



Glossary of Multiple Myeloma Terms

Some things that make multiple myeloma (MM) difficult to understand are the unfamiliar medical terms that some experts and healthcare providers use to explain it. You may come across words like these when you are talking to someone about MM or when you are reading an article about it. Try not to feel overwhelmed when this happens. If you're talking to a healthcare professional, you can always ask them to explain.

WHY IT'S HELPFUL

This glossary is here to help you when you encounter an unfamiliar word or phrase. You may find it helpful to print out this glossary and keep it on hand as a resource when you visit your doctor.

GLOSSARY OF MULTIPLE MYELOMA TERMS

24-HOUR URINE PROTEIN

Also called total protein, a test that measures the amount and type of protein in urine over a 24-hour period. This analysis is performed as part of the initial diagnostic workup.

ACTIVE MYELOMA (SYMPTOMATIC MYELOMA)

Myeloma that has spread throughout the bone marrow and is causing symptoms. Active myeloma is defined as the presence of monoclonal protein and 1 or more of the CRAB features: calcium elevation (increase of >10 mg/dL); renal dysfunction (creatinine >2 mg/dL); anemia (hemoglobin <10 g/dL or >2 g/dL decrease from the patient's baseline); bone disease (lytic lesions or osteoporosis). (See CRAB criteria.)

ACUTE KIDNEY INJURY (ACUTE RENAL FAILURE)

The term acute kidney injury has replaced the term acute renal failure. It is a serious condition characterized by a sudden decrease in the functioning of the kidney. Acute renal failure can be caused by many different factors in patients with multiple myeloma.

ALBUMIN

The main protein in the plasma. Albumin levels are assessed as part of the initial diagnostic workup for multiple myeloma.

ALLOGENEIC TRANSPLANT

The infusion of bone marrow or stem cells from a donor to a recipient. The donor is compatible with the recipient but not genetically identical.



AMYLOIDOSIS

A rare disease that occurs when substances called amyloid proteins deposit in organs and disrupt the structure and function of affected tissue and organs. Amyloids are abnormal proteins produced by cells in the bone marrow.

ANEMIA

A condition defined by a decrease in hemoglobin, usually below 10 g/dL (normal range, >13 to 14 g/dL). Myeloma in the bone marrow blocks red blood cell production. Some common symptoms of anemia include shortness of breath, weakness, and fatigue.

ANTIBODY (IMMUNOGLOBULIN)

A protein that helps fight infections in the body. Antibodies are made of 2 heavy chains and 2 light chains of proteins. There are 5 different types of heavy chains: A, D, G, E, and M. There are 2 forms of light chains: kappa and lambda. The antibodies made by myeloma cells (monoclonal proteins) are not normal; they proliferate in excess and are not produced in response to an infection. Additionally, monoclonal proteins do not help to fight infections.

ASYMPTOMATIC

No symptoms of active disease, and no CRAB features. Asymptomatic multiple myeloma is also known as smoldering myeloma. (See CRAB criteria; see smoldering myeloma.)

ARTERIAL THROMBOEMBOLISM

The formation of a blood clot in the artery that breaks free from the original location.

AUTOLOGOUS TRANSPLANT

A type of stem cell transplant in which the patient is a self-donor. Stem cells are removed from the bone marrow or blood and frozen prior to high-dose chemotherapy. The cells are then thawed and reinfused into the patient after the recipient has received high-dose chemotherapy.

B CELL

Also known as B lymphocyte. B cells are white blood cells that become plasma cells in the bone marrow. B cells are the source of antibodies.

BENCE JONES PROTEIN

A myeloma monoclonal protein found in urine expressed as g/24 h. Although the presence of a small amount of protein (<0.1 g/24 h) may be present in urine under normal circumstances, the presence of any Bence Jones protein in urine is abnormal.



BETA-2 MICROGLOBULIN (β 2M)

A small protein in the blood made by many types of cells, including white blood cells and myeloma cells. High levels of β 2M are found in patients with active multiple myeloma. Serum β 2M values are used as part of the staging criteria of the International Staging System for multiple myeloma.

