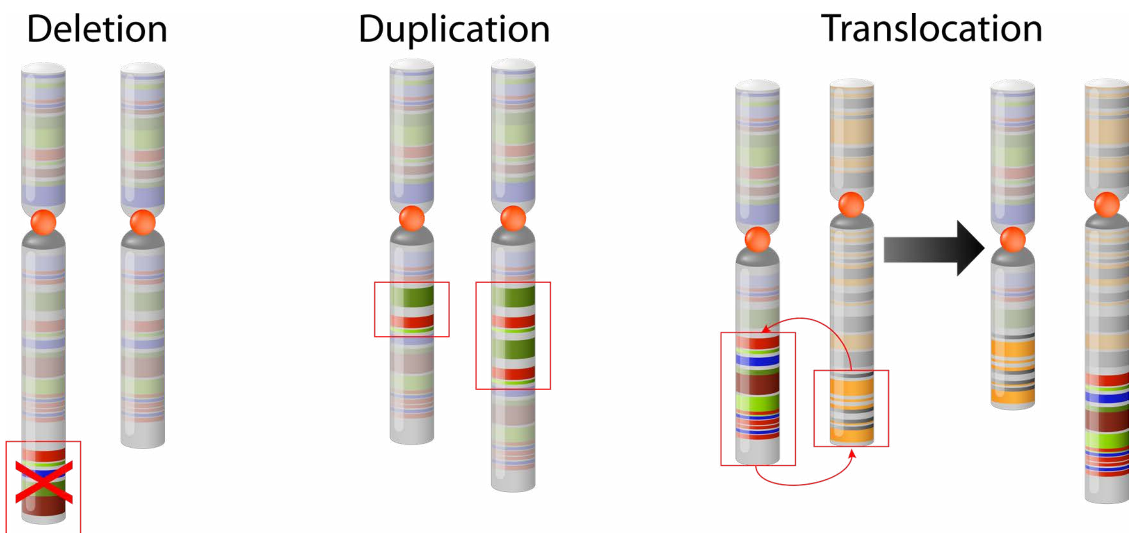
How abnormal changes in chromosomes affect myeloma

Chromosomes are made up of genes that carry DNA, the body's genetic instructions. Abnormal changes in chromosomes can disrupt a gene's function. An abnormality may cause genes to make too many or too few proteins, for example, leading to disease or illness.



Abnormal changes that are important in multiple myeloma include:

Deletion

A deletion is a loss of part of a chromosome. For example, a deletion of all or part of chromosome 13 may indicate more aggressive myeloma.

Duplication/ amplification

A duplication is when part of a chromosome is repeated. An amplification is when those genes are duplicated multiple times. Amplification of a part of chromosome 1 (1q21) is linked with more aggressive myeloma.

Translocation

A translocation is when part of one chromosome breaks off and switches places with part of another chromosome. For example, a translocation between part of chromosome 4 and part of chromosome 14 is associated with high-risk myeloma.

High risk is associated with having any of the following abnormal changes. Very high risk is associated with having 2 or more of these changes.

- Deletion of part or all of chromosome 17
- Translocation between parts of chromosomes 4 and 14
- Translocation between parts of chromosomes 14 and 16
- Translocation between parts of chromosomes 14 and 20
- Extra copies (duplication/amplification) or deletion of part of chromosome 1
- Translocation within the *MYC* gene
- Mutation of the *TP53* gene

Imaging tests

Imaging tests take pictures (images) of the inside of your body. The images can show the size, location, and other features of myeloma in your bones.

Because myeloma cells may live inside any bone in your body, it's important that your whole body be scanned in order not to miss the diagnosis. After diagnosis, imaging can also show how well your treatment is working or if the myeloma is growing.

Types of imaging include low-dose PET/CT scan, CT scan, x-ray, and MRI.

PET/CT scan

PET and CT are two types of imaging tests. These tests are often done at the same time. When used together, it's called a PET/CT scan.

PET/CT scan

Imaging instruments, like this PET/CT scanner, can show what's going on inside your body. During the scan, you'll lie on a table that moves into the tunnel of the machine. The scan can detect even small amounts of cancer.

A whole-body PET/CT scan is very good at showing where active myeloma is located in the body, both in the bones and elsewhere. And the CT part of PET/CT can help show bone damage from myeloma. Since bone lesions are common in people with multiple myeloma, an imaging test such as PET/CT scan is strongly recommended.

To create images, a radiotracer first needs to be injected into your body through a vein. The radiotracer emits a small amount of energy that's detected by the PET scanner. The radiotracer makes myeloma cells appear brighter in the images. The most commonly used radiotracer is called FDG. NCCN experts recommend using FDG for PET/CT scans for multiple myeloma.

FDG is a substance similar to glucose (sugar). If you have diabetes, the scan can't be done if your blood sugar is too high.

Low-dose CT scan

CT takes many pictures of a body part from different angles using x-rays. A computer combines all the pictures to make a series of cross-sectional images. The amount of radiation used for this type of scan is much lower than standard doses of a CT scan.

A whole-body low-dose CT scan may be used to check the whole body for lytic bone lesions. Lytic bone lesions look as if the bone has cracks in them. These lesions may cause pain, weaken the bones, and lead to fractures.

Bone survey

A bone survey uses x-rays to take pictures of your entire skeleton to look for broken or damaged bones.

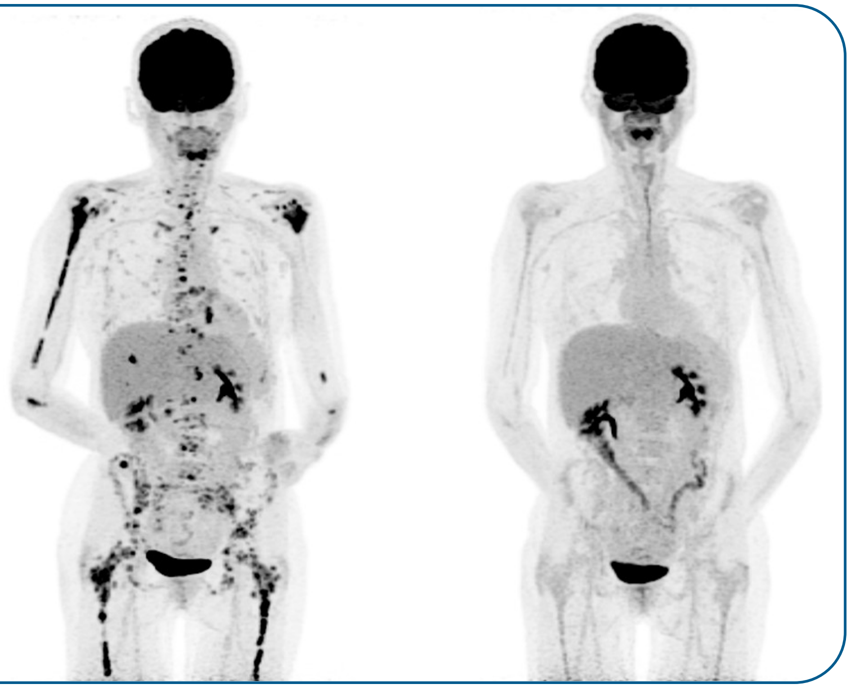
Bone surveys have mostly been replaced by PET/CT or whole-body low-dose CT scans, which show bone lesions much better than

PET scans

PET scans highlight areas of the body that have busy cellular activity, like the brain, kidneys, and bladder. Cancer cells are also very active and are highlighted on PET scans, too.

This PET scan (left) shows a patient with many areas of myeloma in the bones. After CAR T-cell therapy, the areas affected by myeloma are nearly eliminated (right).

Image: National Cancer Institute



regular x-rays. However, whole-body x-rays may still be done at some medical centers if other imaging tests aren't available.

MRI scan

MRI uses radio waves and powerful magnets to take pictures of the inside of the body. It makes images of bone and bone marrow. This type of scan may show abnormal areas where myeloma cells have replaced bone marrow.

MRI is particularly useful for telling the difference between multiple myeloma and smoldering myeloma, and for looking at soft tissues in the body. It's also used to distinguish between bone fractures due to myeloma and those due to osteoporosis.

Other tests used in certain cases

Not everyone requires every test. These tests are only used in certain circumstances:

Blood viscosity

Blood viscosity is a test that measures the thickness of your blood. Having a lot of M proteins in your blood can make your blood very thick—a rare condition called hyperviscosity. Hyperviscosity is associated with myeloma that produces a higher number of immunoglobulins.

Hyperviscosity can lead to neurological symptoms, headaches, vision problems, shortness of breath, bleeding, and damage to your kidneys and other organs.

Echocardiogram

An echocardiogram is an ultrasound of the heart. This test is used to view the structure of your heart and check how well it's working. An echocardiogram is sometimes used because multiple myeloma and some of its treatments can affect heart function in some people.

Light chain amyloidosis biopsy

Light chain amyloid (or AL amyloid) is a rare protein found in people with abnormal plasma cells that make abnormally folded light chains. AL amyloid can collect and build up in tissues and organs throughout the body. The buildup of AL amyloid proteins, called AL amyloidosis, can damage organs such as the heart and kidneys. Tests for AL amyloidosis can be done on a sample of bone marrow, the fat pad (fat from just under the skin of the belly), or an organ that may have amyloid deposits in it.

Ask for a second opinion

It's normal to want to start treatment as soon as possible. Still, there's usually enough time to have another cancer care provider review your test results and suggest a treatment plan. This is called getting a second opinion, and it's a normal part of cancer care. Even doctors get second opinions!

Seek out a myeloma specialist, if you can, because they have more experience diagnosing and treating people with this disease. Treatment decisions made by a non-myeloma specialist can seriously affect later treatment decisions. Most people with myeloma have time for a second opinion from a myeloma specialist. Make use of that time.

