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MULTIPLE MYELOMA

A Treatment Guide for Patients and their Families

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MULTIPLE MYELOMA

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Education leads to empowered decision making

Many people have not heard of multiple myeloma when they are first diagnosed, which makes it vitally important to learn as much as possible about this type of hematologic (blood) cancer that affects plasma cells. It is usually managed as a chronic condition because multiple myeloma is not often cured, but research is making great progress, offering hope to many.

It helps to know a little bit about plasma cells when learning about multiple myeloma. Plasma cells are produced in the bone marrow. They make different types of antibodies to help fight germs and viruses, and stop infection and disease. Antibodies are proteins created as a reaction to foreign substances, such as bacteria, in the body. As a type of white blood cell, plasma cells are an important part of the immune system, a network of cells that work together to defend your body against infections.

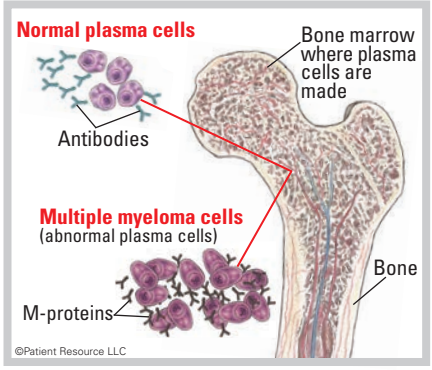
Multiple myeloma begins when the blood's plasma cells multiply uncontrollably. When abnormal plasma cells grow out of control, they prevent healthy plasma cells from producing antibodies, weakening the immune system and affecting the body's ability to fight infection. These abnormal, cancerous plasma cells are called myeloma cells, and, like normal plasma cells, myeloma cells also make antibodies (see Figure 1).

Myeloma cells produce too much of the same antibody called the M-protein, which does not fight infection and may cause the following:

- Myeloma cells can damage the kidneys or other organs.
- They can overcrowd the bone marrow, which suppresses the growth of healthy cells that produce blood.
- When bone marrow cannot produce enough healthy cells, it can lead to anemia, bleeding and infection.
- Myeloma cells can cause tumors in bones, leading to fractures.

FIGURE 1

MULTIPLE MYELOMA



The accumulation of myeloma cells usually occurs in multiple areas of bone in the body, giving the disease its name, "multiple myeloma." When myeloma cells collect in bone marrow, they slow down the growth of healthy white blood cells, red blood cells and platelets. Myeloma cells collect in solid bone, causing holes called lytic lesions. The majority of people with multiple myeloma have lytic lesions when their disease is diagnosed. People with multiple myeloma may or may not have symptoms, which can make it difficult to recognize. As a result, the disease may be at an advanced stage when it is diagnosed.

MAKING A DIAGNOSIS

To determine whether you have multiple myeloma, your doctor may order blood and urine tests as well as a bone marrow biopsy and imaging tests, which may include magnetic resonance imaging (MRI) and positron emission tomography combined with computed tomography (PET/CT), and X-rays.

Tests on a sample of your bone marrow provide information for staging or determining whether your multiple myeloma is high-risk. The tests may include cytogenetic analysis, fluorescence in situ hybridization (FISH) and flow cytometry (see *Genomic Testing*, page 3).

Your doctor may order a biopsy of fat from around your stomach to check for amyloidosis, which is a buildup of amyloid, an abnormal protein. Amyloidosis may be either primary (with no known cause), secondary (caused by multiple myeloma) or hereditary (passed down from parents to children). Differentiating between amyloidosis and multiple myeloma may be part of the diagnostic process.

Only two precursors to multiple myeloma are known to exist: monoclonal gammopathy of undetermined significance (MGUS) and smoldering myeloma. MGUS occurs when abnormal plasma cells produce too many copies of an identical antibody. Most cases of multiple myeloma are preceded by MGUS, but it is unknown whether MGUS is always present before diagnosis.

Smoldering myeloma, also called asymptomatic multiple myeloma, is an early stage of myeloma. Preventive treatments to delay smoldering myeloma from progressing to multiple myeloma are being studied in clinical trials. Another type of myeloma is called a solitary plasmacytoma. It is an early, isolated form of multiple myeloma and may develop into active multiple myeloma.

The exact cause of multiple myeloma remains unknown, but research is helping doctors learn more about it and how it develops. Treatments are improving as newer therapies and drug combinations are developed and approved. As a result, many more patients are living healthy, active lives.

This guide explains how multiple myeloma is staged and treated. Side effect management and suggestions for managing your diagnosis long term are explored. Because surrounding yourself with support is key for managing a chronic illness, additional resources are also included (see *Assistance,* page 12). ■

CRAB
The COMMON SIGNS of MULTIPLE MYELOMA

The most common signs of multiple myeloma, which are attributed to the same factors used to stage multiple myeloma, can be described with the CRAB acronym.

C	**CALCIUM LEVEL** Elevated calcium levels in the blood
R	**RENAL (KIDNEY) FUNCTION** Kidney damage or failure resulting from the multiple myeloma protein
A	**ANEMIA** Low red blood cell counts caused by cancer cells slowing the growth of healthy bone marrow cells
B	**BONE LESIONS** Bone damage (lytic lesions), thinning of the bones (osteoporosis) or a compression fracture of the spine

Personalizing treatment begins with staging

Staging provides essential information, describing the extent of the multiple myeloma, helping guide the treatment plan and predicting treatment outcomes (prognosis). Test results during the sometimes complex diagnostic process, including a thorough physical exam, imaging studies, blood and urine tests, bone marrow biopsy and molecular testing, are considered. Once the tests confirm the diagnosis, your doctor will assign a stage.

Researchers have discovered that certain chromosome and molecular abnormalities may be found in this cancer type. Molecular testing will be performed on the tumor or a bone marrow sample to look specifically for changes in chromosomes, genes, proteins and other factors that may indicate the aggressiveness of the disease (see *Genomic Testing*, page 3). This information further affects the treatments that may be available to you.

You will likely hear many terms you have not heard before, which can make understanding your diagnosis challenging. Ask your doctor to fully explain those terms, along with your type and stage and what your test results and any genetic findings mean. You will feel more confident making treatment decisions when you feel fully informed.

DETERMINING PROGNOSIS

The information gathered for the staging process also helps doctors understand the prognosis (chance of recovery). Certain factors affect prognosis and treatment options. They include the following:

- The type of plasma cell neoplasm
- The stage of the disease
- Whether a certain immunoglobulin (antibody) is present
- Whether there are certain genetic/genomic changes
- Whether the kidneys are damaged
- Whether the cancer responds to initial treatment or recurs (comes back)

UNDERSTANDING THE STAGING SYSTEMS

Your doctor may refer to the staging systems that are used for multiple myeloma: the Revised International Staging System (RISS), which is commonly used (see Table 1), and the Durie-Salmon Staging System (see Table 2). Both systems have three stages, but they have different meanings. A new version of the RISS has been proposed. Ask your physician about the staging system being used for your diagnosis.

REVISED INTERNATIONAL STAGING SYSTEM (RISS)

The RISS uses the following factors to assign one of three stages:

- **Albumin level.** Albumin is made in the liver, and the blood albumin level can help your doctor determine how well your liver and kidneys function. Low levels may signal a more advanced myeloma.
- **Beta-2-microglobulin level.** This is made by malignant myeloma cells. The level in the blood increases as myeloma progresses, so high levels may mean that the cancer is more advanced.
- **Lactate dehydrogenase (LDH) level.** LDH helps cells convert sugar to energy. High levels of LDH in the blood may indicate a more advanced myeloma.
- **Genetic abnormalities.** Biomarker testing of the tumor is performed to look for abnormalities and changes in chromosomes, genes, proteins and other factors unique to the tumor. The types of testing used include cytogenetics, fluorescence in situ hybridization (FISH) and measurable/minimum residual disease (MRD) testing.

DURIE-SALMON STAGING SYSTEM

The Durie-Salmon Staging System considers four main factors:

1. **M-protein.** Large amounts of this abnormal protein in the blood or urine may indicate that a high number of malignant plasma cells are present.
2. **Calcium.** A high calcium level in the blood (hypercalcemia) may mean that multiple myeloma has caused substantial bone damage.
3. **Hemoglobin.** This essential protein is found in red blood cells, and the level indicates the number of red blood cells. Healthy blood cells are crowded out by multiple myeloma cells in the bone marrow, so a low hemoglobin level (anemia) may mean a high level of multiple myeloma cells.
4. **Bone damage.** Imaging tests are used to identify the location and severity of bone damage in the body. Multiple sites may indicate advanced multiple myeloma.