BISPHOSPHONATE

A class of medications that improve bone strength and prevent loss of bone mass by inhibiting osteoclast-mediated bone resorption and related skeletal complications.

BONE MARROW

Soft spongy tissue in the center of bone where blood cell formation occurs.

BONE MARROW ASPIRATE

Removal by needle and syringe of a small amount of the liquid portion of the bone marrow to test for disease. It is usually performed in conjunction with a bone marrow biopsy.

BONE MARROW BIOPSY

Removal by needle of a small amount of bone and solid marrow to be tested for cancer. If tests reveal the presence of cancerous plasma cells, the biopsy is used to estimate how much of the bone marrow is affected. A bone marrow biopsy is usually performed in conjunction with a bone marrow aspirate.

BONE MARROW TRANSPLANT (BMT)/ PERIPHERAL BLOOD STEM CELL TRANSPLANT (PBSCT)/ HEMATOPOIETIC STEM CELL TRANSPLANT (HSCT)

A medical procedure that is used to restore stem cells in the body when bone marrow has been destroyed. Although BMT and PBSCT differ in the source of the stem cells, both BMT and PBSCT can be called HSCT. In BMT, the source of the stem cells is the bone marrow. In PBSCT, the source of the stem cells is the bloodstream. Multiple myeloma can be treated with HSCT. PBSCT is more common than BMT. (See allogeneic transplant; see autologous transplant.)

CALCIUM

A mineral stored in the body that is essential for bodily functions. It is primarily stored in bones and teeth. Multiple myeloma activates osteoclast cells and blocks osteoblast cells, causing bone damage and increased calcium in the blood. (See hypercalcemia.)

CELL

A small structure in the body that makes up all of the body's tissues.



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CHEMOTHERAPY

A medication that destroys cancer cells. Most chemotherapeutic agents travel through the bloodstream and are thus considered systemic.

CLINICAL TRIAL

A research study that assesses how well new medical approaches work in humans. There are 4 phases of a clinical trial. Phase 1: a new drug/treatment is given to a small group of people for the first time to test the drug's safety, determine a safe dosage range, and identify side effects. Phase 2: the drug/treatment is given to a larger group of people to determine if it is effective and further test its safety. Phase 3: the drug/treatment is given to large groups of people to confirm effectiveness, monitor side effects, compare it to commonly used treatments, and collect information that will allow the drug/treatment to be used safely. Phase 4: studies done after the drug/treatment is marketed to collect information on the drug's effect in various populations and determine if there are side effects associated with long-term use.

COMPLETE BLOOD COUNT

A blood test that measures the number of white blood cells, red blood cells, and platelets. In patients with multiple myeloma, myeloma cells take over the bone marrow and as a result, too few normal blood cells are made.

COMPLETE RESPONSE (CR)

One of 5 treatment response categories developed by the International Myeloma Working Group. CR is a less favorable response to treatment than stringent complete response (sCR) but is better than very good partial response (VGPR), partial response (PR), or stable disease (SD). CR is defined as negative immunofixation on serum and urine assays, disappearance of any soft tissue plasmacytomas, and $\leq 5\%$ plasma cells in the bone marrow.

COMPUTED TOMOGRAPHY SCAN

An imaging technique that combines many computerized X-rays taken from different angles to create 3-dimensional images of the organs and structures in the body.

CONSOLIDATION

An increase in the intensity of treatment to further reduce tumor burden. It is typically used within the context of clinical trials and is not a standard of care.

CRAB CRITERIA

Features that define active multiple myeloma and indicate myeloma-related organ damage. **C**=calcium elevation, **R**=renal dysfunction, **A**=anemia, **B**=bone lesions.



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C-REACTIVE PROTEIN (CRP)

A protein made by the liver. High levels of CRP mean that there is an inflammatory process occurring.