What's next?

The tests described in this chapter are used not only to diagnose multiple myeloma, but also to plan and track treatment. Importantly, several of these tests are used to find out if you're able to have a hematopoietic (blood-forming) cell transplant.

The next chapter provides an overview of the different treatment options for multiple myeloma.

Key points

- Cancer tests are used to make a diagnosis, plan treatment, and check how well treatment is working.
- Blood and urine tests check for signs of disease.
- Samples of tissue and fluid from the bone marrow are tested to confirm myeloma.
- Myeloma cells may exist inside any bone in your body, so imaging is used to scan your whole body for signs of the disease.
- Getting a second opinion is a good idea, and is a normal part of cancer care.

Questions to ask

- Where do I go to get tested? How long will the tests take? Will any of the tests hurt?
- How often are these tests wrong?
- How soon will I know the results and who will explain them to me?
- Will my biopsy tissue be saved for further testing? Can I have it sent to another facility for additional testing?
- How can I get a second opinion?

"Myeloma is a cancer for which we have dozens of available treatment options. If we partner with skilled myeloma specialists to make intelligent treatment decisions, we can expect to live many years of quality life."

3

Types of treatment

Your care team may recommend treatment with drug therapy followed by a hematopoietic cell transplant. You and your team will work together to figure out the best treatment for you.

This chapter explains all the treatments available for multiple myeloma. You'll likely receive several different treatments.

You'll also receive treatment to help relieve the symptoms of myeloma and the side effects of myeloma therapy. Participating in a of a new treatment is another option.

Know that there are many types of treatment available. So if one therapy doesn't work for you, you can try a different one. However, no one with myeloma will receive every treatment described in this chapter. See **Guide 2**.

Multi-drug therapy

The first treatment given for multiple myeloma often involves a combination of three or four medications, sometimes called triplet or quadruplet therapy. Typical multi-drug therapy may include:

- A targeted therapy
- An immunomodulator
- A monoclonal antibody
- A corticosteroid

These aren't the only medications for multiple myeloma, though. Different types of therapies treat myeloma in different ways. See **Guide 3**. You may be given a chemotherapy drug instead of an immunomodulator, for example.

Some people who are in poor health may start with a two-drug treatment and step up to a three- or four-drug treatment as they improve.

No matter what the drug combination is, the goal is to control disease and improve symptoms.

After multi-drug therapy, you may have a hematopoietic cell transplant or another therapy. Not every person with myeloma will have a hematopoietic cell transplant, though.

Here's a look at the different types of medication used for multi-drug therapy, starting with targeted therapy:

Guide 2 **Common treatments for multiple myeloma**
Multi-drug therapy
Hematopoietic cell transplant
Radiation therapy
Surgery
Clinical trial
Supportive care (available with any treatment)

Guide 3
Medications for multiple myeloma

Brand name	Generic name	Type of treatment
Abecma	idecabtagene vicleucel	CAR T-cell therapy
Adriamycin	doxorubicin hydrochloride	chemotherapy
Bendeka	bendamustine	chemotherapy
Carvykti	ciltacabtagene autoleucel	CAR T-cell therapy
Cytoxan	cyclophosphamide	chemotherapy
Darzalex	daratumumab	monoclonal antibody
Darzalex Faspro	daratumumab and hyaluronidase-fihj	monoclonal antibody
Decadron	dexamethasone	steroid
Doxil	doxorubicin hydrochloride liposome	chemotherapy
Elrexfio	elranatamab-bcmm	bispecific antibody
Empliciti	elotuzumab	monoclonal antibody
Etopophos	etoposide	chemotherapy
Kyprolis	carfilzomib	proteasome inhibitor
Ninlaro	ixazomib	proteasome inhibitor
Platinol	cisplatin	chemotherapy
Pomalyst	pomalidomide	immunomodulator
Revlimid	lenalidomide	immunomodulator
Sarclisa	isatuximab-irfc	monoclonal antibody
Talvey	talquetamab-tgvs	bispecific antibody
Tecvayli	teclistamab-cqyv	bispecific antibody
Thalomid	thalidomide	immunomodulator
Treanda	bendamustine	chemotherapy
Velcade	bortezomib	proteasome inhibitor
Venclexta	venetoclax	small molecule inhibitor
Xpovio	selinexor	nuclear export inhibitor

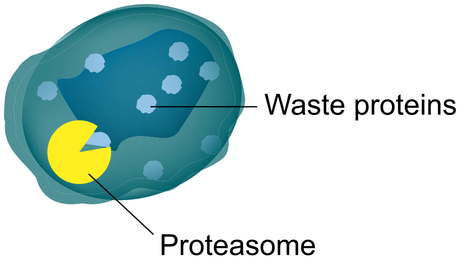
Targeted therapy

Targeted therapy drugs identify specific features of cancer cells to find and attack them. The most common targeted therapy options to treat myeloma are proteasome inhibitors and antibody drugs, but a variety of medications are available:

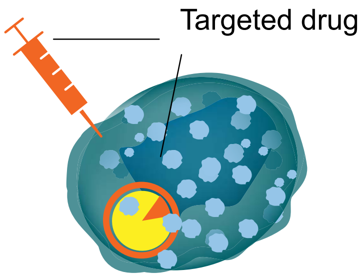
- **Proteasome inhibitors** block the action of certain proteins (proteasomes) that allow myeloma cells to survive.
- **Monoclonal antibodies** are artificial antibodies that attach to proteins on cancer cells. Monoclonal antibodies invite other immune cells to attack cancer cells.
- **Chimeric antigen receptor (CAR) T-cell therapy** is a treatment made from your own T cells. A T cell is a type of white blood cell that hunts and destroys cancer cells, infected cells, and other damaged cells. CAR T-cell therapy reprograms your natural T cells to improve their ability to recognize and target cancer cells.
- **Small molecule inhibitors** are drugs whose molecules are so small, they can penetrate inside cancer cells. Once inside, a small molecule inhibitor targets proteins or other molecules, causing the cancer cell to die.
- **Nuclear export inhibitors** prevent proteins from leaving the nucleus of cancer cells, which stops the cancer cells from functioning.
- **Bispecific antibodies** are drugs that seek two targets. A bispecific antibody attaches to both T cells and to myeloma cells, bringing the cells together so that the T cells attack the myeloma cells.

How targeted therapy works: One example

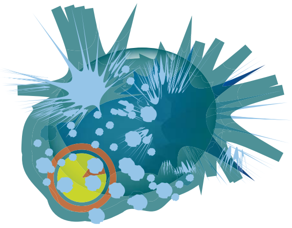
Targeted therapy drugs work in different ways. One way is by blocking a process that keeps the myeloma cell alive. One such process: Proteasomes that clear out waste proteins in myeloma cells.



But a targeted drug can block proteasomes from carrying out this process. If the proteasomes are halted, then the waste proteins build up inside the cells.



Eventually, the myeloma cells become overloaded with waste proteins and are destroyed.



Side effects of targeted therapy

A side effect is an unhealthy or unpleasant physical or mental condition caused by treatment. Any treatment for myeloma can cause side effects.

Common side effects of targeted therapy medications include fatigue, drowsiness, weakness, headache, chills, loss of appetite, nausea, vomiting, diarrhea, constipation, and fatigue. Some of these medications can also lower the level of important minerals and electrolytes in the body.

Targeted therapy drugs may also reduce the number of red blood cells, white blood cells, or platelets in your body. A low white blood cell count can lower immunity and increase the risk of infection. A low platelet count can increase the risk of bruising and bleeding.

Other common side effects are blood clots, shortness of breath, skin rash, common cold, muscle aches, heart issues, and numbness or tingling in the hands or feet (called peripheral neuropathy).

Some people have many side effects while others have few. Some side effects can be very serious while others can be unpleasant but not serious.

Most side effects appear soon after treatment starts and go away after treatment ends. Other side effects are long-term or may appear years later.

It takes a team

Treating multiple myeloma takes a team approach. Your team should communicate and work together to bring the best knowledge from each specialty. This is called multidisciplinary care.

Your multidisciplinary team is made up of a number of cancer specialists and care providers. These include:

A medical oncologist treats cancer using systemic therapies such as chemotherapy and immunotherapy. A medical oncologist will often coordinate your care with other team members. If not, ask who will coordinate your care.

A diagnostic radiologist reads the results of PET/CT scans and other imaging tests.

A radiation oncologist prescribes and plans radiation therapy.

An orthopedic surgeon treats fractures in the vertebrae and other bones.

Your primary care doctor handles medical care not related to your cancer. Your primary doctor can help you express your thoughts about treatments to your cancer care team.

The side effects of therapy can depend on the drug and the dose. Some of the side effects are caused by several drugs but differ in how likely they are to occur. Other side effects are caused by only one type of drug. For example, side effects of CAR T-cell therapy include headaches, confusion, seizures, and a dangerous condition called cytokine release syndrome. This condition can cause fever, chills, nausea, headaches, racing heartbeat, low blood pressure, and trouble breathing.

Not all side effects of different targeted therapies are listed here. Be sure to ask your treatment team for a complete list of common and rare side effects.

If a side effect bothers you, tell someone on your treatment team. There may be ways to help you feel better. There are also ways to prevent some side effects.

Immunomodulators

Immunomodulators are a type of immunotherapy. Immunotherapy uses your body's immune system—your natural defense against infection and disease—to fight cancer. Immunomodulators increase the immune system's ability to find and destroy cancer cells.

Immunomodulators are oral drugs that are often prescribed for many months or even years.

Side effects of immunomodulators

Immunomodulators may cause drowsiness, fatigue, constipation, diarrhea, rash, low blood cell counts, serious blood clots, and peripheral neuropathy. Immunomodulators can also lead to birth defects, so avoid becoming pregnant or getting someone pregnant while using them. Side effects are more common with thalidomide than with other immunomodulators.