Sometimes your doctor will reassess your stage after treatment or if cancer recurs. This is known as restaging. If it is necessary, it typically involves the same diagnostic tests used for the original staging. ■

TABLE 1

REVISED INTERNATIONAL STAGING SYSTEM (RISS)

Stage	Description
Stage I	Serum beta-2-microglobulin, less than 3.5 mg/L and serum albumin, 3.5 g/dL or more and no high-risk cytogenetics* and normal LDH.
Stage II	Not Stage I nor Stage III.
Stage III	Serum beta-2-microglobulin, 5.5 mg/L or more and high-risk cytogenetics or high LDH.

*Cytogenetics is the field of study that analyzes the number and structure of human chromosomes. Researchers have identified certain high-risk cytogenetics that may be present in some people with multiple myeloma.

Used with permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original and primary source for this information is the AJCC Cancer Staging Manual, Eighth Edition (2017) published by Springer Science+Business Media.

TABLE 2

DURIE-SALMON STAGING SYSTEM

Stage	Description
Stage I	Hemoglobin levels are slightly below normal (but above 10 grams per deciliter of blood). Calcium levels are in the normal range (12 milligrams per deciliter of blood or less). M-protein levels are relatively low (less than 5 grams per deciliter for IgG; less than 3 grams per deciliter for IgA; less than 4 grams per 24-hour for urinary light chain). Bone X-rays are normal or show only one area of bone damage.
Stage II	Neither Stage I nor Stage III.
Stage III	Hemoglobin levels are very low (less than 8.5 grams per deciliter of blood). Calcium levels are high (more than 12 milligrams per deciliter of blood). M-protein levels are high (more than 7 grams per deciliter for IgG; more than 5 grams per deciliter for IgA; more than 12 grams per 24-hour for urinary light chain). Bone X-rays show at least three areas of bone damage.

These letters may be added to the Durie-Salmon stage to indicate additional factors:
A: Mostly normal kidney function. **B:** Abnormal kidney function.

Decoding the role of mutations in multiple myeloma

Advances in genomic testing technologies are allowing scientists to better understand multiple myeloma and the gene mutations that drive it. This is possible through various types of testing that analyze the cancer at a deeper level. Because certain abnormal genes and chromosomes are known to play a role in multiple myeloma, some abnormalities are now routinely looked for during the diagnostic process using genomic testing. Doctors use this information to diagnose and stage as well as select treatment options.

UNDERSTANDING GENOMIC TESTING

Ideally performed along with other diagnostic tests before treatment begins, genomic testing, sometimes referred to as molecular testing, is done in a laboratory using samples of blood or tissue to identify a tumor's genome (a complete set of its DNA) and genetic mutations, which are changes in the cell's DNA. The results can indicate the cancer's behavior in response to different drug treatments. By unlocking the DNA code of the tumor, doctors can better understand its unique characteristics.

Specialized equipment will be used to sequence the tumor's DNA and find any abnormalities. DNA sequencing determines the order of the four building blocks – called "bases" – that make up the DNA molecule. If abnormalities are found, they will be compared to known mutations. Results are returned to your doctor in a pathology report.

Genomic testing can also be done during treatment or if the cancer returns. When a tumor returns, it may have different mutations than before, which may affect treatment options.

THE ROLE OF MUTATIONS

Cancer forms when genes begin to change, or mutate, within the structure of normal cells. Therefore, cancer is ultimately a disease of our genes, which are pieces of DNA — the information plan for the growth and control of cells. Genomic testing is built on finding mutations that occur in the DNA of a cell.

Just as every person has a specific, unique blend of genes, cancers are driven by a mixture of specific mutations. In multiple myeloma, chromosome mutations may indicate whether the disease is aggressive or not. In general, some types of the chromosome mutation that can lead to cancer include the following:

- Deletion — Part of the chromosome is missing or deleted.
- Duplication — Part of the chromosome is duplicated, resulting in extra genetic material.
- Inversion — Part of the chromosome has broken off, turned upside down and reattached.
- Rearrangement — Part of the chromosome has broken off and reattached, creating a different order of its genes, which may create a new gene.
- Rings — Part of the chromosome has broken off and formed a circle or ring.
- Translocation — Part of the chromosome is transferred to another chromosome.

Knowing whether you have chromosome mutations associated with multiple myeloma will help you to understand the aggressiveness of the disease and make informed decisions with your doctor about your treatment options. Some chromosome mutations found in multiple myeloma that may indicate a higher-risk form include the following:

- Deletion of part or all of chromosome 17
- Deletion of part or all of chromosome 13
- Translocation of part of chromosome 4 with part of chromosome 14
- Translocation between parts of chromosomes 14 and 16
- Translocation between parts of chromosomes 14 and 20
- Duplication/amplification or deletion of part of chromosome 1

It is possible for a patient to have more than one chromosome mutation at the same time, which increases the chance of a higher risk multiple myeloma.

TYPES OF TESTING USED

A variety of tests are used to discover key pieces of information that could affect your treatment options. The tests your doctor chooses may depend on your diagnosis, the information your doctor is seeking and the known mutations associated with multiple myeloma.

Some of the tests that may be performed on blood or bone marrow for diagnosis, or determining whether the multiple myeloma is high risk, include the following:

- **Biomarkers** are substances that can be measured in the blood, plasma, urine, cerebrospinal fluid or other body fluids or tissues. Biomarkers that are commonly tested for in multiple myeloma include albumin, beta-2-microglobulin and lactate dehydrogenase.
- **Cytogenetics** evaluates cells for chromosome abnormalities by looking for genetic changes at the DNA level in a bone marrow sample. Abnormalities, such as chromosomes that are broken, rearranged or missing, may indicate the level of disease. Cytogenetic analysis may help your doctor determine the treatment plan most likely to be effective for you.
- **Flow cytometry** measures the number of cells, the percentage of live cells and certain characteristics of cells, such as size and shape in a sample of blood or bone marrow. The presence of tumor markers/biomarkers, such as antigens, on the surface of cells is also measured. This aids in diagnosis.
- **Fluorescence in situ hybridization** (FISH) detects abnormal cells that may be associated with a more advanced myeloma. During the test, fluorescent dye is used to highlight genes or areas of chromosomes under a microscope to look for abnormalities that might have clinical implications.
- **Immunohistochemistry** uses antibodies to check for certain antigens in a sample of tissue. It may be used to help with diagnosis and to determine the difference between certain types of cancer.
- **Measurable/minimum residual disease** (MRD) testing determines the number of cancer cells that are present in bone marrow. "MRD positive" means disease is still detected. "MRD negative" means no disease is detected. ■

Learn about all of the options available to you

Recent advances in treatment strategies offer promise and hope for people with multiple myeloma and their loved ones. Through clinical trials, new and more effective options designed to treat and manage multiple myeloma are becoming available with the goal that one day there will be a cure. As you and your doctor discuss a treatment plan, make it a priority to share your expectations for your quality of life and how you may be able to achieve it.

Because diagnosing and treating multiple myeloma can be challenging, finding a blood cancer specialist with expertise in treating multiple myeloma is highly recommended. A general hematologist/oncologist can give you a referral to a specialist.

You may also want to seek a second opinion or advice from a hematologist or doctor who specializes in treating multiple myeloma. This can happen either before or after diagnosis and even after you begin treatment. One doctor may favor one treatment approach, while another might suggest a different combination of treatments. A second opinion is also a way to make sure your pathology diagnosis and staging are accurate and that you are aware of clinical trials to consider. You need to learn about all your treatment options.

Possessing flexibility and patience is very important because this cancer is often managed as a chronic disease (see *Living with a Chronic Condition,* page 11). It may be helpful to talk to others with multiple myeloma. Learning how they have managed it can help you adopt a positive attitude and move forward more confidently.

GETTING STARTED

You will hear a lot of new information. Some of the terms your medical team uses may be confusing. These explanations may help you feel more informed as you make the important decisions ahead.

- **First-line therapy** is the first treatment used.
- **Second-line therapy** is given when the first-line therapy does not work or is no longer effective.
- **Standard of care** refers to the widely recommended treatments known for the type and stage of cancer you have.
- **Local treatments** are directed to a specific organ or limited area of the body and include surgery and radiation therapy.
- **Systemic treatments** travel throughout the body and are typically drug therapies, such as chemotherapy, targeted therapy and immunotherapy.
- **Doublet therapy** is a combination of two drugs, such as an immunomodulatory agent and a corticosteroid.
- **Triplet therapy** is a combination of three drugs with different mechanisms of action, such as a proteasome inhibitor or chemotherapy drug, along with an immunomodulating agent and corticosteroid.
- **Quadruplet therapy** adds a fourth drug with another mechanism of action to a different target.