CREATININE CLEARANCE

A test that is used to estimate glomerular filtration rate, or how well the kidneys are functioning. The test compares the level of creatinine in urine to the level of creatinine in blood. Higher levels of creatinine in the blood indicate less creatinine cleared by the kidneys through the urine, and less kidney function.

CYTOGENETICS

The branch of genetics that studies the structure of DNA within the cell nucleus. This DNA is condensed during cell division and forms chromosomes. Cytogenetic studies focus on the number and morphology of chromosomes using chromosome banding techniques, or fluorescently labeled probes. Cytogenetics may be part of the initial diagnostic workup for multiple myeloma.

CYTOKINE

A substance secreted by cells of the immune system that stimulates growth and activity of cells. Cytokines are produced in the bone marrow and circulate in the bloodstream.

DEEP VEIN THROMBOSIS (DVT)

A blood clot that forms in a deep vein (usually in the leg) in the body. It may become dislodged, causing problems elsewhere in the body, such as the lung. Signs of DVT include pain or swelling, warmth or tenderness over the vein, and skin redness.

DEHYDRATION

A condition where the body does not have enough fluid to function properly. In patients with multiple myeloma, dehydration may be caused by increased calcium in the blood. (See hypercalcemia.)

DIALYSIS

A process whereby a person's blood must be filtered through a machine (dialysis machine) because his or her kidneys cannot filter the blood. Up to 10% of patients with newly diagnosed multiple myeloma may require dialysis.

DOUBLE/TRIPLET THERAPY

A combination of 2 or 3 drugs or therapies taken at the same time to treat multiple myeloma.



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DURATION OF RESPONSE

Recommended alternative term to “stable disease” to characterize treatment efficacy. It is calculated from the time of first recorded achievement of a particular response level.

ERYTHROPOIETIN

A kidney-derived hormone that may be decreased in patients with multiple myeloma. Decreased erythropoietin may lead to anemia. Synthetic erythropoietin may be injected into a patient to counteract the effects of reduced erythropoietin.

EXTRAMEDULLARY MYELOMA

Myeloma that is located outside of the bone marrow. The presence of extramedullary disease may be associated with poorer patient outcomes.

FATIGUE

Severe tiredness despite getting adequate sleep. Fatigue can be a symptom of myeloma-induced anemia, hypercalcemia, and/or kidney damage.

FIRST-LINE THERAPY

The initial treatment given for a disease. Also called induction therapy, primary therapy, and primary treatment.

FLOW CYTOMETRY

A tool that measures abnormal cells in the bone marrow and provides information about the risk of progression from smoldering to active myeloma. It may be useful in the follow-up or surveillance plan for patients with smoldering myeloma.

FLUORESCENCE IN-SITU HYBRIDIZATION (FISH)

A laboratory technique used as part of the initial diagnostic workup for multiple myeloma that studies chromosomal changes that may occur in myeloma cells during cell division. The presence or absence of chromosomal changes, and the types of changes that may occur, enable assessment of a patient’s risk status.

FREE LIGHT CHAIN

Plasma cells make immunoglobulins out of light and heavy chain components. (See antibody.) Plasma cells typically make more light than heavy chains. The excess light chains enter the bloodstream unattached to heavy chains and are called free light chains. The amount of free light chain production is linked to the activity of myeloma or plasma cell growth.



FREE LIGHT CHAIN ASSAY

A sensitive laboratory test performed on serum to detect increased levels of free light chains. This test is recommended as part of the initial diagnostic workup and to help monitor disease progression.

GENE EXPRESSION PROFILING

A high-throughput genomic technique that may offer further information about risk stratification and inform treatment decisions for patients with molecularly defined high-risk disease.

GLOMERULAR FILTRATION RATE (GFR)

A test that evaluates how well the kidneys are working. GFR estimates how much blood passes through the glomeruli each minute.

GRANULOCYTE COLONY-STIMULATING FACTOR (G-CSF)

A protein normally made by the body that stimulates the bone marrow to make neutrophils. (See neutrophil.) It is also used to prevent or treat neutropenia, or low white blood cell count. (See neutropenia.)