Steroids

Corticosteroids (often just called steroids) are used to relieve swelling and inflammation. Some steroids also have anti-cancer effects. Steroids are often used with chemotherapy, targeted therapy, or both to treat myeloma. Steroids may be given as a pill, a liquid, or an IV injection.

Side effects of steroids

Common side effects of steroids are feeling hungry, trouble sleeping, slow wound healing, upset stomach, muscle weakness, weight gain, and swelling in the ankles, feet, and hands. Steroids may also significantly increase blood sugar levels. Steroids make some people feel irritable and cranky. Changes in mood can happen from day to day.

Most side effects of steroids go away after the drugs are stopped. When used for a long time, steroids can lead to weakening of bones, thinning of skin, and increased risk of diabetes, cataracts, ulcers, and infections.

Chemotherapy

Chemotherapy (or chemo) is a drug therapy for destroying cancer cells. Chemotherapy is a systemic (whole-body) therapy that kills fast-growing cells throughout the body. Cancer cells are fast-growing cells, but some normal cells are fast-growing too.

Different types of chemotherapy drugs work in different ways to kill cancer cells or stop new ones from being made. Many chemotherapy drugs are liquids that are slowly injected into a vein (IV infusion) or underneath the skin (subcutaneous). Some are pills that are swallowed. The drugs travel in the bloodstream to treat cancer throughout the body.

Chemotherapy is given in cycles. Each cycle has days of treatment followed by days of rest. This allows the body to recover before the next treatment cycle. Cycles vary in length depending on which drugs are used. Often, the cycles are 14, 21, or 28 days long. The number of treatment days per cycle and the total number of cycles given also vary based on the chemotherapy used.

Side effects of chemotherapy

Like other therapies, the side effects of chemotherapy depend on many factors. These include the drug, the dose, and the person.

In general, side effects are caused by the death of fast-growing cells, which are found in the intestines, mouth, and blood. Some chemotherapy drugs can also cause damage to your bone marrow.

Common side effects of chemotherapy are nausea, vomiting, diarrhea, mouth sores, loss of appetite, hair loss, and low blood cell counts. Feeling very tired (fatigue) or weak is also common.

Not all side effects of chemotherapy are listed here. Be sure to ask your treatment team for a complete list of common and rare side effects for the medications you'll be receiving. If a side effect bothers you, tell your treatment team. There may be ways to help you feel better. There are also ways to prevent some side effects.

Hematopoietic cell transplant

Cancer and its treatment—especially when used in high doses—can damage and destroy cells in the bone marrow. A hematopoietic (blood-forming) cell transplant replaces the damaged or destroyed cells with healthy blood stem cells. This is also called a stem cell rescue or a bone marrow transplant.

Where do healthy blood stem cells come from? They typically come from the patient's own blood. A blood stem cell is a special kind of cell that can develop into any type of blood cell. After a hematopoietic cell transplant, the healthy blood stem cells grow new blood cells and bone marrow.

Hematopoietic cell transplants are a common treatment for multiple myeloma, but they're not for everyone. A hematopoietic cell transplant is an intense treatment. The transplant process can take several weeks, and recovery may take several months.

Your treatment team will consider many factors when deciding if you can benefit from this procedure. Some of these factors include your fitness level, health status, vital organ function, cancer stage, previous treatments, other medical conditions, available supportive care, and additional factors—including your goals and wishes.

A hematopoietic cell transplant is usually performed after you've had initial treatment. Some people who aren't able to have a hematopoietic cell transplant at first may be able to have one if their condition improves after initial treatment.

Here's a step-by-step description of a hematopoietic cell transplant:

Collecting blood stem cells

The first step is to collect, or harvest, the stem cells in your blood. Beforehand, you'll be given injections (shots) of growth factors that will boost the amount of blood stem cells in the bone marrow and move them into the bloodstream.

The main procedure is called apheresis, which uses a special machine to collect stem cells from your bloodstream. You may need a number of apheresis procedures to obtain enough blood stem cells.

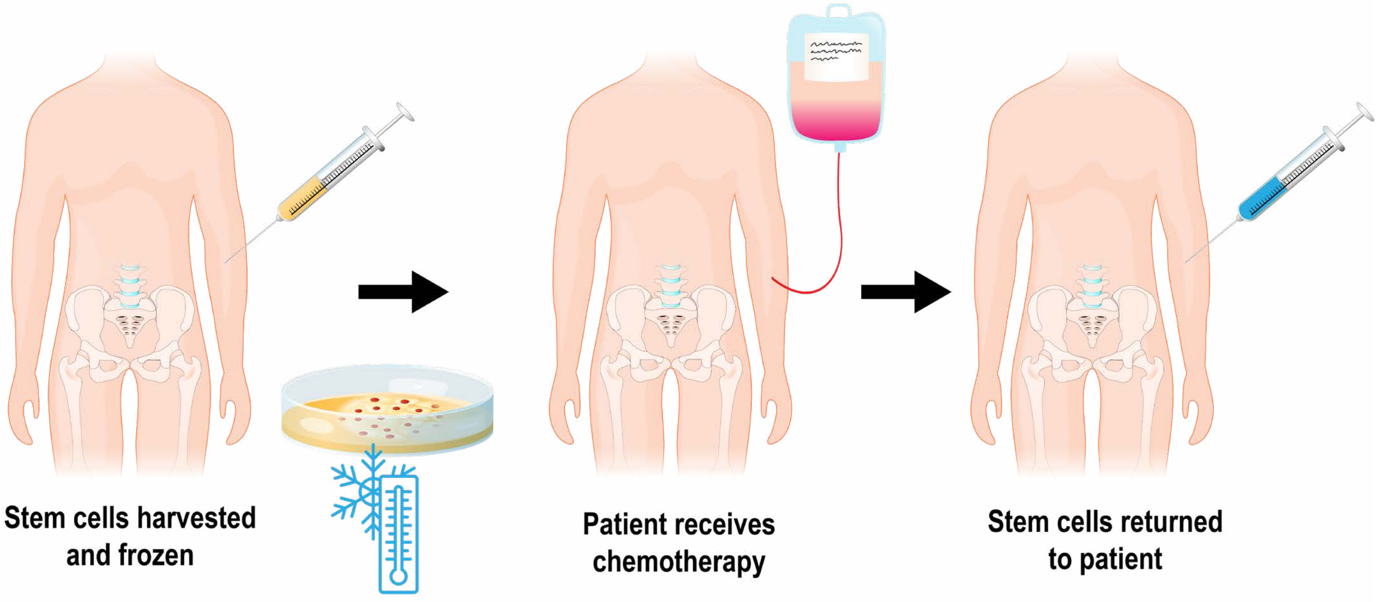
The blood stem cells are often frozen and stored until they're needed. Your doctor or care team may recommend collecting additional cells for a second transplant in the future if your myeloma comes back.

How a hematopoietic cell transplant is done

First, blood stem cells are removed (harvested) from the patient's blood or bone marrow.

Second, the harvested blood stem cells are concentrated and frozen for preservation. Meanwhile, the patient receives high-dose chemotherapy to destroy any myeloma cells in the bone marrow.

Lastly, the blood stem cells are returned (transfused) to the patient, where they'll grow healthy new cells in the bone marrow.



High-dose chemotherapy

The next step is receiving high-dose chemotherapy. Chemotherapy destroys any myeloma cells in your bone marrow. But it also destroys normal cells in your bone marrow. This greatly weakens your immune system, leaving you very vulnerable to infections.

You'll receive antibiotics and take other precautions to avoid infection for the next few weeks.

Replacing blood stem cells

A day or two after chemotherapy, your blood stem cells will be put back into your body with a transfusion. A transfusion is a slow injection into a large vein. This process can take several hours to complete.

The transplanted blood stem cells will quickly travel to your bone marrow and begin to settle in and grow. This is called engraftment. Depending on the type of transplant, it usually takes about 2 to 4 weeks for your bone marrow and blood cells to return to minimum safe levels.

Until then, you'll have little or no immune defense. It may take a few weeks or months for the blood cells to fully recover so that your immune system is back to normal. While the new blood stem cells grow, you'll be given transfusions of platelets and red blood cells to restore and maintain your blood counts. You'll also to be re-immunized against childhood illnesses.

At some centers, people can receive a hematopoietic cell transplant as an outpatient procedure, so they can go home the same day.

Side effects of hematopoietic cell transplant

High-dose chemotherapy can result in nausea, vomiting, diarrhea, hair loss, loss of appetite, and mouth sores.

You'll likely feel tired and weak after the transplant and while waiting for the new blood stem cells to grow in the bone marrow. This weak and unpleasant feeling might last for several weeks after you go home, too.

Radiation therapy

Radiation therapy is a type of local therapy. Local therapy treats cancer cells only in a specific area of the body. For myeloma, radiation therapy is most commonly used to treat a painful area of bone damage, a plasmacytoma that's causing pain (palliative treatment), or a bone that may break.

Radiation therapy is also sometimes used as the only treatment for a solitary plasmacytoma (a single mass of myeloma cells).

Radiation therapy involves a large machine that sends out high-energy rays to a specific area of cancer cells. This either kills the cancer cells or stops new cancer cells from being made.

Radiation that treats the cancer itself requires a series of treatments that takes several weeks. Radiation therapy for pain relief involves daily treatments over several days.

Side effects of radiation therapy

Side effects of radiation therapy depend on the dose, the length of treatment, and what part of the body received the radiation.

Patients who receive a short course of treatment for pain relief may not have any side effects except redness of the skin or slight irritation in the treated area. Radiation to treat the cancer itself may cause more side effects due to the higher dose of radiation and longer duration of treatment.

Side effects don't usually occur during the actual treatments. But you may have fatigue that begins after the treatment has finished and lasts for several weeks. You may also develop nausea or diarrhea. You may lose your appetite and may even lose weight during treatment. Other side effects, such as redness of the skin or hair loss, may occur in treated areas.

