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WHAT IS MEASURABLE* RESIDUAL DISEASE (MRD)?

MRD refers to the small number of cancer cells left in the body during or after cancer treatment. Sensitive tests are done to detect whether the patient is negative or positive for MRD.

*Can also be called minimal residual disease.

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TESTS USED

- MRD testing uses highly sensitive methods that can look for a small amount of cancer cells in a very large sample of cells.
- The most widely used tests are **flow cytometry**, **next-generation sequencing (NGS)** and **polymerase chain reaction (PCR) assays**.
- These tests use samples of bone marrow cells (taken by aspiration) and/or peripheral blood cells (taken through a vein).

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POSITIVE VS. NEGATIVE

A patient can have a positive or negative MRD result.

- **Positive Test Result:** There are still cancer cells found in the body after treatment—called “MRD positivity.”
- **Negative Test Result:** There aren’t any cancer cells found in the body after treatment—called “MRD negativity.”

It is always encouraging when these sensitive tests cannot find any cancer cells, but the details depend greatly on the test and the type of cancer.

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HOW MRD TESTING CAN BE USED

MRD testing can help doctors to:

- Determine how well the cancer has responded to treatment
- Confirm and monitor remissions
- Identify patients who may be at a higher risk of relapse
- Identify patients who may need to restart treatment
- Identify patients whose treatment can be reduced or stopped
- Identify patients who may benefit from other treatments

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MRD TESTING IN SPECIFIC BLOOD CANCERS

The type of MRD testing used varies depending on the type of blood cancer.

- **Acute Lymphoblastic Leukemia (ALL):** Flow cytometry, polymerase chain reaction (PCR) and next-generation sequencing (NGS)
- **Acute Myeloid Leukemia (AML)/Advanced Myelodysplastic Syndromes (MDS):** Flow cytometry, PCR and NGS
- **Chronic Lymphocytic Leukemia (CLL):** Flow cytometry, PCR and NGS
- **Chronic Myeloid Leukemia (CML):** PCR
- **Lymphoma:** Flow cytometry, PCR and NGS
- **Myeloma:** Flow cytometry, NGS and imaging tests
- **MDS:** Specific testing has not been determined but is being explored to better understand the disease in clinical trials.
- **Myeloproliferative Neoplasms (MPNs):** PCR

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INSURANCE COVERAGE

MRD tests are considered specialized tests and can be expensive. Patients need to be aware that:

- MRD testing may require prior authorization from an insurance provider.
- The blood or bone marrow sample for the test may be sent to an out-of-network laboratory which can result in out-of-network fees for patients.

Ask your treatment team to inform you if an MRD sample is being sent out to an out-of-network laboratory. Speak to your insurance provider to find out the cost of MRD testing.

For additional information, visit www.LLS.org/booklets to download or print the booklet *Measurable Residual Disease (MRD)*.

Please reach out to our Information Specialists for more information about this and other disease, treatment, and support questions and concerns at **800.955.4572** or www.LLS.org/InformationSpecialists.

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The mission of The Leukemia & Lymphoma Society (LLS) is to cure leukemia, lymphoma, Hodgkin’s disease and myeloma, and improve the quality of life of patients and their families. Find out more at www.LLS.org.

Questions to Ask Your Healthcare Team about Measurable Residual Disease

It is likely that you will have questions about MRD testing and/or the significance of MRD test results. It is important to share all your questions and concerns with your treatment team. If you do not understand any part of the information your healthcare provider gives you, ask them to explain it in another way.

Doctor's name _____ Date of appointment or call _____

GENERAL QUESTIONS ABOUT MRD TESTING

1. Do I need MRD testing for my specific cancer?
2. What are the benefits of MRD testing?
3. Is MRD testing available as a standard part of treatment, or is it used only in clinical trials?
4. Which MRD test is used for this type of cancer? How is the test done?
5. When should an MRD test be done? How often is MRD testing done?
6. Where will the MRD test take place?
7. Do patients need to bring someone with them to the test?

MRD TEST RESULTS

1. How long does it take to get results of the MRD test?
2. How do patients find out about MRD test results?
3. Is there an online portal patients can access to view MRD test results? If so, how can it be accessed?
4. What do the MRD test results mean?
5. What does an MRD-positive or an MRD-negative test result mean in my case?

MRD STATUS AND TREATMENT

1. How will the results of MRD testing affect my treatment plan?
2. Do MRD-negative patients need to continue treatment?
3. If the results are MRD positive, what is the treatment plan?
4. If an MRD-negative test later becomes an MRD-positive result, will treatment begin immediately, or will treatment be put off until a clinical relapse?
5. How is MRD status used to determine specific information about treatment (for example, the number of treatment cycles a patient receives, the timing of a transplant, or when to begin or end maintenance treatment)?

MRD TESTING AND FINANCES

1. Will my insurance plan cover MRD testing?
2. Will I need pre-authorization from my insurance provider before the test is done?
3. If the MRD testing is not covered by insurance, is there any financial assistance available to complete the necessary testing?
4. Is the sample being sent to an out-of-network laboratory? If so, can it be sent to an in-network laboratory instead?
5. Is there a social worker and/or nurse in the hospital or doctor's office with whom a patient can speak to, especially about financial issues and concerns?

Some treatment centers have resources to help patients access programs that help cover the costs of testing and treatment. Some clinical trials may cover the costs of MRD testing and/or treatment drugs for all participants.

For general information and resources on coping with the financial aspects of cancer care, please see the LLS booklet *Cancer and Your Finances*. You can also contact LLS Information Specialists at (800) 955-4572 for information about financial assistance programs.