GROWTH FACTOR

A substance that regulates cell division and survival. Erythropoietin, a growth factor that stimulates the growth of red blood cells, should be considered for patients with multiple myeloma who are anemic, especially those with renal failure.

HEAVY CHAIN

The longer protein chain that is part of an antibody/immunoglobulin. (See antibody.)

HEMATOPOIETIC STEM CELL

A bone marrow stem cell (primarily in adults) that gives rise to blood cells throughout the life of an organism. (See stem cell.)

HYPERCALCEMIA

A condition describing too much calcium in the blood. Hypercalcemia can result from excess bone resorption in patients with multiple myeloma. Hypercalcemia is usually treated on an emergency basis using intravenous fluids plus drugs that reduce bone destruction and treat multiple myeloma. Signs and symptoms may include loss of appetite, nausea, thirst, fatigue, muscle weakness, restlessness, and confusion. Calcium elevation >10 mg/dL is a CRAB criterion that indicates end-organ damage associated with active multiple myeloma. (See CRAB criteria.)



HYPERVISCOSITY SYNDROME

An increased thickness of the blood due to the concentration of monoclonal proteins. Hyperviscosity is considered a medical emergency and should be treated with plasmapheresis and exchange. Chemotherapy is also recommended to kill the cells that produce monoclonal proteins. Hyperviscosity syndrome can lead to headaches, dizziness, weakness, fatigue, sleepiness, and oozing from cuts.

IMMUNOFIXATION (SERUM AND URINE)

Tests that determine the levels of monoclonal protein. The serum immunofixation electrophoresis test uses blood, and the urine immunofixation electrophoresis test uses urine. They are recommended as part of the initial multiple myeloma diagnostic workup and for disease monitoring.

IMMUNOGLOBULIN (ANTIBODY)

See antibody.

IMMUNOHISTOCHEMISTRY

A test, often performed on the bone marrow, that determines if monoclonal proteins are present and to measure plasma cell involvement.

IMMUNOMODULATORY DRUGS (IMiDS)

A class of drugs that modulates the function of the immune system. IMiDs are thalidomide analogues, which include Revlimid® (lenalidomide) and Pomalyst® (pomalidomide).

INDUCTION THERAPY

The initial treatment used in an effort to achieve remission in a patient with newly diagnosed multiple myeloma.

KARYOTYPE

A test that analyzes plasma cell chromosomes from the bone marrow aspirate. The test can help identify genetic problems underlying a disease. The test can count the number of chromosomes or look for structural changes in the chromosomes. (See cytogenetics.)

KYPHOPLASTY

A procedure used to restore support to the spinal column after a vertebral fracture. A balloon-like device is placed in the fractured vertebrae and then inflated. This restores the normal shape and height of the spine. The balloon is removed, and cement is injected to hold the vertebrae in place.

LACTATE DEHYDROGENASE

A protein made by myeloma cells. High levels may indicate advanced disease.



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LIGHT CHAIN (BENCE JONES) MYELOMA

Myeloma cells that only make free light chains and no complete monoclonal proteins. Light chain myeloma is also known as Bence Jones myeloma. (See free light chains.)

LYTIC LESION

A damaged area of a bone that appears as a dark spot on an X-ray. Lytic lesions are evidence of weakened bone and are the result of increased osteoclast activity and decreased osteoblast activity. (See CRAB criteria.)

MAGNETIC RESONANCE IMAGING

An imaging test that uses radio waves and a powerful magnet to produce images of organs and structures within the body.

MAINTENANCE THERAPY

A treatment given to patients who are in remission with the goal of preventing or delaying a relapse.

MINIMAL RESIDUAL DISEASE

Term created to describe disease detectable only by techniques that are more sensitive than morphology (eg, flow cytometry or polymerase chain reaction).