Surgery

Surgery is an operation to remove or repair a part of the body. It's rarely used to treat multiple myeloma. But minimally invasive procedures can be used in some cases to fix fractures in bones or stabilize fractures in the vertebrae that may be affecting the spinal cord.

Side effects of surgery

You may experience fatigue, bleeding, or pain after the surgery. Other common side effects are swelling and surgical scars. Infections may occur occasionally.

Clinical trial

A clinical trial is a type of medical research study. After being developed and tested in a lab, potential new ways of fighting cancer need to be studied in people. If found to be safe and effective in a clinical trial, a drug, device, or treatment approach may be approved by the U.S. Food and Drug Administration (FDA).

Everyone with cancer should carefully consider all of the treatment options available for their cancer type, including standard treatments and clinical trials. Talk to your team about whether a clinical trial would be the best choice for you.

Phases

Most clinical trials focus on treatment and are done in phases.

- **Phase 1** trials study the safety and side effects of an investigational drug or treatment approach.
- **Phase 2** trials study how well the drug or approach works against a specific type of cancer.
- **Phase 3** trials test the drug or approach against a standard treatment. If the results are good, it may be approved by the FDA.
- **Phase 4** trials study the safety and benefit of an FDA-approved treatment.

Who can enroll?

It depends on the clinical trial's rules, called eligibility criteria. The rules may be about age, cancer type and stage, treatment history, or general health. They ensure that participants are alike in certain ways in order to compare how their disease responds to a specific treatment.

Informed consent

Clinical trials are managed by a research team. This group of experts will review the study with you in detail, including its purpose and the risks and benefits of joining.

All of this information is also provided in an informed consent form. This agreement confirms that you've been fully told about your part in the trial. Read the form carefully and ask questions before signing it. Take time to discuss it with people you trust.

Keep in mind that you can leave and seek treatment outside of the clinical trial at any time.

Will I get a placebo?

A placebo (an inactive treatment that appears real) is almost never used alone in cancer clinical trials. During the trial, you'll continue to receive standard cancer care. You may be given either a placebo with a standard treatment, or a new drug with a standard treatment. You'll be informed before you enroll if a placebo is part of a clinical trial.

Are clinical trials free?

The study sponsor pays for costs related to the research. But you'll still be asked to cover typical or standard-of-care medical costs. This care is often billed to your insurance. You'll also need to pay for any other services, like transportation or childcare, due to extra appointments.

Finding a clinical trial

In the United States

NCCN Cancer Centers
NCCN.org/cancercenters

The National Cancer Institute (NCI)
cancer.gov/about-cancer/treatment/clinical-trials/search

Worldwide

The U.S. National Library of Medicine (NLM)
clinicaltrials.gov

Need help finding a clinical trial?

NCI's Cancer Information Service (CIS)
1.800.4.CANCER (1.800.422.6237)
cancer.gov/contact

Don't wait for your doctor to bring up clinical trials. Start the conversation and learn about all of your treatment options. If you find a study that you may be eligible for, ask your care team if you meet the requirements.

“

Without clinical trials, our treatment wouldn't change. It would always remain the same. Some people refer to clinical trials as receiving tomorrow's best treatment today.”

What's next?

This chapter provided an overview of the many treatment options available for multiple myeloma. The next chapter explains primary treatment—the first treatment you'll receive to try to rid your body of myeloma.

Key points

- There are many types of treatment for myeloma. If one therapy doesn't work for you, you can try a different one.
- Multi-drug therapy—a combination of three or four different medications—is typically the first treatment given for multiple myeloma. A hematopoietic cell transplant often follows multi-drug therapy.
- A hematopoietic cell transplant replaces damaged or diseased cells in the bone marrow with healthy blood stem cells. It starts with high-dose chemotherapy to wipe out any myeloma cells in the body.
- A clinical trial studies a test or treatment to see how safe it is and how well it works.

Questions to ask

- Are you suggesting treatment options from the NCCN Guidelines, or have you modified the treatment approach in my situation?
- How do my age, overall health, and other factors affect my options?
- Are my chances any better for one option than another? Less time-consuming? Less expensive?
- What side effects am I going to have from these treatments, and how are they going to affect my daily functioning and quality of life?
- Am I eligible for a clinical trial?

4

Primary treatment

The previous chapter discussed all the possible treatment options for multiple myeloma. This chapter explains how the treatment process will begin for you.

Primary treatment is the first treatment used to rid the body of cancer. Primary treatment is different for each of the three types of multiple myeloma:

- **Active (or symptomatic) multiple myeloma** causes symptoms and affects organs. Myeloma that's causing symptoms should be treated.
- **Solitary plasmacytoma** consists of a single mass of myeloma cells in bone or soft tissue. It often causes bone pain or fractures. Solitary plasmacytoma requires treatment to the affected area.
- **Smoldering myeloma** isn't active, doesn't cause any symptoms or organ problems, and rarely needs treatment.

We'll talk first about primary treatment for active multiple myeloma. Later in this chapter we'll discuss treatment for solitary plasmacytoma and smoldering myeloma.

Active multiple myeloma

Active multiple myeloma is when myeloma cells are found in many sites throughout the bone marrow. It's also called symptomatic multiple myeloma because it can cause many symptoms, including bone lesions and organ damage.

Active multiple myeloma needs to be treated. There are many good treatments for active myeloma—and new ones are being developed all the time. Treatment focuses on fighting the cancer as well as relieving symptoms. Your specific treatment will depend on the extent or aggressiveness of the myeloma, your health, your related symptoms, and other considerations.

Your treatment team will first try therapy that has shown the greatest chance of success in people whose myeloma is like yours. This is called primary treatment. If primary treatment doesn't reduce myeloma, you can have additional treatment.

Primary treatment

Primary treatment for active multiple myeloma usually includes several treatments that are given during the same time:

- **Multi-drug therapy** is the usual primary treatment to attack and destroy myeloma cells. A common three-drug combination includes a targeted therapy, an immunomodulator, and a steroid. A four-drug combination may also include a second targeted therapy drug. People who aren't able to take a three- or four-drug combination can start with two medications.

- **Bone-building therapy** strengthens bones and protects them from damage, which is very common in people with multiple myeloma. The recommended treatments are bisphosphonates or denosumab.
- **Supportive care** can ease the symptoms of myeloma and the side effects of myeloma treatment. Care is based on the symptoms and side effects you have. You may receive radiation therapy to reduce bone pain, for example. Or, if you're taking medications that can cause blood clots, you may be given blood thinners to lower the chances of getting a clot.

The choice of primary treatment depends on whether a hematopoietic cell transplant might be part of your treatment plan.

For example, some chemotherapy drugs can cause severe damage to healthy cells in your bone marrow. This makes it more difficult to harvest blood stem cells for a transplant. So if you're likely to have a hematopoietic cell transplant, then chemo drugs aren't recommended for your primary treatment.

Preferred multi-drug combinations for primary treatment are listed in **Guide 4**. Preferred therapies have the most evidence they work better than others.

Other recommended multi-drug combinations also appear in **Guide 4**. Other recommended therapies may not work quite as well as preferred therapies, but they can still be useful.

Testing for hematopoietic cell transplant

Because a hematopoietic (blood-forming) cell transplant may be a major part of your treatment plan, testing to find out if you can have the procedure is done soon after you start primary treatment.

The transplant itself, which includes high-dose chemotherapy, usually occurs right after completing primary treatment.

Follow-up tests

Follow-up tests let your care team know if primary treatment is working. Many of the tests used for follow-up are the same ones used to diagnose myeloma.

Common follow-up tests include:

- Blood tests such as CBC with differential and metabolic panel
- Free light chain assay
- Tests for immunoglobulins and M proteins in your blood
- Tests for proteins and light chains in your urine
- Whole-body imaging with PET/CT, low-dose CT, or MRI

Follow-up tests indicate whether the treatment has had an effect on the cancer. This is called a treatment response.

Treatment response

A treatment response (also called a remission) is a measurable improvement caused by treatment. See **Guide 5**. The response is defined by how well treatment destroys myeloma cells or reduces bone lesions. Symptoms usually improve with a response to treatment, too.

How well your myeloma responds to primary treatment can determine your next step. It may indicate you're ready for a hematopoietic cell transplant or maintenance therapy.

If your myeloma doesn't respond to treatment, it has become progressive disease. See *Chapter 6: Treatment for progression and relapse*.

Hematopoietic cell transplant

Treatment for active myeloma may or may not include a hematopoietic cell transplant. A hematopoietic cell transplant isn't a treatment option for everyone. This treatment destroys cells in the bone marrow with chemotherapy and then replaces them with healthy blood stem cells. Your care team will look at a

Guide 4
Multi-drug combination options for primary treatment

Preferred combinations	
Having a hematopoietic cell transplant	Daratumumab, bortezomib, lenalidomide, and dexamethasone
Not having a hematopoietic cell transplant	Daratumumab, lenalidomide, and dexamethasone
	Isatuximab-irfc, bortezomib, lenalidomide, and dexamethasone
	Lenalidomide, bortezomib, and dexamethasone
Other recommended combinations	
Having a hematopoietic cell transplant	Bortezomib, lenalidomide, and dexamethasone
	Carfilzomib, lenalidomide, and dexamethasone
	Isatuximab-irfc, bortezomib, lenalidomide, and dexamethasone
Not having a hematopoietic cell transplant	Carfilzomib, lenalidomide, and dexamethasone

Guide 5
Possible results of primary treatment

Remission	When the signs and symptoms of cancer decrease or disappear. Remission may be partial or complete.
Relapse	When cancer comes back after being in remission for a while.
Progression	When the cancer doesn't improve or becomes worse after treatment.

number of factors to decide if it's the right choice for you.

