

Multiple myeloma

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Diagnosis

Sometimes a health care professional finds multiple myeloma during a blood test for another condition. Other times your symptoms may lead your health care professional to test for multiple myeloma.

Tests and procedures to diagnose multiple myeloma include:

- **Blood tests.** The M proteins made by myeloma cells can show up in a sample of blood. Blood tests also might find another protein myeloma cells make, called beta-2-microglobulin.

Other blood tests give your health care team clues about your diagnosis. These tests might include tests that look at kidney function, blood cell counts, calcium levels and uric acid levels.

- **Urine tests.** M proteins can show up in urine samples. In urine, the proteins are called Bence Jones proteins.
- **Bone marrow tests.** Bone marrow biopsy and bone marrow aspiration are used to collect bone marrow samples for testing. Bone marrow has a soft

and a liquid part. In a bone marrow biopsy, a needle is used to collect a small amount of the solid tissue. In a bone marrow aspiration, a needle is used to draw a sample of the fluid. The samples are typically taken from the hip bone.

The samples go to a lab for testing. In the lab, tests look for myeloma cells. Other special tests give your health care team more information about your myeloma cells. For example, the fluorescence in situ hybridization test looks for changes in the cells' genetic material, called DNA.

- **Imaging tests.** Imaging tests can show bone problems linked with multiple myeloma. Tests may include an X-ray, MRI scan, CT scan, or positron emission tomography scan, also called PET scan.

Stages

The results of your tests help your health care team decide your myeloma's stage. In multiple myeloma, the stages range from 1 to 3. The stage tells your health care team how quickly your myeloma is growing. A stage 1 multiple myeloma is growing slowly. As the stages get higher, the myeloma becomes more aggressive. A stage 3 multiple myeloma is getting worse quickly.

Multiple myeloma can also be given a risk level. This is another way to say how aggressive the disease is.

Your health care team uses the multiple myeloma stage and risk level to understand your prognosis and plan your treatment.

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Our caring team of Mayo Clinic experts can help you with your multiple myeloma-related health concerns.

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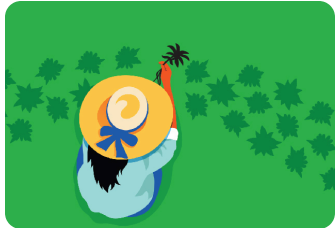
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Treatment



Keeping multiple myeloma under control.

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Multiple myeloma treatment isn't always needed right away. If there are no symptoms, you might have tests to watch the myeloma to see if it gets worse. When multiple myeloma causes symptoms, treatment often starts with medicine. Treatment can help relieve pain, control complications, and slow the growth of the myeloma cells.

Treatment may not be needed right away

Sometimes multiple myeloma doesn't cause symptoms. Doctors call this smoldering multiple myeloma. This kind of multiple myeloma might not need treatment right away.

If the myeloma is at an early stage and is growing slowly, you might have regular checkups to monitor the cancer. A health care professional might test your blood and urine to look for signs that the myeloma is getting worse.

You and your health care team might decide to start treatment if you develop multiple myeloma symptoms.

Treatments for myeloma

Treatments might include:

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- **Targeted therapy.** Targeted therapy uses medicines that attack specific chemicals in the cancer cells. By blocking these chemicals, targeted treatments can cause cancer cells to die.
- **Immunotherapy.** Immunotherapy is a treatment with medicine that helps the body's immune system to kill cancer cells. The immune system fights off diseases by attacking germs and other cells that shouldn't be in the body. Cancer cells survive by hiding from the immune system. Immunotherapy helps the immune system cells find and kill the cancer cells.
- **CAR-T cell therapy.** Chimeric antigen receptor T cell therapy, also called CAR-T cell therapy, trains your immune system cells to fight multiple myeloma. This treatment begins with removing some white blood cells, including T cells, from your blood. The cells are sent to a lab. In the lab, the cells are treated so that they make special receptors. The receptors help the cells recognize a marker on the surface of the myeloma cells.

Then the cells are put back into your body. They can now find and destroy the multiple myeloma cells.

- **Chemotherapy.** Chemotherapy uses strong medicines to kill cancer cells. The medicines kill fast-growing cells, including myeloma cells.
- **Corticosteroids.** Corticosteroid medicines help control swelling and irritation, called inflammation, in the body. They also work against myeloma cells.
- **Bone marrow transplant.** A bone marrow transplant, also known as a stem cell transplant, replaces diseased bone marrow with healthy bone marrow.

Before a bone marrow transplant, blood-forming stem cells are collected from your blood. High doses of chemotherapy then are given to destroy your diseased bone marrow. Then the stem cells are put into your body. They travel to the bones and begin rebuilding bone marrow. This type of transplant using your own cells is called an autologous bone marrow transplant.

Sometimes the stem cells come from a healthy donor. This type of transplant is called an allogenic bone marrow transplant.

- **Radiation therapy.** Radiation therapy uses powerful energy beams to kill cancer cells. The energy can come from X-rays, protons or other sources. Radiation can quickly shrink a growth of myeloma cells. It might be used if myeloma cells form a mass called a plasmacytoma. Radiation may help control a plasmacytoma that's causing pain or destroying a bone.

