

Multiple Myeloma

A plain-English guide for you and your family

WHAT IS HAPPENING

Normally, plasma cells live in your bone marrow and make many different antibodies—each one tailored to fight a different germ. Your marrow also balances the birth of red blood cells (which carry oxygen), white blood cells (which fight infection), and platelets (which stop bleeding). At the same time, bone is constantly remodeled: osteoblasts (builder cells) lay down new bone, and osteoclasts (breaker cells) dissolve old bone to keep everything strong and fresh. In multiple myeloma, one plasma cell breaks the rules and starts copying itself over and over. This rogue clone floods the marrow, makes one antibody (the M-protein) in huge amounts, and sends signals that tell osteoclasts to work overtime—dissolving bone and dumping calcium into the blood. The clone also crowds out the normal marrow, so red blood cells, white blood cells, and platelets all drop. The kidneys try to filter the flood of M-protein and its pieces (light chains), but these pieces jam and scar the tiny kidney tubes. Every symptom—tired from anemia, bone pain and fractures, high calcium, kidney damage, and more infections—flows from that one upstream break: the runaway plasma cell clone.

What you might feel

- Bone pain, especially in the back or ribs
- Getting tired easily and looking pale (anemia)
- Breaking a bone from a tiny bump or fall (pathologic fracture)
- Getting infections often, like pneumonia or urinary tract infections
- Feeling confused, very thirsty, or urinating a lot (high calcium)
- Foamy urine or swelling in the legs (kidney trouble)
- Nosebleeds or easy bruising
- High total protein on a blood test, but albumin is normal

Call the doctor right away if...

- New fracture or severe bone pain in the spine (could mean the vertebra is collapsing and pressing on the spinal cord)

- Sudden confusion, extreme thirst, or barely urinating (signs of dangerously high calcium or failing kidneys)
- Fever plus shaking chills in someone with known myeloma (weakened immune system makes infections life-threatening fast)
- Numbness, tingling, or weakness in the legs (could mean spinal cord compression from a collapsed vertebra)

What the care team will do

- Run IV normal saline at 200 to 300 mL per hour to keep urine output above 100 mL per hour
- Hold all NSAIDs like ibuprofen and all contrast dye procedures until renal function is checked
- Check calcium level immediately if patient has confusion, severe constipation, or drowsiness
- Use gentle handling during all care and log-roll for position changes; get x-ray before moving patient with new pain
- Monitor temperature every 4 hours and start neutropenic fever protocol immediately for temp above 100.4 F
- Teach patient to report any new back pain, leg weakness, or trouble urinating right away
- Give bisphosphonates like zoledronic acid slowly over at least 15 minutes and check creatinine before each dose
- Assess for peripheral neuropathy by testing light touch and asking about numbness before each chemotherapy dose

Medicines you may be given — and why

Bortezomib (Velcade)

Bortezomib blocks the proteasome (the cell's trash compactor that breaks down old proteins). When myeloma cells can't get rid of their protein junk, the trash piles up inside them until they die. Normal cells handle this stress better than cancer cells, so myeloma cells die off more.

Lenalidomide (Revlimid)

Lenalidomide has three main jobs. It wakes up the immune system's T cells (infection fighters) and natural killer cells so they attack myeloma cells. It also blocks new blood vessels from feeding the tumor. Finally, it directly damages the myeloma cells' DNA and protein-making machinery so they can't grow.

Dexamethasone

Dexamethasone is a strong steroid that kills myeloma cells directly and calms down inflammation. It slips into myeloma cells, turns on genes that trigger cell death, and shuts down survival signals. It also quiets the immune overreaction that makes patients feel sick.

Daratumumab (Darzalex)

Daratumumab is a lab-made antibody that sticks to CD38 (a protein badge on the surface of myeloma cells). Once it locks on, it marks the cancer cell for destruction. The body's immune system sees the tag and kills the myeloma cell in three ways: direct cell death, calling in immune attack cells, and punching holes in the cancer cell's wall.

Carfilzomib (Kyprolis)

Carfilzomib blocks the proteasome (the cell's protein trash compactor) more tightly than bortezomib and does not let go. Myeloma cells drown in their own protein junk and die. Because it binds irreversibly (permanently), it may work even when bortezomib stops working.

Zoledronic acid (Reclast, Zometa)

Zoledronic acid slows down osteoclasts (the cells that chew up bone). In myeloma, the cancer cells tell osteoclasts to dig too many holes in the bone. Zoledronic acid poisons the osteoclasts so they stop breaking down bone, which prevents fractures, eases bone pain, and lowers dangerous calcium levels in the blood.

Pomalidomide (Pomalyst)

Pomalidomide is a stronger cousin of lenalidomide. It wakes up the immune system (especially T cells and NK cells) to attack myeloma, blocks new blood vessels from feeding the tumor, and directly kills myeloma cells by destroying key growth proteins inside them.

Where this information comes from

- International Myeloma Working Group (IMWG) 2014 diagnostic criteria
- NCCN Clinical Practice Guidelines in Oncology: Multiple Myeloma, Version 3.2025
- American Society of Hematology (ASH) guidelines
- UpToDate / Cochrane systematic reviews on multiple myeloma

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