If your doctor thinks you'll have a hematopoietic cell transplant, then your blood stem cells will be removed (harvested) after 4 to 6 cycles of primary treatment, when the number of myeloma cells is low.

Collecting blood stem cells when you're ready but delaying the transplant until you need it may also be an option. Or, if you might have a second transplant as later treatment, enough blood stem cells should be collected for two transplants.

After the transplant, you'll have follow-up tests to check for a treatment response. Tests to measure the level of M proteins in your blood and urine should be done at least every 3 months.

If your myeloma responds to the transplant and remains stable or goes into remission, you've hit a major milestone. Take time to celebrate and appreciate the outcome. Next, you'll move on to maintenance therapy.

If your myeloma doesn't improve after the transplant, your disease is progressing. But this doesn't mean you're out of options. There's still much that can be done. See *Chapter 6: Treatment for progression and relapse*.

Maintenance therapy

Maintenance therapy is medication that's given less often or in lower doses to keep (maintain) the good results of prior treatments.

The preferred maintenance treatment after a hematopoietic cell transplant is lenalidomide. Other recommended maintenance treatments include lenalidomide and carfilzomib or lenalidomide and daratumumab, among others.

Be sure to discuss with your care team the benefits and risks of having maintenance therapy.

One risk, for instance, is that maintenance therapy (especially with lenalidomide) slightly increases your chance of developing another cancer.

Continuing therapy

If you aren't able to have a hematopoietic cell transplant, or you don't want a transplant right away, then another option is to continue receiving primary treatment or maintenance treatment, depending on your situation. This treatment is given until no further improvement is seen on follow-up tests or until it's no longer effective.

More follow-up tests

After a hematopoietic cell transplant, or during maintenance or continuing therapy, you'll have more follow-up tests to determine whether the myeloma is getting worse or getting better.

These tests also check whether your treatments are having any toxic (harmful) effects on your body. Many of these follow-up tests will be the same ones you've had before.

Relapse

Even with the best treatment, multiple myeloma often comes back (relapses) months or years after primary treatment.

If your multiple myeloma relapses, you can have additional therapy that's different from your primary treatment. Read about additional treatment in *Chapter 6: Treatment for progression and relapse*.

So far, this chapter has discussed primary treatment for active multiple myeloma. Now let's talk about treatment for the other, less common types of myeloma—solitary plasmacytoma and smoldering myeloma.

Solitary plasmacytoma

A solitary plasmacytoma is a single mass of myeloma cells in a bone or soft tissue. A solitary plasmacytoma is a type of active myeloma. So it needs treatment.

Primary treatment

Because there's only one cancer mass, treatment for solitary plasmacytoma requires only local therapy. Local therapy treats a specific area or part of the body, not the whole body. The primary local treatment for a solitary plasmacytoma is radiation therapy. Sometimes surgery is also required.

For people who have a high risk of developing multiple myeloma, chemotherapy may also be recommended.

Clinical trial

A clinical trial is also a primary treatment option for people with solitary plasmacytoma. An NCCN panel of myeloma experts encourages people with solitary plasmacytoma to consider joining a clinical trial.

Follow-up tests

Regular follow-up testing is key to detect signs of progression to active multiple myeloma.

After primary treatment, people with solitary plasmacytoma should have follow-up visits every 3 to 6 months. Blood tests are necessary at each visit. Imaging should be done on an annual basis. Other follow-up tests are given as needed.

Progressive disease

If follow-up tests indicate that the plasmacytoma is progressing even after treatment, then further testing is necessary. This includes all the tests required for diagnosing multiple myeloma. If you're diagnosed with multiple myeloma, you can go back to the beginning of this chapter and read about primary treatment for active multiple myeloma.

It's important to know that about half of people with solitary plasmacytoma never progress to multiple myeloma.

Smoldering myeloma

Myeloma that isn't causing symptoms is called smoldering myeloma. Smoldering myeloma rarely needs treatment right away if it hasn't caused organ damage or cancer-related symptoms. NCCN experts recommend that people who have smoldering myeloma join a clinical trial.

However, smoldering myeloma can sometimes turn into multiple myeloma. Those with high-risk smoldering myeloma may require more frequent follow-up visits or even treatment. But in most people, smoldering myeloma can exist for years before becoming active myeloma. You may still want to see a myeloma specialist to make sure your myeloma does not need treatment.

Observation

Observation without treatment is an option for many people with inactive smoldering myeloma. Observation means that you'll have regular follow-up visits so your care team can look out for any cancer growth or symptoms.

Clinical trial

A clinical trial is a preferred primary treatment option for people with smoldering myeloma. An NCCN panel of myeloma experts strongly encourages people with smoldering myeloma to enroll in a clinical trial if one is open and is the right fit.

Follow-up tests

Many of the tests used for follow-up are the same as those used to confirm active myeloma and assess symptoms. During observation, you should have follow-up blood tests every 3 to 6 months and whole-body imaging once a year.

Progression

If smoldering myeloma grows and starts causing symptoms, that means it has progressed to active (symptomatic) myeloma. From this point, it should be tested and treated as multiple myeloma. If you're diagnosed with multiple myeloma, you can go back to the beginning of this chapter and read about primary treatment for active multiple myeloma.

What's next?

This chapter explained primary treatment and follow-up care for myeloma. You also read about supportive care early in this chapter. The next chapter provides an in-depth look at how supportive care can help with myeloma symptoms and the side effects of myeloma treatment.

If your myeloma is stable or in remission after primary treatment, take time to appreciate your life and enjoy your health. And remember to take care of your health by eating well, being active, and going to follow-up visits.

Key points

- Treatment for active multiple myeloma focuses on fighting the cancer as well as relieving symptoms.
- The choice of medications used for primary treatment depends on whether a hematopoietic cell transplant is part of your overall treatment plan.
- Supportive care helps manage myeloma symptoms and side effects of treatment.
- Maintenance therapy is given less often or in lower doses than primary therapy. Its goal is to keep up the good results of previous treatment.
- Solitary plasmacytoma usually requires only local therapy to treat the single cancer mass.
- Smoldering myeloma rarely needs treatment right away. It often takes months or years to turn into active multiple myeloma.

Questions to ask

- Do I have a choice of when to begin treatment? Can I choose the days and times of treatment?
- How long will it take to recover after the treatment?
- How much will the treatment cost? What can I do if the treatments are too expensive?
- Can I stop treatment at any time? What will happen if I stop treatment?

5

Supportive care

Supportive care helps manage the symptoms of myeloma and the side effects of myeloma treatment. Supportive care doesn't treat the cancer, but it aims to improve your quality of life.

Supportive care helps improve your quality of life during and after cancer treatment. The goal of supportive care is to prevent or manage side effects and symptoms, like pain and cancer-related fatigue. It also addresses the mental, social, and spiritual concerns faced by those with cancer.

Supportive care is available to everyone with cancer and their families, not just those at the end of life. Palliative care is another name for supportive care.

Supportive care can also help with:

- Making treatment decisions
- Coordinating your care
- Paying for care
- Planning for advanced care and end of life

Supportive care is an important part of your overall treatment.

Here are some ways supportive care can help with common problems caused by myeloma and myeloma treatment:

Reducing bone damage

Multiple myeloma often makes bones thinner and weaker, a condition called osteoporosis. Osteoporosis can lead to problems such as bone pain, bone fractures, and compression of the spine. Medications are available to help strengthen bones and reduce the risk of fractures and pain.

Bisphosphonates are one type of medication that can improve bone health. Bisphosphonates lessen bone pain and help slow down the destruction of bone caused by myeloma cells. They're given as a liquid that's injected into a vein (IV infusion).

Bisphosphonates for people with multiple myeloma include pamidronate (Aredia) and zoledronic acid (Zometa).

A different type of drug called denosumab (Xgeva) can also help prevent serious bone problems in people with multiple myeloma. Denosumab is given as a shot (injection) under the skin every 4 weeks.

NCCN experts recommend that either bisphosphonates or denosumab be given to anyone receiving primary treatment for myeloma. For people whose kidneys don't work very well, denosumab is a better choice than bisphosphonates.

Bisphosphonates and denosumab can cause side effects such as rotting of the jawbone in the mouth (osteonecrosis). So it's very important to see your dentist before starting this kind of treatment. It's also very important to have good dental care before and during treatment with these medications.

Bone damage can also be painful. You may receive radiation therapy to relieve this pain.

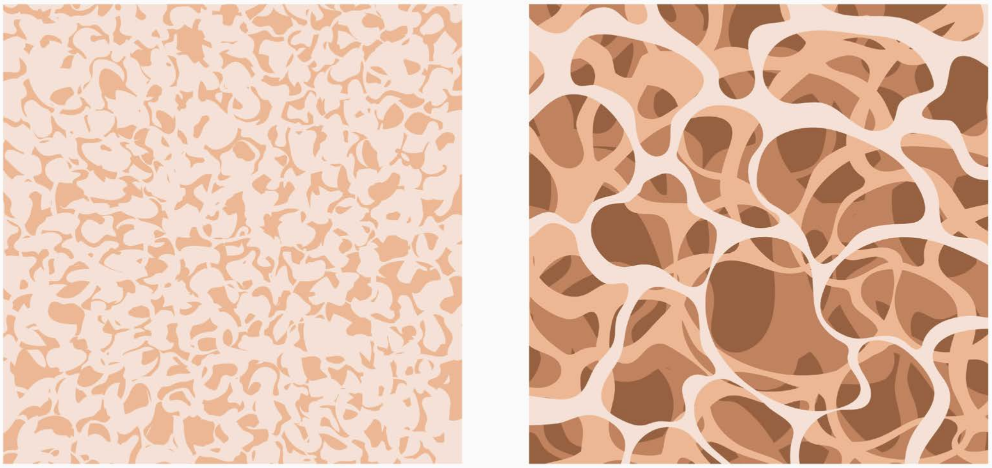
To help prevent or treat a bone fracture, you may be referred to an orthopedic surgeon. Surgeons can prevent bone fractures by placing a rod to support the bone and hold it in place. Surgery may also be used to treat fractures in the bones of the spine (vertebrae).