MAKING YOUR PLAN

Your treatment plan will be based on many factors: whether you are newly diagnosed or are experiencing a recurrence; the presence of symptoms; your overall health; the aggressiveness of the myeloma; and your goals of treatment, which often include reaching remission by eliminating myeloma cells, controlling tumor growth and pain, and improving your quality of life.

It is common for your treatment strategy to change over time. Your doctor will continually monitor your condition and make adjustments for a number of reasons. Sometimes a therapy becomes less effective as time goes on; other times, a different therapy may offer more promise; or you may reach remission, among other things. Keep in mind that cancer is a fluid condition that presents many challenges.

TREATMENT OPTIONS

Reaching remission is the objective of treating multiple myeloma. Remission means no longer having any signs or symptoms of the disease. Your doctor will develop your treatment plan using one or more of the types of therapies explained on the next page. The goal is for you to receive the best level of care possible.

FIGURE 1
SYSTEMIC THERAPY

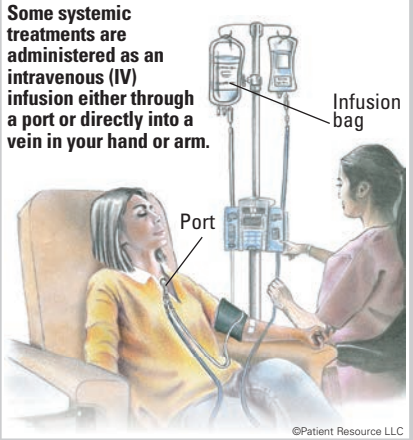


FIGURE 2
SUBCUTANEOUS INJECTION

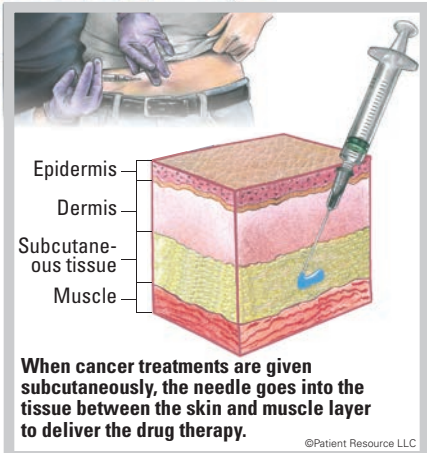
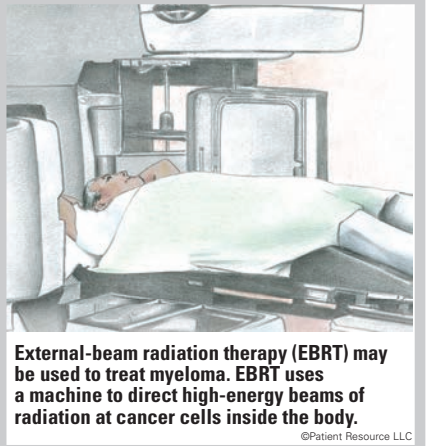


FIGURE 3
RADIATION THERAPY



One or more of the following therapies may be used.

Watchful waiting may be recommended for people with monoclonal gammopathy of undetermined significance (MGUS) or smoldering myeloma (both precursors to multiple myeloma), early-stage disease, and when symptoms are not present. It offers the possibility of avoiding the side effects of treatment as long as possible and, hopefully, without affecting the outcome. Keep regular checkups because treatment should begin as soon as the disease progresses or symptoms appear.

Relapsed and refractory multiple myeloma

The primary goal of treating multiple myeloma is to reach remission. Complete remission is reached when cancer can no longer be found after multiple tests. However, even with complete remission, small numbers of cancer cells may still be in the body. A partial remission occurs when some but not all signs and symptoms have decreased or disappeared.

Relapsed myeloma is disease that has come back after treatment. A relapse can happen weeks, months or even years after initial treatment has ended. Keeping follow-up appointments is important because finding a recurrence early is key to successful treatment.

Refractory myeloma occurs when the cancer stops responding to treatment. The disease may not respond to initial therapy or may stop responding after treatment has been underway for a length of time. If this happens, your doctor may request additional tests that could be used to restage your multiple myeloma. If a new stage is assigned, it will likely change your treatment options.

Drug therapies are commonly used to treat multiple myeloma. These therapies are known as systemic because they travel throughout the body. They may be delivered orally, intravenously or subcutaneously (by injection under the skin) (see Figures 1 and 2). Drug therapies include chemotherapy, immunotherapy, targeted therapy, corticosteroids and bone-modifying drugs.

Chemotherapy destroys cancer cells by preventing them from growing and dividing. It is commonly given for multiple myeloma, and most people receive some form of it. It may consist of a single drug or multiple drugs given in combination. It may also be combined with other types of treatment. Some oral chemotherapy drugs may be taken at home. Intravenous (IV) drugs are given in a doctor's office, clinic or hospital.

Corticosteroids are myeloma cell-fighting drugs that may ease chemotherapy side effects, particularly nausea and vomiting. They can be used alone or in combination with chemotherapy. Corticosteroids also help reduce inflammation and may offer other benefits.

Immunotherapy works with your immune system to help identify and then destroy multiple myeloma cells. It may be given by IV or subcutaneously. A combination of immunotherapy drugs may also be used to treat amyloidosis.

The following types of immunotherapy may be options:

- Monoclonal antibodies (mAbs) are made to target specific antigens — in this case, ones found on myeloma cells. The mAbs can be made to recognize and attach to proteins and other substances on multiple myeloma and other cells or deliver other therapeutic agents to slow their growth and/or kill them. They might also enable your immune system to learn to identify and destroy multiple myeloma cells.
- Bispecific mAbs are made up of two different mAbs that can attach to two different antigens at the same time and can be delivered without removing a patient's immune cells (see Figure 4). They can be used for engaging and activating immune cells, such as T-cells, to attack a tumor, block dual signaling pathways, block immune checkpoints or form a way to replace a missing functional protein. Many of these are known as bispecific T-cell engagers (BiTEs).
- Chimeric antigen receptor (CAR) T-cell therapy involves taking a patient's T-cells and modifying them to recognize and kill multiple myeloma cells (see Figure 5).

Targeted therapy attacks certain cancer cells and avoids healthy cells, resulting in fewer side effects than with traditional chemotherapy. These drugs may be given orally, subcutaneously or by IV. They travel throughout the body via the bloodstream looking for specific proteins and tissue environments of myeloma cells.

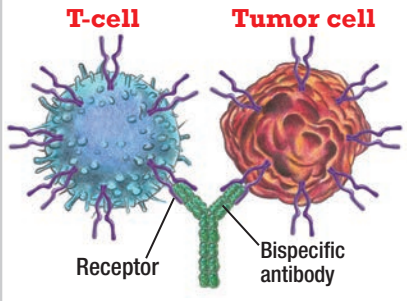
The following drugs may be used alone or in combination with other therapies:

- Angiogenesis inhibitors block new blood vessel growth that feeds myeloma cells.

Continued on page 6

FIGURE 4

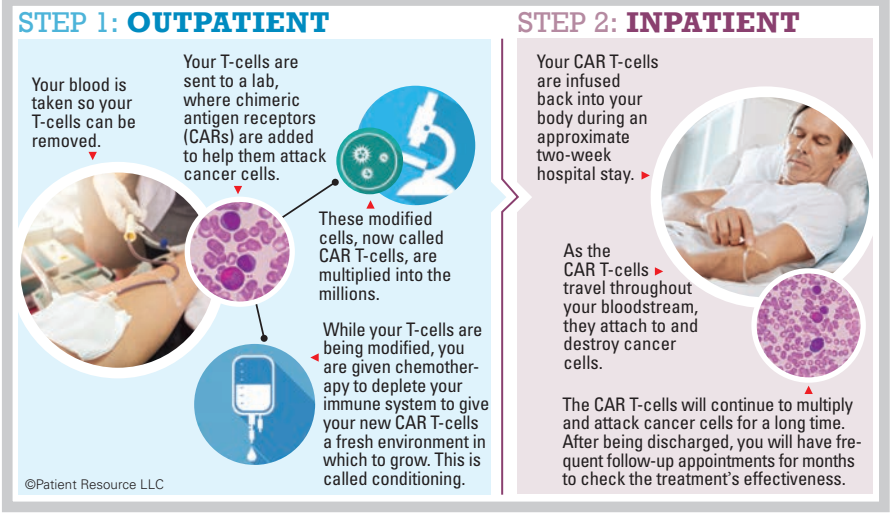
BISPECIFIC ANTIBODY



A bispecific antibody can bind to two different antigens at the same time, connecting a T-cell with a tumor cell. A T-cell is a type of white blood cell, which is part of the immune system. Normally, a T-cell can only interact with a tumor cell if it finds an antigen on a tumor cell and connects to it. A bispecific antibody skips this step and brings the T-cell directly to the tumor cell to release chemicals or other therapeutics to attack the tumor cell.

