

Chronic Myeloid Leukemia (CML): Measuring Treatment Response



During treatment for CML, tests will be done to see how well treatment is working. Your blood and maybe bone marrow will likely be tested every 3 to 6 months for at least the first year. The tests look for the Philadelphia (Ph) chromosome. They may also look for the BCR-ABL gene that almost all CML cells have. Testing is done to see if the treatment is destroying leukemia cells.

The main goal of treatment is to reduce or destroy cells with the Ph chromosome. This helps stop symptoms and puts the cancer into remission. Remission means there are no signs of the disease in the body.

Your healthcare team may look for 3 types of responses to treatment of CML. These include:

- Hematologic response
- Cytogenetic response
- Molecular response

What is a hematologic response?

This type of response means your levels of red blood cells, white blood cells, and platelets are more normal. It also means that the symptoms get better. This type of response most often happens within a couple of months of starting treatment. The levels of hematologic response include:

- **Complete hematologic response.** Levels of all blood cells return to normal. There are no CML cells seen in the blood. The spleen is a normal size. You have no symptoms of CML.
- **Partial hematologic response.** Your blood cell levels have gotten better, but have not fully returned to normal. Symptoms have improved but are still present. Your spleen is smaller, but still bigger than it should be.

What is a cytogenetic response?

This type of response means there's a change in the number of cells with the Ph chromosome in the blood or bone marrow. The levels of cytogenetic response include:

- **Major cytogenetic response.** There are 35% or fewer cells with the Ph chromosome than at diagnosis. A major response can either be a **complete cytogenetic response** (less than 1% of cells have the Ph chromosome) or a **partial cytogenetic response** (between 1% to 35% of the cells have the Ph chromosome).
- **Minor cytogenetic response.** Fewer cells with the Ph chromosome are found in the blood or bone marrow. But it's still in 36% to 65% of the cells.
- **Minimal cytogenetic response.** This is when 66% to 95% of cells have the Ph chromosome.
- **No response.** This is when more than 95% of the cells still have the Ph chromosome.

What is a molecular response?

This type of response shows if the BCR-ABL gene can still be found in the blood or bone marrow. The levels of molecular response include:

- **Major.** This means the level of BCR-ABL detected is very low.
- **Complete.** The BCR-ABL gene can't be detected.

- **Early molecular response.** This is done at 3 and 6 months after treatment starts. It means that at 3 and 6 months, the BCR-ABL gene is found in less than 10% of the cells.

What your results mean

Your healthcare team will explain what your test results mean for your treatment and your outcomes (prognosis). If one type of treatment has no effect, or works for a while and then stops, your team may switch you to another type of treatment.

Studies have shown that people with CML who have a complete or partial cytogenetic response tend to live longer than those who don't. Still, the leukemia may come back even after a complete cytogenetic response. Talk with your healthcare team about what your results mean for you.

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