Two surgical procedures that may be used are vertebroplasty and kyphoplasty.

Vertebroplasty and kyphoplasty

Vertebroplasty or kyphoplasty may be used to treat compression fractures in the vertebrae. A compression fracture is a break in a vertebra caused by the collapse of bones in the spine. Vertebroplasty involves injecting a special orthopedic cement into the vertebra. The cement supports and strengthens the bone for pain relief and to hold it in place.

Kyphoplasty involves a balloon-like device that's placed in the fractured vertebrae and then inflated. This spreads out the vertebrae to restore the normal shape and height of the spine. Then the balloon is removed, and orthopedic cement is injected to support the vertebrae and hold them in place.



How osteoporosis weakens bones

Normal bone **Bone with osteoporosis**

If you look at a normal bone under a microscope, you'll see the bone structure is dense and closely packed together. But a bone that develops osteoporosis loses density and mass. The structure thins out and leaves large gaps. This weakens bones, making them more likely to break.

Decreasing kidney damage

Myeloma cells cause your bones to break down, which releases calcium into the bloodstream. A high level of calcium in the blood is dangerous for the kidneys. If this happens, you'll be treated with IV fluids and drugs to help your kidneys flush out the excess calcium.

Very high levels of M proteins can cause the blood to become very thick. This is called hyperviscosity. Very thick blood can damage the kidneys and other organs. Hyperviscosity can be treated with a process called plasmapheresis. This treatment filters blood through a machine to remove the M proteins.

High levels of abnormal M proteins, including light chains, can also damage the kidneys. Free light chains combine with another protein in the kidneys. This makes the light chains become too large to pass through the kidneys. The damage caused by this blockage is called myeloma kidney. Prompt treatment of myeloma is required to prevent permanent kidney damage.

To prevent kidney failure, your care team may recommend staying hydrated. This means drinking plenty of fluids, especially water.

You'll also be told to avoid using certain medications like NSAIDs (such as ibuprofen and naproxen) and IV contrast, which is often given before an imaging test. Your care team will watch you closely for signs of kidney damage, especially if you're taking bisphosphonates for a long time.

Avoiding infections

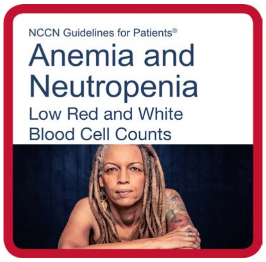
Myeloma and certain myeloma treatments can increase your risk of infection. But you can greatly reduce this risk by getting vaccinated for infections that are common in people with myeloma, including pneumonia, the flu, and COVID-19.

Another infection is shingles, which causes a painful skin rash. Shingles can be a side effect of bortezomib, carfilzomib, ixazomib, and daratumumab. If you're receiving any of these medicines, you might also be given pills to prevent shingles.

Treating anemia

Myeloma cells crowd out the normal blood cells in the bone marrow. This can cause anemia—a condition in which the number of red blood cells is too low. Sometimes anemia may be treated with a drug that causes your body make more erythropoietin. Erythropoietin is a natural hormone that helps the bone marrow make more red blood cells.

If you're being treated with drugs to increase erythropoietin, you should have frequent checkups to test for possible blood clots. You can read more about anemia at NCCN.org/patientguidelines and on the NCCN Patient Guides for Cancer app.



NCCN Guidelines for Patients®
Anemia and Neutropenia
Low Red and White Blood Cell Counts

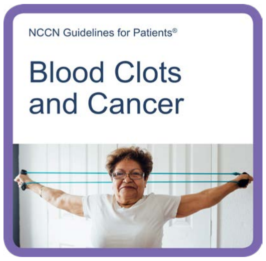
Preventing blood clots

People with myeloma have a much higher risk of forming blood clots in their bodies, particularly in the first 6 months after being newly diagnosed with myeloma. A blood clot that travels to the lungs, heart, or brain can be dangerous, even deadly.

Some drugs used for treating myeloma—particularly carfilzomib, lenalidomide, pomalidomide, and thalidomide—have a greater chance of causing blood clots.

Blood thinners are medications that thin out the blood to lower the risk of blood clots. NCCN experts recommend taking either blood thinners or aspirin (an anti-platelet drug) while being treated for myeloma, depending on your risk of clotting.

You can read more about blood clots and cancer at [NCCN.org/patientguidelines](https://www.nccn.org/patientguidelines) and on the [NCCN Patient Guides for Cancer](https://www.nccn.org/patientguidelines) app.



NCCN Guidelines for Patients®
Blood Clots and Cancer

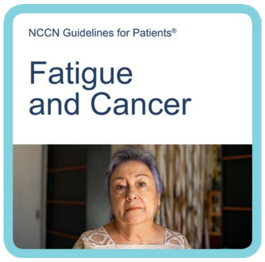
Fighting fatigue

Fatigue is a common problem for people with multiple myeloma. Fatigue is tiredness and lack of energy despite getting enough sleep and nutrition. It can last for months or even years.

Fatigue often has more than one cause. It may be due to your cancer, your cancer treatment, another medical condition, or a combination of these problems. Likewise, fatigue often requires more than one remedy.

Being treated for anemia may be the first step. Learning how to conserve energy may also help. If depression is making fatigue worse, seek counseling and medication. Eating healthy foods and getting good nutrition is also important.

Exercise can also lessen fatigue. Plus, exercise is critical for staying healthy. Almost every person with myeloma can do some sort of exercise. You can read more about fatigue and cancer care at [NCCN.org/patientguidelines](https://www.nccn.org/patientguidelines) and on the [NCCN Patient Guides for Cancer](https://www.nccn.org/patientguidelines) app.



NCCN Guidelines for Patients®
Fatigue and Cancer

Reducing anxiety and depression

Anxiety and depression are very common in people with cancer. These emotions can be overwhelming. They can leave you feeling helpless and distressed, and prevent you from taking part in your daily life.

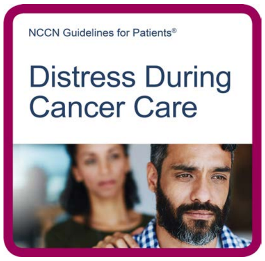
These feelings should not go untreated. If you're feeling depressed or anxious, be sure to ask your treatment team for help.

Medication, counseling, and exercise are some ways to lessen these symptoms. Making sure you have a connection with other people—family, friends, and other acquaintances—is equally important.

Support groups

Many people diagnosed with cancer find support groups to be very helpful. Support groups often include people at different stages of treatment. Some people may be newly diagnosed, while others may be finished with treatment. If your hospital or community doesn't have support groups for people with cancer, check out the online resources listed on page 57 of this book.

You can read more about distress and cancer care at NCCN.org/patientguidelines and on the NCCN Patient Guides for Cancer app.



NCCN Guidelines for Patients®

Distress During Cancer Care

What's next?

This chapter reviewed the supportive care options available for the symptoms of multiple myeloma and the side effects from its treatment.

As you know by now, multiple myeloma often returns months or years after a remission. It's the nature of the disease. The next chapter explains that you still have many treatment options if your myeloma comes back or doesn't go away after primary treatment.

Key points

- Supportive care is for any stage of myeloma treatment, not just for when cancer has advanced.
- Multiple myeloma increases the risk for bone damage. In addition to primary treatment, you can also receive bone-strengthening drugs.
- Kidney problems are common in people with multiple myeloma. Treatment is based on what's causing the kidney problem.
- Myeloma and certain myeloma treatments can increase your risk of infection. Getting medications and vaccinations greatly reduces the risk of infections.
- People with myeloma have a higher risk for blood clots. Blood thinners and anti-clotting medicines can reduce this risk.
- If you're feeling depressed or anxious, ask your treatment team for help. These feelings should not go untreated.

Questions to ask

- Which side effects are most common and how long do they usually last?
- Do any medications worsen side effects?
- Are there any long-term or permanent side effects?
- What symptoms should I report right away, and who should I contact?
- Do any side effects lessen or worsen in severity over time?

6

Treatment for progression and relapse

The previous chapter discussed the options for supportive care. This chapter explains the treatments available when myeloma continues or comes back.

Even with the best treatment, sometimes multiple myeloma doesn't go away or gets worse (progression). Or it may get better after primary treatment, but then it comes back again (relapse) months or years later.

Although relapses are expected, they aren't easy. It's normal to feel disappointment, frustration, and hopelessness. Allow yourself some time to absorb the news and get adjusted.

But also, be aware that there are many other available therapies for progression and relapse that are different from your primary treatment.

What is progression?

Progressive disease means that the myeloma has remained or has grown even with treatment. This growth could be indicated by different test results, such as:

- An increase in M proteins in your blood or urine
- An increase in plasma cells in your bone marrow
- An increase in the number or size of bone lesions

Having progressive disease doesn't mean you're out of treatment options. Your treatment team will suggest trying something new, such as a different combination of medications or a clinical trial.

What is a relapse?

A relapse is when cancer improves for a while after treatment, but then it comes back with new symptoms or organ damage. Sometimes a relapse is just the reappearance of abnormal myeloma proteins without any new symptoms. In any case, most people with multiple myeloma can expect to have multiple relapses over the course of their treatment.

A relapse can happen within a few months or up to years after starting different treatments. Signs of a myeloma relapse are when M proteins increase, symptoms come back, or new symptoms begin. A relapse can sometimes cause worse symptoms than when the myeloma first appeared. Worse symptoms can be a sign of more aggressive cancer.