FIGURE 5

CAR T-CELL THERAPY



- BCL-2 inhibitors block the BCL-2 protein, which is found in myeloma cells.
- Histone deacetylase (HDAC) inhibitors affect gene expression inside myeloma cells.
- Immunomodulators may stimulate or slow down the immune system in indirect ways. They may boost the immune system and the effects of other therapies on the myeloma cells. They may be effective in treating newly-diagnosed multiple myeloma and relapsed or refractory disease.
- Monoclonal antibodies (mAbs) are commonly used. Laboratory-made mAbs attach to specific proteins and attack myeloma cells.
- Bispecific mAbs are made up of two different mAbs that can attach to two different antigens at the same time and can be delivered without removing a patient's immune cells.
- Proteasome inhibitors target enzymes to slow or stop myeloma cell growth and development.
- Selective inhibitors of nuclear export (SINE) enhance the anti-cancer activity of certain proteins in a cell.

Bone-modifying (strengthening) drugs can treat bone problems caused by multiple myeloma as well as prevent further bone damage from occurring. Myeloma cells in the bone marrow can lead to bone lesions and the destruction of bone (see *Bone Loss*, page 9). Contact your doctor as soon as you begin to feel any pain.

Stem cell transplantation may be recommended (see *Stem Cell Transplantation*, page 7). An autologous (auto) transplant uses the patient's own stem cells, which are collected, filtered, processed and frozen. High-dose chemotherapy and sometimes full-body radiation therapy (conditioning) are given to destroy cancer cells. Then the reserved stem cells are thawed and infused back into the patient's body. This therapy may also be used to treat amyloidosis. Another option is an allogeneic (allo) transplant, which uses donor cells.

Radiation therapy may be used for localized myeloma or bone pain that does not lessen with chemotherapy (see Figure 3, page 4).

Surgery may be used to treat a plasmacytoma (malignant plasma cell tumor) but is rarely a treatment option. In cases of weakened bone, metal plates or rods may be placed to provide support or to prevent fractures.

Plasmapheresis involves using a machine to filter plasma. Though it is not a treatment for multiple myeloma, it may be used if large amounts of M-protein make the blood too thick.

Clinical trials may offer the opportunity to try an innovative treatment that is testing a variety of therapies before they are widely available. Most cancer treatments used today were once developed, tested and evaluated through the clinical trials process to gain approval from the U.S. Food and Drug Administration (FDA).

Many clinical trials for novel multiple myeloma treatments are taking place today. It is an active area of research that is testing new drugs, new modes of action and new combinations of currently approved drug therapies. Current trials are focused on a new type of chimeric antigen receptor (CAR) using natural killer (NK) cells as well as other CAR T-cell therapies; therapies for treating relapsed and refractory myeloma; better methods of detecting, monitoring and treating side effects; and a next-generation immunomodulator.

A clinical trial may be your best option if your cancer has become resistant to your current treatment or if you have already had multiple lines of therapy. It offers a higher level of care because you will be monitored by the medical team managing your trial as well as by your regular oncologist. And you are helping improve treatments for other patients.

Ask your doctor if you are a candidate for a clinical trial and whether you should consider one at any time during your treatment.

The importance of medication adherence

Most cancer therapies are designed to maintain a specific level of drugs in your system for a certain time based on your cancer type and stage, your overall health, previous therapies and other factors. If your medications are not taken exactly as prescribed, or if you miss appointments for your infusions, injections or radiation therapy, the consequences can be serious, even life-threatening. To be fully effective, every treatment dose must be taken with the same kind of accuracy, precise timing and safety precautions, for as long as prescribed. This is known as medication adherence.

COMMON DRUG THERAPIES FOR MULTIPLE MYELOMA

These therapies may be used alone or in combination. For some combination therapies your doctor might suggest, go to PatientResource.com/Multiple_Myeloma_Treatment

- bortezomib (Velcade)
- carfilzomib (Kyprolis)
- carmustine (BiCNU)
- ciltacabtagene autoleucel (Carvykti)
- cyclophosphamide
- daratumumab (Darzalex)
- daratumumab and hyaluronidase-fihj (Darzalex Faspro)
- dexamethasone
- doxorubicin hydrochloride (Adriamycin)
- doxorubicin liposomal (Doxil)
- elotuzumab (Empliciti)
- idecabtagene vicleucel (Abecma)
- isatuximab-irfc (Sarclisa)
- ixazomib (Ninlaro)
- lenalidomide (Revlimid)
- melphalan (Alkeran)
- panobinostat (Farydak)
- pomalidomide (Pomalyst)
- prednisone
- selinexor (Xpovio)
- teclistamab-cqyv (Tecvayli)
- thalidomide (Thalomid)

As of 3/9/23

ONGOING MONITORING

Treating multiple myeloma will include ongoing monitoring of your treatment and health status to evaluate whether your treatment is effective and that the disease has not developed resistance to the medications. One way to prevent resistance is through the use of several drugs together. This may include doublet, triplet or quadruplet therapy. It is common for multiple myeloma patients to receive more than one drug.

As part of your monitoring, your doctor may use measurable/minimum residual disease (MRD) testing to measure a treatment's effectiveness. MRD is used to describe a very small number of cancer cells that remain in the body during or after treatment. MRD can be found only by highly sensitive laboratory methods that are able to find one cancer cell among one million normal cells. Checking for MRD may identify appropriate treatment, determine how well treatment is working, detect whether cancer has come back or make a prognosis.

When residual cancer cells are still detectable in the blood, this is known as being "MRD positive." When no cancer cells can be found, it is known as being "MRD negative." Research studies have shown that MRD negativity is associated with longer remissions.

Because treatments for multiple myeloma are improving, a patient may have a very long remission. That might be referred to as a "durable response." It is typically seen with the use of immunotherapy drugs. ■

Get the facts about stem cell transplantation

Once your doctor determines that a stem cell transplant is your best option, ask about the process and what to expect. It is an intense treatment and requires the necessary support of a caregiver. Learn as much as you can, including the potential risks and benefits, before proceeding.

The goal of stem cell transplantation is to create a new immune system by helping restore the body's ability to produce blood stem cells. The soft, spongy tissue inside your bones that is bone marrow produces blood-forming stem cells. They make billions of white blood cells that fight infection and illness, red blood cells that deliver oxygen to your body's cells, and platelets that help your blood clot to stop bleeding.

High doses of chemotherapy are used to destroy the cancer cells in the marrow, blood and other parts of the body. A stem cell transplant, in which a person receives healthy stem cells (blood-forming cells) to replace their own stem cells that were destroyed by treatment with radiation or chemotherapy, is then performed. A successful procedure results in healthy bone marrow and restores the body's immune response.

Two main types of blood stem cell transplant are available. The most commonly used to treat multiple myeloma is an autologous (auto) transplant. It uses your own stem cells. If needed, you will receive another transplant 6 to 12 months later, which is called a tandem stem cell transplant.

An allogeneic transplant may be used in some cases. It uses donated stem cells that come either from a family member or someone not related to you — often found through a registry (see *Lifesaving donors needed* below). Along with replacing stem cells, the donated cells may also kill cancer cells that remain after high-dose conditioning. This is called the graft-versus-tumor effect.

Donor tissue needs to match yours as closely as possible. A close match reduces the chance of a serious condition known as Graft-versus-Host Disease (GvHD). A type of white blood cell called a T-cell triggers this reaction.