MONOCLONAL GAMMOPATHY OF UNDETERMINED SIGNIFICANCE (MGUS)

A benign condition where the monoclonal protein is present (usually <3.0 g/dL), but none of the CRAB diagnostic features are present. (See CRAB criteria.) Fewer than 10% of bone marrow cells are monoclonal plasma cells. MGUS progresses to malignant multiple myeloma at a rate of 1% per year.

MONOCLONAL PROTEIN (M-PROTEIN)

An antibody made by myeloma cells that is synthesized uncontrollably, as opposed to being synthesized in response to a germ. M-proteins are found in excessive amounts in the blood or urine of patients with multiple myeloma. They have an abnormal amino acid sequence and protein structure owing to mutations in the genes responsible for immunoglobulin production in the myeloma cells that make them. Unlike normal antibodies, M-proteins are unable to fight infections.¹ The identification of an M-protein is important for diagnosis, and the level of M-protein can help measure treatment effectiveness.

MULTIPLE MYELOMA

Cancer of the plasma cells in the bone marrow. Malignant plasma cells (myeloma cells) accumulate in the bone marrow, causing hallmark features. (See CRAB criteria.)



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MYELOMA CELL

A malignant plasma cell that accumulates in the bone marrow, resulting in characteristic features of multiple myeloma. (See CRAB criteria.) In multiple myeloma, one type of plasma cell is duplicated excessively, leading to the overproduction of monoclonal protein. Myeloma cells typically secrete monoclonal proteins into the blood and/or urine. (See monoclonal protein.)

MYELOMA KIDNEY

A condition where the kidney(s) are damaged by fragments of the abnormal antibodies made by myeloma cells. Myeloma kidney is also referred to as cast nephropathy.

MYELOSUPPRESSION

A decrease in the production of red blood cells (anemia), neutrophils (neutropenia), or platelets (thrombocytopenia). Patients with multiple myeloma are at risk for myelosuppression from the disease process and the treatments.

NEUROPATHY

A nerve condition that manifests in pain, numbness, tingling, swelling, or muscle weakness. Neuropathy can be the result of cancer or cancer treatment, physical injury, infection, toxic substances, or chronic disease (eg, diabetes, kidney failure, or malnutrition).

NEUTROPENIA

A state of abnormally low neutrophil (infection-fighting white blood cell) count. Neutropenia in adults is generally defined as a neutrophil count ≤ 1700 neutrophils per microliter of blood. Severe neutropenia is defined as < 500 neutrophils per microliter of blood. Neutropenia in patients with multiple myeloma may be associated with certain multiple myeloma treatments. Infection is a serious concern when patients have neutropenia.

NEUTROPHIL

A type of white blood cell necessary to fight bacterial infections.

OSTEOBLAST

A cell that produces osteoid, which will become mineralized with calcium to form new bone.

OSTEOCLAST

A bone marrow cell that resorbs or breaks down old bone. The overstimulation of osteoclasts is one of the processes responsible for lytic lesions in patients with multiple myeloma.



OSTEOLYTIC LESION

See lytic lesion.

OSTEOPENIA

Reduced bone density that is less severe than osteoporosis. Osteopenia in patients with multiple myeloma may be detected by a bone density test.

OSTEOPOROSIS

A reduction in bone density.

OBJECTIVE RESPONSE RATE (ORR)

The proportion of patients with tumor size reduction of a predefined amount and for a minimum time period. ORR is typically defined by the Food and Drug Administration as the sum of partial and complete responses and, as such, is considered a direct measure of antitumor activity. The significance of ORR is measured by the magnitude and duration and the percentage of complete responses (no detectable evidence of tumor).

OVERALL SURVIVAL

The length of time from diagnosis or treatment initiation that patients diagnosed with a disease remain alive. A measure used in clinical trials to assess how well a new treatment works.

PARESTHESIA

An abnormal sensation of burning, tingling, or pin pricks commonly occurring in the hands, arms, legs, or feet. Patients with multiple myeloma may experience paresthesia as a result of the disease process or associated with treatment.

