Multiple Myeloma: Diagnosis

If your healthcare provider thinks you might have multiple myeloma, certain exams and tests will be needed to be sure. Diagnosing multiple myeloma starts with your healthcare provider asking you questions. You'll be asked about your health history, your symptoms, risk factors, and family history of disease. A physical exam will be done.

What tests might I need?

You may have one or more of these tests:

- Blood tests
- Urine tests
- Bone marrow aspiration and biopsy
- Imaging tests

Blood tests

You'll likely have blood tests done to look for signs of multiple myeloma. These tests might include:

- **Serum quantitative immunoglobulin (antibody) levels.** Your healthcare provider will check the levels of different immunoglobulins (or antibodies) in your blood. These are proteins made by your plasma cells. In most cases, this cancer causes an increase in the level of a certain type of immunoglobulin. A test called a serum free light chain assay may also be done on your blood or urine. This test looks for certain proteins.
- **Serum protein electrophoresis (SPEP) and serum immunofixation electrophoresis (SIFE).** These tests can be done on blood samples to check which type of immunoglobulin the cancer cells are making and the amount. The immunoglobulin most commonly made is known as an M protein.
- **Complete blood count (CBC) with differential.** This test checks the number of white and red blood cells and platelets in your blood. Myeloma cells often crowd out the normal cells in the bone marrow, which is where new blood cells are made. This can lead to low levels of normal blood cells.
- **Blood chemistry tests.** These tests check the levels of certain minerals and other chemicals in your blood. They can also give your healthcare provider an idea of how well your kidneys and liver are working.

Urine tests

- **Tests on a 24-hour urine sample.** The immunoglobulins made by myeloma cells can often be found in urine. Your healthcare provider may ask you to collect all of your urine over a 24-hour period. They will then test it using urine protein electrophoresis (UPEP) and urine immunofixation electrophoresis (UIFE). A total protein test is also done to measure the total amount and type of protein in the 24-hour urine sample.
- **Urinalysis.** Having certain chemicals and proteins in your urine could mean you have kidney problems. Your healthcare provider may check your urine for these.

Bone marrow aspiration and biopsy

These tests look for cancer cells in your bone marrow. These two procedures are used to examine bone marrow and are often done at the same time. Your healthcare provider will first clean the site and then use a small needle to put a local anesthetic into the area over the back of your hip (pelvic) bone. This makes it numb. For the bone marrow aspiration, a thin, hollow needle is pushed into the top ridge of your hip bone (posterior iliac crest). A syringe is then connected to suck out (aspirate) a sample of blood and cells from your bone marrow. This is normally followed by the bone marrow biopsy. For the biopsy, your healthcare provider uses a larger needle to remove a small core of bone and bone marrow from your hip bone.

The bone marrow samples are sent to a lab. The bone marrow, blood, and a small piece of bone are looked at under a microscope by a pathologist to check for abnormal cells. Special lab tests are also done on the samples. These can include immunohistochemistry (IHC), flow cytometry, cytogenetic analysis (karyotyping), and fluorescent in situ hybridization (FISH). These help your healthcare providers learn more about the gene and protein changes in the myeloma cells.

Imaging tests

Your healthcare provider may also do imaging tests to look for multiple myeloma. You may have one or more of these tests:

- **Bone X-rays (skeletal survey).** Regular X-rays of your bones can be used to look for damage caused by myeloma.
- **MRI.** This test uses strong magnets and radio waves to create detailed images of the bone marrow and other organs. An MRI can show more detail than other imaging tests. It's used to measure the size of the tumor.
- **CT scan.** A CT scan uses X-rays taken from many angles to create very detailed cross-sectional pictures of organs and shows abnormalities or tumors in soft tissues.
- **PET scan or PET/CT.** For this test, a radioactive sugar is put into your blood. It tends to collect in cancer cells. A special camera is then used to see which parts of your body have taken up more of the sugar. The picture from a PET scan is not very detailed, but it can show likely areas of cancer all over your body. Many machines can now do both a PET scan and CT scan at the same time. This is known as a PET/CT scan.

Getting your test results

Ask your healthcare provider how long it will take to get the results of your tests. Also ask how you'll get them. Will you get a phone call? Do you need to make an appointment?

Your healthcare provider will talk with you about other tests you may need if multiple myeloma is found. Make sure you understand the results and what follow-up you need.