THE TRANSPLANT PROCESS

Stem cell transplants generally occur as follows:

1. **Collection.** Stem cells from you or a donor are collected, filtered and processed. In some cases, the cells are frozen and stored, and later thawed.
2. **Conditioning.** You may receive high-dose chemotherapy or full-body radiation therapy to destroy the cancer cells. Reduced-intensity conditioning treatment that uses milder doses of chemotherapy and radiation therapy may also be an option in an allogeneic transplant. The potential success of this approach depends entirely on the anti-cancer effect of the new immune system transplanted into the patient.
3. **Transfusion.** A doctor infuses the harvested stem cells into your body through a vein.
4. **Recovery and engraftment.** Within about 2 to 4 weeks, healthy cells begin to grow (engraft). While your weakened immune system recovers, you will be at risk for infection. This process will require ongoing use of prophylactic (preventive) antiviral and antibacterial medications as well as repeat inoculations with childhood vaccines. The number of red blood cells, white blood cells and platelets will continue to be monitored until they are back to safe levels. Allogeneic transplant recipients also remain at risk for chronic GvHD and may require lifelong treatment for this condition.

Lifesaving donors needed

Join the millions of potential bone marrow donors already registered with organizations such as Be The Match, operated by the National Marrow Donor Program. African American donors and people between the ages of 18 and 35 are especially needed. Find out if you could help save a life at *www.bethematch.org*

SURROUND YOURSELF WITH SUPPORT

This treatment option takes time and effort. You will benefit from the help of a caregiver pre- and post-transplant. If a loved one or friend is not available, consider hiring a temporary caregiver to help with these and other tasks:

- Deep clean the home before you return.
- Keep your home clean and safe to help protect you from infection.
- Schedule and take you for appointments and immunizations.
- Ensure you stay on schedule with your treatments.
- Care for your dressings or central venous catheter, and deliver medicines through the catheter, if applicable.
- Check for signs of infection or other problems, and report changes to your medical team.
- Make healthy meals and encourage you to eat well.
- Help you access resources to help with the psychosocial, physical and financial challenges of a transplant.

UNDERSTANDING GRAFT-VERSUS-HOST DISEASE

Graft-versus-Host Disease (GvHD) is a potentially serious condition that occurs when graft immune cells from a donor in an allogeneic bone marrow transplant recognize the patient's own healthy cells as foreign and attack them. GvHD can damage your skin, liver, intestines and other organs.

GvHD can be mild, moderate or severe. If it emerges within 100 days of the transplant, it is usually classified as acute. Chronic GvHD usually appears later after the transplant and may cause short-term or long-term symptoms. Your doctor may prescribe a preventive drug that helps minimize the risk of acute GvHD.

If you experience any of the following symptoms that signal the onset of GvHD after your transplant, contact your doctor immediately:

- Abdominal pain and swelling or diarrhea
- Rashes, raised or discolored skin, skin thickening or tightening
- Yellow skin or eyes, dry eyes
- Taste changes or loss of appetite
- Frequent infections, unintentional weight loss
- Indigestion, abnormal gas or bloating ■

Be proactive about managing side effects

Most cancer treatments cause some type of side effect. Fortunately, the advances in treatment strategies include ways to prevent and minimize them. Supportive care services are now available to help you with the physical and emotional side effects that accompany your multiple myeloma diagnosis and treatment.

As you discuss treatment options with your doctor, ask about the potential side effects of each. Keep in mind that how you respond to those side effects will depend on many factors, including your specific diagnosis, health history, age and other characteristics. Ask whether telehealth appointments or an online portal are available for reporting symptoms or complications between follow-up visits.

It may also be helpful to keep track of side effects by downloading a side effect tracker at PatientResource.com/Tracker.

PHYSICAL SIDE EFFECTS

Some physical side effects can be disruptive while others are an annoyance (see Table 1). Ask your doctor how you can recognize symptoms, when they might occur and ways you can help manage them. See *Living with a Chronic Condition*, page 11, to learn more about managing emotional effects.

POTENTIALLY SEVERE SIDE EFFECTS

Some of the drug therapies used may be accompanied by side effects that can become serious and potentially life-threatening. Talk with your doctor about the signs and symptoms to watch for, how to identify them and those that require emergency care. Make sure you know whom to contact and how, especially after hours. Contact the appropriate person immediately if you experience any symptoms. Prompt treatment is necessary to keep these symptoms from becoming fatal.

Not all potentially severe side effects are ones you can recognize. Some are identified only on lab work and imaging results, so it is crucial to stay on schedule with your follow-up appointments for monitoring.

Because it is important that any treating physician knows you are susceptible to these serious side effects, you are encouraged to carry identification that lists your cancer diagnosis, biomarkers, current treatments, oncologist's name and contact information, and cancer center.

Following are some of the most common potentially severe side effects of certain cancer treatments.

Infections. Normally, your immune system destroys harmful organisms before they can cause damage. However, because disease and its treatments weaken the immune system, it often cannot destroy them fast enough, increasing the risk for infection.

Infections are generally treatable, but if you experience any of the following symptoms, it is important to talk to your doctor immediately before your infection gets worse or spreads: fever (oral temperature higher than 100.4°F), chills and sweating; flu-like symptoms (body aches, general fatigue) with or without fever; cough, shortness of breath or painful breathing; sore throat or sores in your mouth; redness, pain or swelling on any area of your skin; pus or drainage from any open cut or sore; diarrhea (loose or liquid stools); pain or burning with urination; or vaginal drainage or itching.

Cytokine Release Syndrome (CRS). A cytokine is a type of protein that is made by certain immune and non-immune cells, and it is a part of a healthy immune system. These small proteins help control the growth and activity of your blood cells and immune cells. Some cytokines stimulate the immune system and others slow it down. CRS can occur if the immune cells affected by treatment release too many cytokines into the bloodstream. When this occurs, it can result in a cytokine storm, which can send the immune system into overdrive.

TABLE 1

SOME COMMON PHYSICAL SIDE EFFECTS

Side Effect	Symptoms
Anemia	Low energy, weakness, dizziness, light-headedness, shortness of breath, rapid heartbeat
Blood clots	Leg discomfort, swelling, warmth and a reddish discoloration
Bone loss and pain	Weakened bone caused by the cancer or treatment
Chemo brain (cognitive dysfunction)	Brain fog, confusion and/or memory problems
Constipation	Difficulty passing stools or less frequent bowel movements compared to your usual bowel habits
Diarrhea	Frequent loose or watery bowel movements that are commonly an inconvenience but can become serious if left untreated
Fatigue	Tiredness that is much stronger and harder to relieve than the fatigue an otherwise healthy person has
Fever	Raised body temperature that could signal an infection
Hair loss (alopecia)	Hair loss on the head, face and body
Hypercalcemia	Excessive thirst and/or urination, headaches, nausea/vomiting, severe constipation, confusion, depression or decreased appetite
Keratopathy	Changes to the surface of the eye that can lead to dry eyes, blurred vision, worsening vision, severe vision loss and corneal ulcer
Nausea and vomiting	The feeling of needing to throw up and/or throwing up
Neutropenia	Low white blood cell count that increases the risk of infection
Peripheral neuropathy	Numbness, pain, burning sensations and tingling, usually in the hands or feet at first
Respiratory problems	Shortness of breath with or without coughing, upper respiratory infections
Skin reactions	Rash, redness and irritation or dry, flaky or peeling skin that may itch
Thrombocytopenia	Low number of platelets in the blood, which can lead to bruising and bleeding

It is a common side effect with chimeric antigen receptor (CAR) T-cell therapy and bispecific T-cell engager (BiTE) therapy. CRS can lead to high fever, inflammation, fatigue and nausea that can be severe and damage multiple organs. Without swift medical treatment, CRS can be fatal.

Hepatic Toxicity. Also referred to as liver damage, this may occur with some drug therapies. Symptoms may include rash, fever, stomach pain, nausea and vomiting, jaundice (yellow color in the eyes and skin) and fatigue.

Immune Effector Cell-associated Neurotoxicity Syndrome (ICANS). ICANS is a clinical and neuropsychiatric syndrome that can occur in the days to weeks following treatment with certain types of immunotherapy, especially immune effector cell and T-cell engaging therapies. ICANS affects a person's nervous system. It is the second most common side effect of CAR T-cell therapy. Symptoms include confusion; behavioral changes; inability to speak or understand speech; attention, thinking and memory problems; muscle weakness, muscle jerks and twitching; headaches; and seizures.

Immune-related Adverse Events. Immunotherapy drugs work by altering the way the immune system operates, and it is possible that they may cause the immune system to attack normal, healthy parts of the body. The most serious of these side effects are called immune-related adverse events. They are rare. Your doctor can manage those that are low-grade reactions. Some, however, can progress and become critical. Knowing the symptoms of these reactions will help you and your caregivers observe the response to the drug and report any potential problems to your doctor.