PARTIAL RESPONSE (PR)

One of the 5 uniform treatment response subcategories developed by the International Myeloma Working Group for patients with multiple myeloma. PR is a less favorable response to treatment than stringent complete response (sCR), complete response (CR), or very good partial response (VGPR) but is better than stable disease (SD). PR is defined as having a $\geq 50\%$ reduction in serum monoclonal protein and a reduction in 24-hour urine monoclonal protein of $\geq 90\%$ or to < 200 mg/24 h. Additionally, a $\geq 50\%$ reduction in the size of soft tissue plasmacytomas is required if the patient had a plasmacytoma at baseline.

PERFORMANCE STATUS

A measure of how well a patient is able to perform ordinary tasks and execute daily activities.



PERIPHERAL NEUROPATHY

A condition resulting from nerve damage that may cause weakness, numbness, and pain, typically in the hands and feet. It may be a complication of multiple myeloma or treatment.

PLASMA

The part of the blood that carries the blood cells.

PLASMA CELL

The most mature form of a B cell that makes proteins to fight infections. Multiple myeloma is cancer of the plasma cells in the bone marrow.

PLASMA CELL LABELING INDEX

A test that shows how many and how rapidly myeloma cells are dividing.

PLASMACYTOMA (SOLITARY PLASMACYTOMA)

A condition in which a patient has a single mass of myeloma cells.

PLATELET

A type of blood cell that makes clots and stops bleeding.

POSITRON EMISSION TOMOGRAPHY (PET) SCAN

An imaging test that uses radioactive material to see the shape and function of body parts. PET scans can be used to image myeloma cells and may determine the spread of myeloma.

PROGNOSIS

The course and outcome of a disease.

PROGRESSION-FREE SURVIVAL

The time from randomization in a clinical trial until objective tumor progression or death.

PROGRESSIVE DISEASE

Cancer that is proliferating. The International Myeloma Working Group has defined progressive disease as having at least one of the following: $\geq 25\%$ increase in serum monoclonal component (absolute increase must be ≥ 0.5 g/dL); and/or urine monoclonal component (absolute increase must be ≥ 200 mg/24h); and/or in patients without measurable serum and urine monoclonal protein levels: the difference between involved and uninvolved free light chain levels (absolute increase must be >10 mg/dL); bone marrow



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plasma cell percentage (absolute percentage must be $\geq 10\%$); development of new, or increased size of, existing bone lesions or soft tissue plasmacytomas; or development of hypercalcemia solely attributable to the plasma cell proliferative disorder.

PROPHYLACTIC MEDICINE

Medicine given to prevent a disease.

PROTEASOME INHIBITOR

A class of drugs that includes Velcade® (bortezomib) and Kyprolis™ (carfilzomib) approved for the treatment of multiple myeloma. The mechanisms of action are specific to each medication, but in general they block the proteasome pathways that play an essential role in regulating the intercellular concentration of proteins; this disruption leads to cell death.

PROTEINS

A chain of small chemical compounds that are vital to cells.

PULMONARY EMBOLUS

A blockage of an artery in the lung most commonly caused by a blood clot. Patients with multiple myeloma are at increased risk for a pulmonary embolism because of the disease and treatments for multiple myeloma. Signs and symptoms of a pulmonary embolism include anxiety, sudden dyspnea, chest discomfort, tachycardia or tachypnea, low fever, pleural friction rub, and wheezing. Pulmonary embolism is a medical emergency.

QUANTITATIVE IMMUNOGLOBULINS

A test used to measure the amount of different types of antibodies (IgG, IgA, and IgM) in blood and urine. Quantitative immunoglobulin testing is recommended as part of the initial diagnostic workup and for follow-up surveillance in multiple myeloma.

RADIATION THERAPY

A treatment for cancer that uses high-energy particles to destroy cancer cells.

REFRACTORY MULTIPLE MYELOMA

Multiple myeloma that is not responsive to usual therapies. Patients are considered to have relapsed/refractory multiple myeloma if they have achieved a minor response or better to treatment relapse and then progress on salvage therapy, or experience progression within 60 days of their last therapy.