The fear of having a relapse is likely the most common psychological difficulty that occurs after cancer treatment. So stressing out about a relapse is understandable. If this kind of stress is bothering you, ask your care team for help.

Fortunately, there are many treatment options for multiple myeloma, even if it has relapsed.

Revisit your preferences and goals

Being faced with progression or relapse can be a good time to pause and consider your preferences and goals again.

It's important to have an open and honest conversation with your team about your goals for treatment and your treatment plan right from the time of diagnosis. Think about what you want from treatment. Weigh your options and share your concerns with your care team. In shared decision-making, you and your care team share information, discuss the options, and agree on a treatment plan.

Your treatment plan may change because of new information. Tests may find new results. How well the treatment is working may change. Or you may change your mind about treatment. Any of these changes will require a new treatment plan.

Treatment options for relapse or progression

Additional treatments for relapsed or progressive myeloma include a clinical trial, medications you haven't tried before, a hematopoietic cell transplant, and possibly bispecific antibodies or CAR T-cell therapy. See **Guide 6**.

Clinical trial

A clinical trial is a treatment option for many people with multiple myeloma. Clinical trials give people access to treatment options that they couldn't usually receive otherwise.

Joining a clinical trial may be even more important for someone who has relapsed or progressive myeloma. Ask your treatment team how you might be able to join a clinical trial.

Medications you haven't tried

Additional treatment includes medications or therapies you haven't already tried or those you haven't used for at least 6 months.

A variety of options are available for previously treated multiple myeloma, depending on which therapies you've already tried and how well they worked. Preferred multi-drug combinations for previously treated multiple myeloma are listed in **Guide 7**.

Preferred therapies have the most evidence they work better and may be safer than other therapies. But other recommended therapies are also available.

Guide 6 **Treatments for relapsing or progressive multiple myeloma**
Clinical trial
Medication combinations you haven't tried before
Chimeric antigen receptor (CAR) T-cell therapy
Hematopoietic cell transplant
Supportive care (available with any treatment)

Talk to your treatment team about which treatment options may be better for you. They can explain the reasons for choosing one combination of medications over another.

Some therapies may put you at risk for serious side effects. Certain medications are stronger than others and may be harmful to people who are frail or elderly. Some drugs are given only after you've had 1 or more prior treatments.

Your team can discuss the side effects that may occur. They'll consider these things, along with the extent of your disease, when working with you to decide your next treatment.

If treatment stops working

Sometimes a treatment doesn't work against a person's cancer. Or the treatment works at first but then the cancer becomes resistant to it over time. When resistance happens, a different medication—or a different combination of medications—can be tried in place of the resistant one.

For a person with advanced multiple myeloma, resistance can become a serious problem. A person's cancer can become resistant to several medications or even entire drug classes. This level of resistance can make it more difficult to keep the cancer under control.

Guide 7
Preferred multi-drug combination options for additional treatment

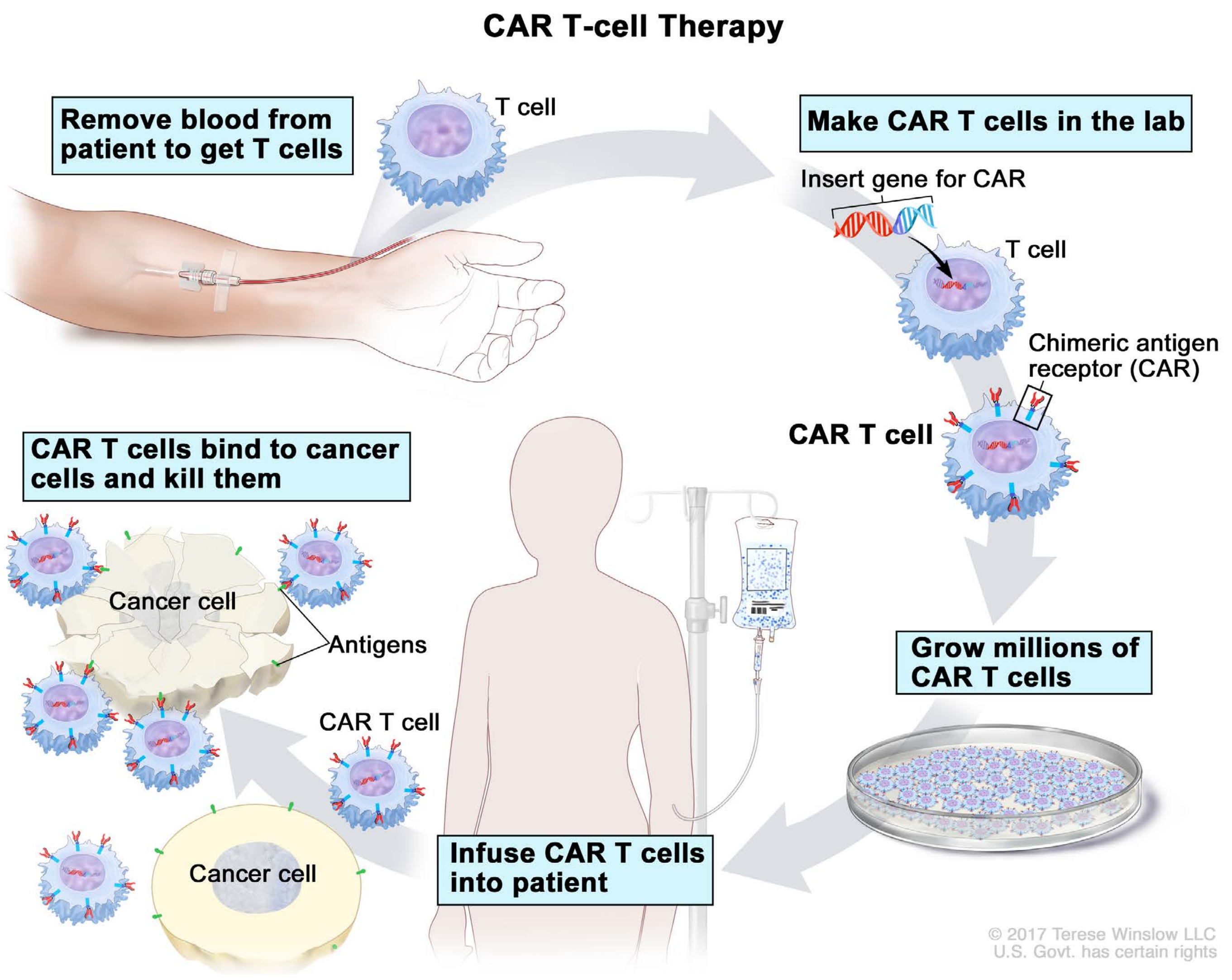
There are many medication combinations for previously treated multiple myeloma. Some of the more common combinations are (in alphabetical order):
Carfilzomib, lenalidomide, and dexamethasone
Carfilzomib, pomalidomide, and dexamethasone
Daratumumab, bortezomib, and dexamethasone
Daratumumab, carfilzomib, and dexamethasone
Daratumumab, lenalidomide, and dexamethasone
Daratumumab, pomalidomide, and dexamethasone
Elotuzumab, pomalidomide, and dexamethasone
Isatuximab-irfc, carfilzomib, and dexamethasone
Isatuximab-irfc, pomalidomide, and dexamethasone
Ixazomib, pomalidomide, and dexamethasone
Pomalidomide, bortezomib, and dexamethasone

However, there will likely be one or more other therapies and medications still available depending on the person, their cancer, and various other factors.

After you've tried at least 3 or 4 therapies, the next preferred treatment options for relapsed or resistant multiple myeloma are CAR T-cell therapy or targeted therapy using bispecific antibodies. (CAR T-cell therapy may be considered even sooner in some cases.) Other recommended treatments are also available.

CAR T-cell therapy

Chimeric antigen receptor (CAR) T-cell therapy is a preferred treatment option for certain people with relapsed or resistant myeloma who've tried at least 1 or 2 other therapies.



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CAR T-cell therapy is a special type of immunotherapy. It changes some of your body's immune cells (T cells) to help them better find and kill cancer cells.

To create CAR T cells, immune cells are first removed from your blood. In a lab, the cells are modified to grow chimeric antigen receptors (CARs) on their surface. These receptors are like hooks that can latch onto cancer cells.

Next, these CAR T cells are multiplied in the lab. At this time, you'll have a short course of chemotherapy, which will help the treatment to work more effectively. Then the CAR T cells will be infused back into your body. Once in the blood, the CAR T cells have an improved ability to identify a specific protein on cancer cells, latch onto the cancer cells, and then destroy them.

The two CAR T-cell therapies available for multiple myeloma are Abecma (idecabtagene vicleucel) and Carvykti (ciltacabtagene autoleucel).

Hematopoietic cell transplant

A hematopoietic (blood-forming) cell transplant may be an option for someone who hasn't already had one.

A hematopoietic cell transplant is also sometimes an option for someone with relapsed or progressive multiple myeloma who had a long-lasting remission (usually at least 2 years or more) to an earlier hematopoietic cell transplant.

Follow-up tests

After you receive treatment for progression or relapse, you'll have follow-up tests to see if the treatment is working or if it's causing any side effects. Surveillance is a key part of your follow-up plan. Be sure to continue to go to follow-up visits, get tested regularly, and stay in touch with your treatment team.

Supportive care

If tests show progressive disease during or after additional treatment, then supportive care is also recommended. Supportive care (sometimes called palliative care) is given to relieve the symptoms of cancer and the side effects of cancer treatment. You can receive supportive care at any stage. For specific information about supportive care for myeloma, see *Chapter 5: Supportive care*.

Other types of supportive care—including emotional or spiritual support, financial guidance, and family counseling—may also be available to you. Read more about supportive (palliative) care at NCCN.org/patientguidelines and on the NCCN Patient Guides for Cancer app.