Doctors grade adverse effects on a scale of 1 to 4, with 1 being mild and 4 being the most severe. How your doctor treats your side effects will depend on how severe they are and which organ or system is affected. Your doctor may pause your treatment, treat the side effects or refer you to a specialist. With careful management, doctors can often resolve immune-related adverse events while preserving the effectiveness of the immunotherapy medication against cancer cells.

Infusion-related Reactions. An infusion-related reaction can occur when your body has a strong, adverse immune response to a cancer treatment that is given intravenously (IV) or by injection into a vein. The types of drug therapy that can cause this reaction include chemotherapy, targeted therapy and immunotherapy.

Reactions are generally mild, such as itching, rash or fever. More serious symptoms include shaking, chills, low blood pressure, dizziness, breathing difficulties or irregular heartbeat. These can even be life-threatening without medical intervention.

Tumor Lysis Syndrome (TLS). This condition can occur after treating a fast-growing cancer, especially a blood cancer. TLS is usually linked with chemotherapy, but other types of treatment may also lead to this syndrome.

As tumor cells die, they break apart and release their contents, including potassium, phosphate and tumor DNA, into the blood. This causes a change in electrolytes and certain chemicals in the blood, which may cause damage to the nervous system, kidneys, heart, liver and other organs or increase the level of potassium in the blood. ■

Q&A BONE LOSS

The loss of bone is a common side effect of multiple myeloma and its treatments. Although the damage usually cannot be prevented, certain things can help reduce bone pain and protect you from related injuries.

Q: What causes bone loss?

A: Multiple myeloma causes lytic lesions (holes in the bones). Additionally, certain drug therapies may cause thinning of the bones. Chemotherapy can reduce calcium levels in the body, which can lead to bone loss. Steroids can interfere with the body's ability to absorb calcium, which could result in bone loss.

Radiation therapy only affects the part of the body that was treated. Your doctor may order a bone density scan, also known as a dual-energy X-ray absorptiometry (DEXA) scan, before treatment begins to get a baseline measurement of your bone mass to compare with measurements taken later.

Inactivity, or a lack of physical activity, can also contribute to bone loss.

Q: When does bone loss typically occur?

A: The rate of bone loss differs depending on each person's unique characteristics, including age, bone health before diagnosis, menopausal status and treatment.

Cancer treatment often increases the risk of osteopenia (mild bone degeneration) or osteoporosis (severe bone loss). Radiation therapy typically does not immediately affect bone health. Deterioration can take several years, making it important to continue to follow up with your doctor to check for thinning.

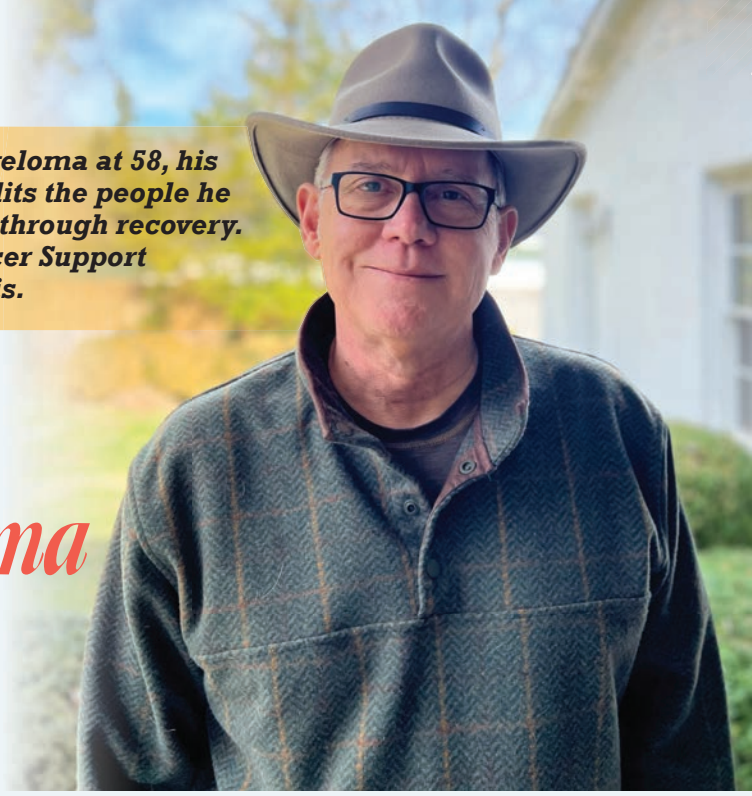
Q: How is bone loss treated?

A: Bone-modifying (strengthening) drugs can help treat bone problems and prevent further damage from occurring. Your doctor will monitor you regularly to detect bone problems. The standard test is a bone scan, which can detect bone metastasis before pain or other symptoms occur. Sometimes, a positron emission tomography/computed tomography (PET/CT) or magnetic resonance imaging (MRI) may be needed to determine whether cancer has spread to the bone.

Q: How can you manage bone loss?

A: You can be an active partner in your own care by doing the following:

- Eat foods that are rich in vitamin D to help your body absorb calcium.
- Choose healthy habits. Avoid smoking and other tobacco products, and limit your alcohol consumption.
- Maintain a healthy body weight. Being underweight increases your risk of bone loss.
- Walk, jog or perform other weight-bearing exercises to help stimulate cells that help grow bones and build muscle.
- Take safety precautions to prevent falls, including installing grab bars in the bathroom, clearing clutter from the floor, using a nightlight, securing or removing rugs, and limiting activities after taking medications that make you tired or dizzy.
- Report pain to your doctor as soon as it occurs.



When Doug was diagnosed with multiple myeloma at 58, his only symptom was persistent neck pain. He credits the people he calls "angels" with helping him from diagnosis through recovery. He became a volunteer with Friend for Life Cancer Support Network to help others facing a similar diagnosis.

Earth "angels" help survivor face multiple myeloma

Three months before I developed persistent neck pain, my annual physical and my bloodwork results had been normal. I attributed the pain to getting older and being an active club cyclist who rode about 2,500 miles each year. When I saw my doctor about the continuing pain, he suggested a CT. At the time, my insurance plan had a high deductible, so I put it off because I didn't think the discomfort was serious enough.

Six months later, I developed severe constipation and returned to my doctor. He wanted to do a CT of my abdomen, so I agreed. The next day, he called with the results — multiple lytic lesions in the pelvic area. After ordering another CT, this time with contrast, he told me I needed to see an oncologist/hematologist and he could get me into one in three weeks. I didn't want to wait, so I called a lifelong friend who was also a doctor. He is my first angel. He set up an appointment with a specialist for the following day at 7 a.m. He was by my side like a brother throughout my treatment.

More imaging scans showed holes everywhere in my bones. Blood work and a bone marrow biopsy confirmed they were caused by light-chain multiple myeloma that had metastasized to my ribs and cervical spine, which explained the pain.

Ten sessions of radiation therapy to my neck and ribs were highly effective. Then, I started a three-drug regimen. After three cycles, I developed a reaction to one of the drugs, so my oncologist discontinued the medication he suspected was causing the reaction. I stayed on the two-drug regimen and reached remission.

Further testing revealed I had the *TP53* deletion on chromosome 17, which meant my myeloma was high risk. So, the next step was an autologous stem cell transplant. Preparing and going through the transplant wasn't easy physically or emotionally. I lost all interest in things I used to enjoy, such as cycling, photography and music. On top of that, my family and I had recently moved to a new neighborhood where we didn't know anyone.

My social worker brought in my second angel, a psychiatrist specializing in behavioral oncology, who surprisingly was someone I already knew from being involved with Bike to Beat Cancer. She helped me conquer the anxiety and depression that can come with a cancer diagnosis.

My third angel was a neighbor in my new neighborhood. I was out walking and met her. Coincidentally, she also knew me from my bike club. She shared that she was a breast cancer survivor. She ran her own landscaping business and one day, I saw her mowing my lawn! I was so moved and grateful.

A fourth angel showed up as a neurosurgeon. One doctor had emphatically suggested I needed a spinal fusion in my neck. This frightened me. Two days later, I met with the neurosurgeon who said that neck surgery wasn't necessary, which saved me the time, expense and pain during recovery. We are still friends today.

After treatment and the transplant, I am happy to report that I'm in remission, going on four years, and take a maintenance medication to prevent a relapse. I feel good and feel blessed to have had the support of my "angels" who helped me along the way. Of course, that includes my wife and other family members who helped me in numerous ways. In subsequent FISH testing, the *TP53* mutation was no longer apparent. I cannot explain why. I just credit my medical team for extending my life.