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REGIMEN

The treatment plan that includes the dosage, schedule, and duration of treatment.

RELAPSE

The return of a disease or the signs and symptoms of a disease after a patient has experienced improvement. The International Myeloma Working Group has defined clinical relapse as including direct indicators of increasing disease and/or organ dysfunction as defined by the CRAB features. (See CRAB criteria.) Also included in the definition are the development of new soft tissue plasmacytomas or bone lesions; a definite increase in the size of existing plasmacytomas or bone lesions; hypercalcemia; a decrease in hemoglobin of ≥ 2 g/dL; and an increase in serum creatinine of ≥ 2 mg/dL. Relapse from complete response is defined as at least one of the following: reappearance of serum or urine monoclonal protein; development of $\geq 5\%$ plasma cells in the bone marrow; and appearance of any other sign of progression, including new plasmacytomas, lytic bone lesions, or hypercalcemia.

RENAL INSUFFICIENCY

Poor function of the kidneys. Renal insufficiency in patients with multiple myeloma is mainly caused by damage to parts of the kidney by light chains. Patients with multiple myeloma are at risk for renal dysfunction.

RESPONSE CRITERIA

The measures used to characterize how well a patient responds to multiple myeloma treatment. There are 5 categories of response developed by the International Myeloma Working Group: stringent complete response (sCR), complete response (CR), very good partial response (VGPR), partial response (PR), and stable disease (SD). (See the individual definitions for each criterion.) Progressive disease and clinical relapse are also used to describe a patient's condition. (See progressive disease; see relapse.)

SECOND-LINE THERAPY

The therapy given to a patient when initial treatment (first-line therapy) does not work or has stopped working.

SERUM FREE LIGHT CHAIN ASSAY

A test that measures small pieces of proteins (free light chains) in the blood that are made by myeloma cells.

SERUM IMMUNOFIXATION ELECTROPHORESIS (SIFE)

A blood test that determines the type of monoclonal proteins in the blood. SIFE is recommended as part of the initial diagnostic workup for multiple myeloma.



SERUM PROTEIN ELECTROPHORESIS (SPEP)

A blood test that determines the amount of monoclonal proteins in the blood.¹ SPEP is recommended as part of the initial diagnostic workup for multiple myeloma.

SINGLE NUCLEOTIDE POLYMORPHISM (SNP)

The most common type of variation among people. SNP can act as a biological marker and help identify genes associated with disease.

SKELETAL SURVEY

A series of X-rays of the skull, spine, ribs, pelvis, and long bones that shows the loss or thinning of the bone or lytic lesions in patients with multiple myeloma.

SMOLDERING MYELOMA (ASYMPTOMATIC MYELOMA)

Myeloma that has achieved a greater level of disease than monoclonal gammopathy of undetermined significance (MGUS) but is not causing symptoms in patients and not damaging the body's organ systems. Smoldering myeloma is defined by the International Myeloma Foundation as monoclonal protein in serum >3 g/dL and/or bone marrow plasma cells $>10\%$; however, none of the CRAB features are present. CRAB features include **C**alcium elevation, **R**enal dysfunction, **A**nemia, and **B**one lesions. (See CRAB criteria.) Additionally, the criteria for MGUS or active multiple myeloma are not met.

SPINAL CORD COMPRESSION

When pressure is applied to the spinal cord as a result of tumor, spinal fracture, or other condition. In patients with multiple myeloma, spinal cord compression from a plasmacytoma arising from a vertebral body is the most frequent and serious neurologic complication. It can cause pain, weakness, loss of feeling, paralysis, incontinence, and impotence. Spinal cord compression is a medical emergency and an urgent magnetic resonance imaging is recommended.

STABLE DISEASE (SD)

A disease state where a patient has some response to treatment but a $<50\%$ reduction in monoclonal protein levels and the disease state is neither improving nor getting worse. The International Myeloma Working Group has defined SD as not meeting any of the criteria for the other response categories and recommends against using SD as a measure of treatment efficacy.