NCCN Guidelines for Patients®

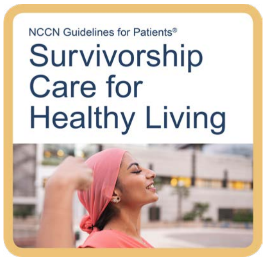
Palliative Care

Survivorship

Survivorship focuses on the health and well-being of a person with cancer from diagnosis until the end of life. This includes the physical, mental, emotional, social, and financial effects of cancer that begin at diagnosis, continue through treatment and recovery, and arise afterward.

Survivorship also includes concerns about follow-up care, late effects of treatment, cancer recurrence, age-appropriate preventive care, and quality of life. Support from family members, friends, and caregivers is also an important part of survivorship.

Read more about survivorship at NCCN.org/patientguidelines and on the NCCN Patient Guides for Cancer app.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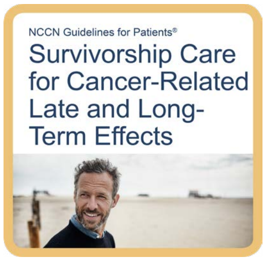
Survivorship Care for Healthy Living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Survivorship Care for Cancer-Related Late and Long-Term Effects

Advance care planning

Advance care planning means making decisions now about the care you would want to receive if you became unable to speak or act for yourself.

Advance care planning is for everyone, not just for those who are very sick. It’s a way to ensure your wishes are understood and respected. You can change your plan at any time.

Advance care planning starts with an honest conversation with your doctor and care team. Ask them about your prognosis—the likely course your cancer will take. Find out what you might expect if your cancer spreads. Discuss the medications or therapies that will give you the best quality of life. Let them know what your goals are and what’s most important to you.

Include family and friends in your advance care planning. Make your wishes clear. It’s important that everyone understands what you want.

You’re not alone

Some people have myeloma that eventually becomes resistant to any therapy. Maybe they had only a few treatment options available, and none of them really worked. It’s normal for someone at this stage to feel many different emotions, such as disbelief, frustration, fear, anxiety, or anger—sometimes all at once. Caregivers and loved ones can also feel these strong emotions.

After months or years of tests and treatments, it can feel defeating if myeloma comes back again or just won’t go away. It’s not something that you can prepare for or know exactly how to deal with.

But you’re not alone, even though you may feel that way sometimes. As noted before, supportive care can help. Supportive care is not just for relieving symptoms and side effects. Supportive care specialists can assist you emotionally, mentally, physically, and spiritually.

Also, if you haven't already joined a support group, this is a good time to consider joining one.

If you need more information about supportive care, reach out to your care team and ask questions. Some medical centers have patient navigators or other staff members who coordinate nonclinical supportive care. If needed, they can also help you get assistance with end-of-life concerns and advance care planning.

Key points

- Progression is when myeloma continues to grow even after treatment.
- A relapse is when symptoms come back or new symptoms begin after a period of improvement.
- Most people with multiple myeloma can expect to have relapses.
- Because your treatment plan may change, it's helpful to have regular talks with your care team about your preferences and goals for treatment.
- Drug resistance is when a treatment doesn't work or stops working against cancer.
- Cancer can become resistant to a number of medications or even entire drug classes.

Questions to ask

- What are the chances of my myeloma worsening or returning?
- What symptoms should I report right away, and who should I contact?
- Am I able to have CAR T-cell therapy or bispecific antibody therapy?
- How do you know if my treatment is working?
- What are my options if treatment stops working?

Let us know what you think!

Please take a moment to complete an online survey about the NCCN Guidelines for Patients.
NCCN.org/patients/response

7

Other resources

Want to learn more? Here's how you can get additional help.

What else to know

This book can help improve your cancer care. It explains expert recommendations and suggests questions to ask your care team. But it's not the only resource that you have.

Collect as much information and help as you need. Many people are interested in learning more about:

- The details of their health and treatment
- Participating in shared decision making
- Getting financial help
- Finding a care provider who's an expert in their field
- Coping with health problems

What else to do

Your health care center can help you with next steps. They often have on-site resources to help meet your needs and find answers to your questions. Health care centers can also tell you about resources in your community.

In addition to help from your providers, the resources listed next provide support for people with multiple myeloma and similar diseases. Visit these websites to learn more about these organizations.

Where to get further help

AnCan Foundation
ancan.org

BMT InfoNet
bmtinfonet.org

Cancer*Care*
cancercare.org

Cancer Hope Network
cancerhopenetwork.org

Imerman Angels
imermanangels.org

International Myeloma Foundation
myeloma.org

National Bone Marrow Transplant Link (nbmtLINK)
nbmtlink.org

National Coalition for Cancer Survivorship
canceradvocacy.org

NMDP
nmdp.org

The Leukemia & Lymphoma Society (LLS)
lls.org/patient-support

The Multiple Myeloma Research Foundation
themmrf.org

Triage Cancer
triagecancer.org

Questions to ask

- Who can I talk to about help with housing, food, and other basic needs?
- What help is available for transportation, childcare, and home care?
- Are there other services available to me and my caregivers?
- How can I connect with others and build a support system?
- Who can I talk to if I don't feel safe at home, at work, or in my neighborhood?

We want your feedback!

Our goal is to provide helpful and easy-to-understand information on cancer.

Take our survey to let us know what we got right and what we could do better.

NCCN.org/patients/feedback

Words to know

active (symptomatic) multiple myeloma
When abnormal plasma cells (myeloma cells) have increased in the bone marrow and are causing symptoms such as kidney problems and bone damage.

amyloidosis
A health condition in which a protein called amyloid builds up in and damages organs.

anemia
A health condition in which the number of red blood cells is low.

antibody
A protein made by plasma cells to help fight off infections. Also called immunoglobulin.

antigen
A substance (such as a virus, bacteria, allergen, or toxin) that triggers a response from the body's immune system.

aspiration
A procedure that removes a small amount of liquid bone marrow to be tested for a disease.

asymptomatic
Having no signs or symptoms of disease.

B cell
A type of white blood cell that turns into a plasma cell in response to germs.

biopsy
A procedure that removes fluid or tissue samples to be tested for a disease.

bisphosphonates
Drugs that help improve bone strength and prevent loss of bone mass.

blood stem cell
An immature cell from which all other types of blood cells are made.

bone lesion
An area of bone damage or abnormal tissue in the bone.

bone marrow
The soft, sponge-like tissue in the center of most bones where blood cells are made.

chemotherapy
Cancer drugs that stop the cell life cycle so cells don't increase in number.

chromosomes
The structures within cells that contain coded instructions for cell behavior.

clinical trial
A type of research that assesses how well health tests or treatments work in people.

complete blood count (CBC)
A test that measures the number of blood cells in a blood sample. It includes the number of white blood cells, red blood cells, and platelets.

CT scan
A test that uses x-rays from many angles to make a series of cross-sectional images of the inside of the body.

corticosteroids
A class of drugs used to reduce redness, swelling, and pain, but also to kill cancer cells.

diagnosis
An identification of an illness based on tests.

flow cytometry
A test that measures myeloma cells in the bone marrow.

fluorescence in situ hybridization (FISH)
A lab test that uses special dyes to look for abnormal changes in a cell's genes and chromosomes.

fracture
A crack or break in a bone.

free light chain
The unattached, shorter fragments of M proteins that are made by myeloma cells.

heavy chain
The longer protein chain that is part of an antibody.

hematopoietic cell transplant
Treatment that uses chemotherapy to destroy cells in the bone marrow and then replaces them with healthy blood stem cells.

high-dose chemotherapy
An intensive drug treatment to kill cancer and disease-fighting cells so transplanted blood stem cells aren't rejected by the body.

hyperviscosity
A condition in which the blood becomes very thick because of too many proteins in the blood.

immunoglobulin
A protein that is made by plasma cells to help fight off infection. Also called an antibody.

intravenous (IV)
A method of giving drugs by a needle or tube inserted into a vein.

light chain
The shorter protein chain that is part of an antibody.

light chain myeloma
A condition in which myeloma cells make only free light chains and no complete M proteins.

local therapy
Treatment that affects only one specific area of the body.

lymphocyte
A type of white blood cell that helps to protect the body from infection.

MRI
A test that uses radio waves and powerful magnets to view parts of the inside of the body and how they're working.

maintenance treatment
Medication that's given in a lower dose or less often to keep (maintain) good results of prior treatments.

M protein
An abnormal antibody made by myeloma cells that doesn't fight germs. Also called monoclonal protein.

mutation
An abnormal change in the genetic code (DNA) of a gene within cells.

pathologist
A doctor who's an expert in testing cells and tissue to find disease.

plasma cell
A type of white blood cell that makes germ-fighting proteins called antibodies.

plasmacytoma
A mass formed by abnormal plasma cells (myeloma cells).

PET scan
A test that uses a radiotracer to see the shape and function of organs and tissues inside the body.

primary treatment
The main treatment used to rid the body of cancer.

prognosis
The likely or expected course and outcome of a disease.

progression
The growth or spread of cancer after being tested or treated.

radiation therapy
A treatment that uses high-energy rays (radiation) to destroy cancer cells.

remission
The decrease or disappearance of the signs and symptoms of cancer.

relapse
The return of myeloma signs or symptoms after a period of improvement.

side effect
An unhealthy or unpleasant physical or mental response to treatment.

smoldering myeloma
Myeloma that isn't causing symptoms or damaging organs.

solitary plasmacytoma
Cancer that is a single mass of myeloma cells.

supportive care
Treatment for symptoms of cancer or for the side effects of cancer treatment.

systemic therapy
Drugs used to treat cancer cells throughout the body.

tumor burden
The extent or amount of cancer in the body.

NCCN Contributors

This patient guide is based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Multiple Myeloma, Version 1.2025. It was adapted, reviewed, and published with help from the following people:

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