How treatments are used

Your treatment plan will depend on whether you're likely to have a bone marrow transplant. When deciding if bone marrow transplant is best for you, your health care team considers many factors. These include whether your multiple myeloma is likely to get worse, your age and your overall health.

- **When bone marrow transplant is an option.** If your health care team thinks bone marrow transplant is a good option for you, treatment often begins with a mix of medicines. The mix might include targeted therapy, immunotherapy, corticosteroids and, sometimes, chemotherapy.

After a few months of treatment, blood stem cells are collected from your blood. The bone marrow transplant might happen soon after collecting the cells. Or you might wait until after a relapse, if there is one. Sometimes doctors suggest two bone marrow transplants for people with multiple myeloma.

After the bone marrow transplant, you'll likely have targeted therapy or immunotherapy. These can help keep the myeloma from coming back.

- **When bone marrow transplant isn't an option.** If you decide not to have a bone marrow transplant, treatment might include a mix of medicines. The mix might include targeted therapy, immunotherapy, corticosteroids and, sometimes, chemotherapy.
- **When myeloma comes back or doesn't respond to treatment.** Treatment might involve having another course of the same treatment. Another option is trying one or more of the other treatments available for multiple myeloma.

Research on new treatments is ongoing. You might be able to join a clinical trial. A clinical trial may allow you to try new treatments that are being tested. Ask your health care team about what clinical trials are available.

Treating complications

Treatment might include treating complications of multiple myeloma. For example:

- **Bone pain.** Pain medications, radiation therapy and surgery may help control bone pain.
- **Kidney damage.** People with severe kidney damage may need dialysis.
- **Infections.** Vaccines can help prevent infections, such as the flu and pneumonia.
- **Bone loss.** Bone-building medicines might help prevent bone loss.
- **Anemia.** Medicines can increase the number of red blood cells in the blood. This can help relieve ongoing anemia.

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Alternative medicine

No alternative medicines have been found to treat multiple myeloma. But alternative medicine may help with dealing with the stress and side effects of myeloma and myeloma treatment.

Options might include:

- Art therapy.
- Exercise.
- Meditation.
- Music therapy.
- Relaxation exercises.
- Spirituality.

Talk to your health care provider before trying any of these techniques to make sure they don't have risks.

Coping and support

A cancer diagnosis can be a shock. With time, you'll find ways to cope with the stresses of living with cancer. Until you find what works best for you, try to:

- **Learn enough to help guide your care.** Learn about multiple myeloma so that you feel comfortable making decisions about your care. Ask your health care team about your treatment options and their side effects.

Ask your health care team to recommend good sources of information. You might start with the National Cancer Institute and the International Myeloma Foundation.

- **Have a strong support system.** This can help you cope with issues and worries that might occur. Ask your friends and family for support.

A support group of people coping with cancer might be helpful. People you meet in support groups can offer advice for dealing with day-to-day issues. You can join some support groups online.

- **Set goals you can meet.** Having goals helps you feel in control and can give you a sense of purpose. But don't choose goals you can't reach. You might not be able to work full time, for example. But maybe you can work part time. Many people find that working during cancer treatment can help their state of mind.
- **Take time for yourself.** Eating well, relaxing and getting enough rest can help fight the stress and tiredness cancer causes. Plan for times when you may need to rest more or do less.

Preparing for your appointment

If you have symptoms that worry you, make an appointment with a doctor or other health care professional.

If you have multiple myeloma, you'll likely be referred to a specialist. This might be:

- A doctor who specializes in treating blood and bone marrow disorders. This doctor is called a hematologist.

- A doctor specializes in treating cancer. This doctor is called an oncologist.

Here's some information to help you get ready for your appointment.

What you can do

A family member or friend who goes with you can help you remember the information you're given.

Make a list of:

- **Your symptoms**, when they began and whether they've changed over time.
- **Other medical conditions you have**, especially any plasma conditions, such as monoclonal gammopathy of undetermined significance, also called MGUS.
- **All your medicines, vitamins and supplements**, including doses.
- **Questions to ask your** health care provider.

Questions to ask at your first appointment might include:

- What may be causing my symptoms?
- Are there other possible causes?
- What tests do I need?
- What do I do next to find my diagnosis and get treatment?

Questions to ask if you see a specialist include:

- Do I have multiple myeloma?
- What stage of myeloma do I have?
- Does my myeloma have any high-risk features?
- What are the goals of treatment for me?

- What treatment do you recommend?
- I have these other health problems. How can I best manage them with multiple myeloma?
- What are the possible side effects of treatment?
- If the first treatment isn't successful, what will be the next option?
- Am I likely to have a bone marrow transplant?
- Do I need a medicine to strengthen my bones?
- What is the outlook for my condition?

Be sure to ask all the questions you have about your condition.

What to expect from your doctor

Be prepared to answer some questions about your symptoms and your health, including:

- Do you have bone pain? Where?
- Are you nauseated, more tired or weaker than usual, or have you lost weight?
- Do you keep getting infections, such as pneumonia, sinusitis, bladder or kidney infections, skin infections, or shingles?
- Have you noticed changes in your bowel habits?
- Do you have a family history of plasma disorders such as MGUS?
- Do you have a history of blood clots?

By Mayo Clinic Staff

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Connect with others like you for support and answers to your questions in the [Blood Cancers & Disorders support group](#) on Mayo Clinic Connect, a patient community.

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