STEM CELL

An immature cell that is able to differentiate to form all other blood cells. Stem cells are typically localized in the bone marrow and can be harvested for transplant.



STEM CELL TRANSPLANT

See bone marrow transplant.

STEROID

A type of hormone often given in combination with 1 or more anticancer drugs to help control the effects of the disease on the body. Steroid therapy reduces swelling and inflammation and kills myeloma cells.

STRINGENT COMPLETE RESPONSE (sCR)

One of the 5 treatment response categories developed by the International Myeloma Working Group. sCR is the highest classification of treatment response and is better than complete response (CR), very good partial response (VGPR), partial response (PR), or stable disease (SD). sCR is defined as the CR criteria (see complete response), as well as a normal free light chain ratio and the absence of clonal cells in the bone marrow measured by immunohistochemistry or immunofluorescence.

SUPPORTIVE CARE

Treatments that help prevent, control, or relieve complications and side effects and to improve a patient's comfort and quality of life.

SYMPTOMATIC

Showing symptoms or concerning a specific symptom. Symptomatic myeloma, also called active myeloma, is characterized by increased monoclonal plasma cells in the bone marrow ($\geq 10\%$) and/or presence of a biopsy-proven plasmacytoma; monoclonal protein present in serum and/or urine; and 1 or more of the following CRAB features: **C**alcium elevation, **R**enal dysfunction, **A**nemia, or **B**one disease. (See CRAB criteria.)

SYSTEMIC THERAPY

A treatment that travels through the bloodstream, reaching and affecting cancer cells throughout the body. Systemic treatments are the primary treatments for multiple myeloma and include chemotherapy, targeted therapy, and steroids.

TANDEM CELL TRANSPLANT

A type of autologous transplant involving a second stem cell transplant and a second round of high-dose chemotherapy. Tandem cell transplant is typically given within 6 months of the first transplant.

TARGETED THERAPY

A treatment that targets cancer cells.



THROMBOCYTOPENIA

A low number of platelets in the blood. Normal levels range from 150,000 to 250,000. Bleeding may occur with platelet counts lower than 50,000. Major bleeding is usually associated with platelet counts of <10,000. Thrombocytopenia is a side effect of some antimyeloma drugs.

THROMBOEMBOLISM

The blocking of a blood vessel by a particle that has broken away from a blood clot at its site of formation.

TIME TO PROGRESSION

The time from randomization until objective tumor progression, excluding deaths.

TUMOR MARKER

Substances in the blood that can be used to confirm that cancer is present.

URINE IMMUNOFIXATION ELECTROPHORESIS (UIFE)

A test that determines the type of monoclonal proteins in the urine. UIFE is recommended as part of the initial diagnostic workup for multiple myeloma.

URINE PROTEIN ELECTROPHORESIS (UPEP)

A test that determines the amount of monoclonal protein in the urine. UPEP is recommended as part of the initial diagnostic workup for multiple myeloma.

VACCINE

A biologic agent inserted into the body to prevent disease.

VENOUS THROMBOEMBOLISM (VTE)

Blood clots in the veins. VTEs can be either a deep vein thrombosis (DVT) or a pulmonary embolism (PE). Patients with multiple myeloma are at increased risk for DVTs and PEs, because of both the disease and treatment. (See deep vein thrombosis; see pulmonary embolism.)

VERTEBROPLASTY

See kyphoplasty.



VERY GOOD PARTIAL RESPONSE (VGPR)

One of the 5 treatment response categories developed by the International Myeloma Working Group. VGPR is a less favorable response to treatment than stringent complete response (sCR) or complete response (CR) but is better than partial response (PR) or stable disease (SD). VGPR is defined as monoclonal protein levels detectable by immunofixation but not electrophoresis in serum and urine. Additionally, VGPR is defined by a $\geq 90\%$ reduction in serum monoclonal protein and a monoclonal protein level in urine of < 100 mg/24 h.

WHITE BLOOD CELL

A blood cell that fights infection.