Today, I give back by supporting others with multiple myeloma through Friend for Life Cancer Support Network. Talking with someone who had cancer was very helpful and encouraging to me, especially when I was at my low point. I try to help others in the same way. I truly believe I was surrounded by angels. ■

Doug's Advice

1. **Follow through with the tests your doctor suggests — don't wait.**
2. **Don't try to be your own doctor or Google this disease.**
3. **Read everything the medical team gives you.**
4. **Take someone with you to doctor visits to take notes.**
5. **When you are first diagnosed, find a support group quickly.**
6. **Get help for depression and anxiety. Don't stay in that dark place.**
7. **After a stem cell transplant, your bed is not your friend. Don't lie around. Getting up and moving around will help you far more.**
8. **Ask your case navigator about financial assistance. Don't be ashamed of asking for help.**
9. **If you have received or plan to have a stem cell transplant, you may be eligible for Social Security disability.**
10. **Never beat yourself up about what you could have done better. That is not helpful. A positive attitude is.**

Take an active role in maintaining your physical and emotional health

Managing your multiple myeloma on a daily basis takes effort. But, with the right tools, it is possible to achieve and maintain the quality of life you desire. Partner with your medical team, be an active participant in your own care and explore the resources available. Then, make a plan and stick with it.

YOUR LONG-TERM PLAN

Your plan should include components of each of these five categories. Work with your doctor to address your unique medical and personal needs.

1 Follow-up care. Your doctor should provide a follow-up schedule of appointments to gauge the multiple myeloma's response to treatment. These visits will include a review of your medical history and a physical exam. They may also include imaging procedures, such as positron emission tomography/computed tomography (PET/CT) scans, X-rays, blood and urine tests, and bone marrow biopsy. These tests are important because if your treatment is no longer working or is not as effective as it once was, your doctor may try another therapy.

Your doctor will ask about any ongoing physical symptoms you have and recommend screening guidelines for other types of cancer.

These appointments are important because finding any disease recurrence or another health issue early is key to successful intervention.

2 Caregiving. Although you may want to do many things on your own, you will be stronger with the support of a caregiver. Your energy level may ebb and flow, so you will appreciate help with shopping, cooking, cleaning and driving to appointments.

Your caregiver can also help you stay on schedule with medications taken at home and those given at medical appointments by using a calendar or reminder tool. Managing medications correctly is essential because cancer medications are most effective when taken exactly as prescribed.

Delegate communication to your caregiver. Many organizations offer tools that make it easier to keep family and friends updated on your condition.

3 Emotional support. Do not hesitate to ask for a referral to a patient counselor, mental health professional or cancer support group (locally or online). Reach out to close friends or a spiritual advisor. Your doctor may prescribe medications to help, and you may be able to manage some symptoms on your own. Contact your doctor about excessive crying or continued feelings of hopelessness or despair. Get immediate medical attention if you have thoughts of suicide or death.

Anxiety can begin as soon as you receive your diagnosis, and follow-up exams and laboratory testing may cause scanxiety. You may begin to feel anxious as the appointment nears and stay that way until you get your results. To help manage the stress, set expectations with your doctor or nurse about when and how you will receive the results so you are not left waiting and wondering. Discuss your fears with your friends, a support group or a therapist. Stay busy with things you enjoy.

Depression is more complex than just feeling sad and can include feelings of panic, hopelessness and discouragement. It is crucial to talk with your health care team if these feelings last more than a couple of days. Try engaging in regular physical activity, breathing exercises or meditation.

Fear is a common reaction before, during and after cancer treatment. One way to combat fear is to learn as much as you can about your diagnosis and your treatment. Talk to others going through similar treatment. Support groups, both in person and online, may be helpful.

4 Healthy habits. Living a healthy lifestyle may help you tolerate treatment better, lower the risk of a recurrence or other chronic diseases, and help protect against secondary cancers.

Following a nutritious diet can help you maintain a healthy weight. Include a variety of fruits and vegetables, lean meat, low-fat dairy products and foods with plenty of fiber. Appetite challenges, which may lead to weight loss, are common. Total parenteral nutrition (TPN), a type of intravenous feeding, may be necessary to help prevent malnutrition for stem cell transplant patients who have acute Graft-versus-Host Disease.

Physical activity helps to manage fatigue and may also reduce pain from peripheral neuropathy. You do not have to create an extensive workout plan. Even walking 10 minutes a day can be beneficial.

Staying hydrated can prevent dehydration, which can worsen some side effect symptoms. Set a goal of drinking 8 to 10 glasses of water a day.

5 Palliative care. Some health care teams refer to their supportive care services as palliative care, which is not the same as hospice care. Don't let this common misconception alarm you. Palliative/supportive care is available at any time to anyone with a serious or life-threatening illness, including right after diagnosis, whereas hospice care is generally reserved for end of life. Ask about the services that are available to you. ■

Support and financial resources available for you

CAREGIVERS & SUPPORT

BeholdBeGold ..... www.beholdbegold.org
Cactus Cancer Society ..... www.cactuscancer.org
CanCare ..... www.cancare.org, 713-461-0028
CANCER101 ..... www.cancer101.org, 646-638-2202
Cancer and Careers ..... www.cancerandcareers.org, 646-929-8032
Cancer*Care* ..... www.cancercare.org, 800-813-4673
Cancer Connection ..... www.cancer-connection.org, 413-586-1642
Cancer Hope Network ..... www.cancerhopenetwork.org, 877-467-3638
Cancer Really Sucks! ..... www.cancerreallysucks.org, 319-393-9681
Cancer Support Community ..... www.cancersupportcommunity.org, 888-793-9355
Cancer Support Community Helpline 888-793-9355
Cancer Support Services ..... www.cancersupportservices.org, 877-593-4212
Cancer Survivors Network ..... csn.cancer.org, 800-227-2345
Caregiver Action Network ..... www.caregiveraction.org, 855-227-3640
CaringBridge ..... support.caringbridge.org/multiple_myeloma, 651-789-2300
Center to Advance Palliative Care ..... www.capc.org, 347-835-0658
Chemo Angels ..... www.chemoangels.com
Cleaning for a Reason ..... www.cleaningforareason.org
Connect Thru Cancer ..... www.connectthrucancer.org, 610-436-5555
Cooking with Cancer ..... www.cookingwithcancer.org, 205-978-3570
Family Caregiver Alliance ..... www.caregiver.org, 800-445-8106
Friend for Life Cancer Support Network www.friend4life.org, 866-374-3634
The Gathering Place ..... www.touchedbycancer.org, 216-595-9546
Guide Posts of Strength, Inc. ..... www.cancergps.org, 336-883-4483
Imerman Angels ..... www.imermanangels.org, 866-463-7626
Livestrong Foundation ..... www.livestrong.org, 855-220-7777
Living Hope Cancer Foundation ..... www.getupandlive.org
Lotsa Helping Hands ..... www.lotsahelpinghands.com
MyLifeLine ..... www.mylifeline.org, 888-793-9355
National LGBT Cancer Project ..... www.lgbtcancer.org, 917-301-1913
Patient Empowerment Network ..... www.powerfulpatients.org, 833-213-6657
SHARE Caregiver Circle ..... www.sharecancersupport.org/caregivers-support, 844-275-7427
Stronghold Ministry ..... www.mystronghold.org, 877-230-7674
Triage Cancer ..... www.triagecancer.org, 424-258-4628
Walk With Sally ..... www.walkwithsally.org, 310-322-3900
Well Spouse Association ..... www.wellspouse.org, 732-577-8899
weSPARK Cancer Support Center ..... www.wespark.org, 818-906-3022
Wigs & Wishes ..... www.wigsandwishes.org, 856-582-6600

CLINICAL TRIALS

Be the Match | Jason Carter Clinical Trials Program ..... www.ctsearchsupport.org, 888-814-8610
Cancer Support Community ..... www.cancersupportcommunity.org/find-clinical-trial, 888-793-9355
Center for Information & Study on Clinical Research Participation ..... www.searchclinicaltrials.org, 877-633-4376
ClinicalTrials.gov ..... www.clinicaltrials.gov
Lazarex Cancer Foundation ..... www.lazarex.org, 877-866-9523, 925-820-4517
Multiple Myeloma Research Foundation ..... www.themmrf.org/resources/clinical-trial-finder, 203-229-0464
National Cancer Institute ..... www.cancer.gov/clinicaltrials, 800-422-6237
NCI Cancer Information Service 800-422-6237
WCG CenterWatch ..... www.centerwatch.com, 866-219-3440

MULTIPLE MYELOMA

American Society of Hematology ..... www.hematology.org
The Angiogenesis Foundation ..... www.angio.org/learn/treatments
Asian American Donor Program ..... www.aadp.org
Be The Match ..... www.bethematch.org
Delete Blood Cancer DKMS ..... www.dkms.org
HEADstrong Foundation ..... www.headstrong.org
HealthTree Foundation ..... www.healthtree.org
International Myeloma Foundation ..... www.myeloma.org
Leukemia and Lymphoma Society ..... www.lls.org/myeloma/myeloma-overview
Multiple Myeloma Research Foundation ..... www.themmrf.org

NUTRITION

American Cancer Society ..... www.cancer.org, 800-227-2345
Cancer*Care* ..... www.cancercare.org, 800-813-4673
Cancer Support Community ..... www.cancersupportcommunity.org, 888-793-9355
LLS | PearlPoint Nutrition Services ..... www.pearlpoint.org, 615-467-1936

PAIN MANAGEMENT

American Chronic Pain Association ..... www.theacpa.org
American Society of Anesthesiologists ..... www.asahq.org, 847-825-5586
Cancer Pain Research Consortium ..... www.cancerpainresearch.com, 707-260-0849
U.S. Pain Foundation ..... www.uspainfoundation.org, 800-910-2462

PRESCRIPTION EXPENSES

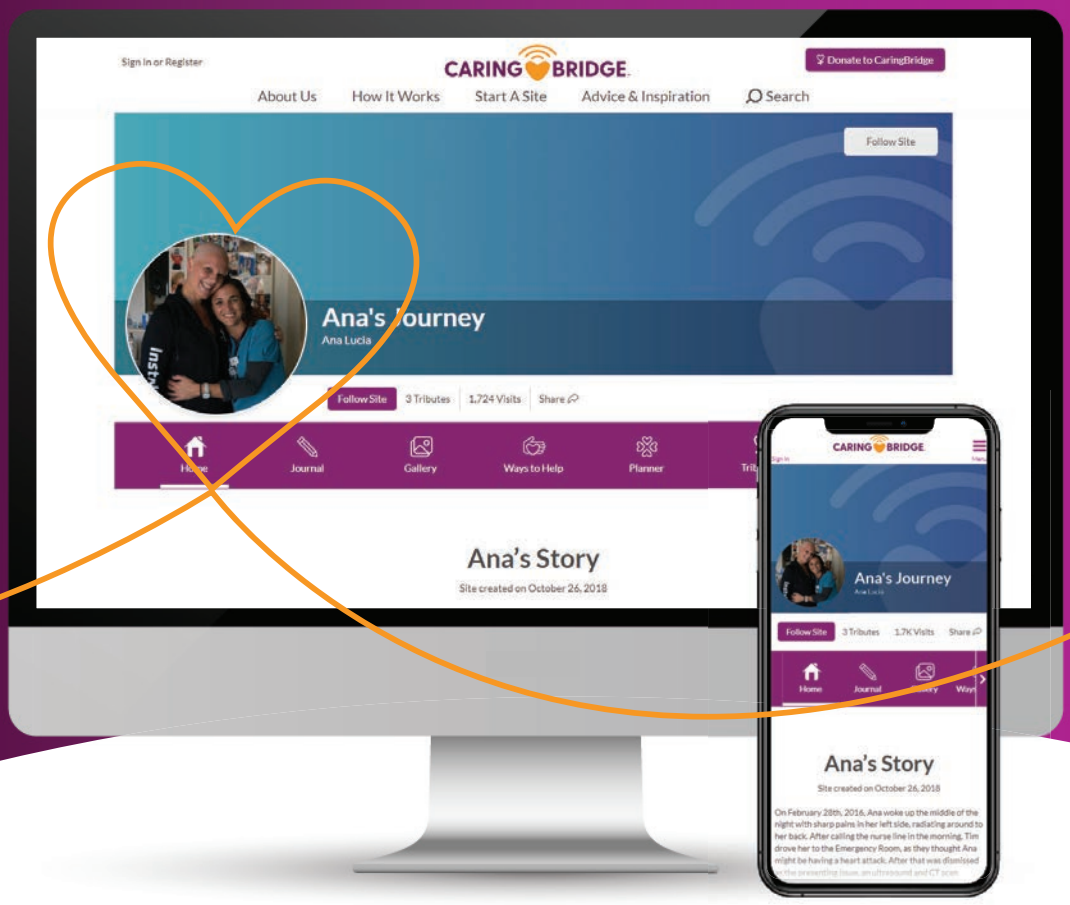
America's Pharmacy ..... www.americaspharmacy.com, 888-495-3181
Bone Marrow & Cancer Foundation ..... www.bonemarrow.org, 800-365-1336
Cancer*Care* Co-Payment Assistance Foundation ..... www.cancercarecopay.org, 866-552-6729
Cancer Financial Assistance Coalition ..... www.cancerfac.org
Good Days ..... www.mygooddays.org, 972-608-7141
HealthWell Foundation ..... www.healthwellfoundation.org, 800-675-8416
Medicine Assistance Tool ..... www.medicineassistancetool.org, 571-350-8643
National Organization for Rare Disorders ..... www.rarediseases.org, 800-999-6673
NeedyMeds ..... www.needymeds.org, 800-503-6897
Patient Access Network Foundation ..... www.panfoundation.org, 866-316-7263
Patient Advocate Foundation Co-Pay Relief ..... www.copays.org, 866-512-3861
RxAssist ..... www.rxassist.org
RxHope ..... www.rxhope.org
SingleCare ..... www.singlecare.com, 844-234-3057
Stupid Cancer ..... www.stupidcancer.org, 212-619-1040
Together Rx Access ..... www.togetherrxaccess.com, 800-444-4106

REIMBURSEMENT & PATIENT ASSISTANCE PROGRAMS

Abecma Cell Therapy 360 ..... www.abecma.com/resources/cell-therapy-360, 888-805-4555
Amgen SupportPlus Co-Pay Program ..... www.amgenassist.com/copay, 866-264-2778
BI Cares Patient Assistance Program ..... www.boehringer-ingelheim.us/our-responsibility/patient-assistance-program, 800-556-8317
Bristol-Myers Squibb Access Support ..... bmsaccesssupport.bmscustomerconnect.com/patient, 800-861-0048
Bristol-Myers Squibb Patient Assistance Foundation ..... bmspaf.org, 800-736-0003
CareASSIST by Sanofi ..... www.sanoficareassist.com, 833-930-2273
Cell Therapy 360 ..... www.celltherapy360.com, 888-805-4555
Darzalex Faspro Janssen CarePath ..... www.janssencarepath.com/darzalex/faspro, 844-553-2792
Darzalex Janssen CarePath ..... www.janssencarepath.com/darzalex, 844-553-2792
Darzalex Patient and Medication Cost Support ..... www.darzalex.com/iv/patient-cost-support, 844-553-2792
Empliciti BMS Access Support ..... www.empliciti.com/cost-access, 844-367-5424
Janssen CarePath ..... www.janssencarepath.com, 844-553-2792
Karyopharm Therapeutics KaryForward ..... www.karyforward.com, 877-527-9493
Kyprolis Patient Support Program ..... www.kyprolis.com/patient-resources, 888-427-7478
MyCARVYKTI ..... www.carvykti.com/resources-and-support, 800-559-7875
Ninlaro Co-Pay Assistance ..... www.takedaoncologycopay.com, 844-817-6468, option 2
Revlimid BMS Access Support ..... www.revlimid.com/access-financial-resources, 800-861-0048
Sarclisa CareASSIST ..... www.sarclisa.com/paying-for-sarclisa, 833-930-2273
Secura Care Patient Support Program ..... securabio.com/patient-support-programs, 844-973-2872
Takeda Oncology Here2Assist ..... www.here2assist.com, 844-817-6468, option 2
Tecvayli Janssen CarePath ..... www.janssencarepath.com/tecvayli, 877-227-3728
Thalomid BMS Access Support ..... bmsaccesssupport.bmscustomerconnect.com/patient/financial-support, 800-861-0048
Together with GSK Oncology ..... www.togetherwithgskoncology.com/patient-information, 844-447-5662
Velcade Reimbursement Assistance Program ..... www.velcade.com/paying-for-treatment, 844-817-6468, option 2
Xpovio Karyforward ..... www.karyforward.com, 877-527-9493

➥ *For more resources, go to* PatientResource.com

Building Bridges of Care and Communication that Provide Love and Support on a Health Journey



CaringBridge is a non-profit that provides a safe space for communication and connection on a trusted, secure platform with flexible privacy options.

CARING BRIDGE

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