

## WHO SHOULD HAVE MSS/MSI BIOMARKER TESTING?

All colorectal cancer (bowel cancer) patients should be tested for MSS/MSI, no matter what stage they have at diagnosis. If your result is MSI-High, you should also be tested for Lynch Syndrome.

## WHAT IS MSS/MSI?

The MSS/MSI biomarker gives information about how your cells handle errors that happen during cell processes. During growth, or healing of organ and tissue damage, your cells divide to make more cells. As each cell splits, the DNA divides and makes a copy of itself for the new cells. Mistakes in the copying process are called DNA mismatch, and the MSS/MSI biomarker specifically shows whether your cells can fix these mistakes. This is called DNA mismatch repair (MMR).

## HOW IS MSS/MSI TESTED? HOW ARE THE RESULTS REPORTED?

The MSS/MSI biomarker is measured in a biopsy of your tumor. Your test results will be reported as either MSS (also known as pMMR, proficient mismatch repair) or MSI-High (also known as dMMR, deficient mismatch repair).

Biomarker testing can give you and your medical team valuable knowledge about your cancer and help guide your treatment choices. For more information about colorectal cancer biomarkers, please visit [knowyourbiomarker.org](http://knowyourbiomarker.org) and talk to your medical team.

## WHAT DO MY MSS/MSI RESULTS MEAN FOR ME? HOW DO THEY IMPACT MY TREATMENT?

**If you have the MSS biomarker, this means that your cells can correct the errors that occur in DNA (DNA mismatch repair), and that there are no mutations in your mismatch repair (MMR) genes.**

- MSS occurs in 85% of all colorectal cancers. It is more common in earlier stages of cancer.
- Immunotherapy is not effective in colorectal cancers with MSS and is not recommended.
- MSS patients are treated with fluorouracil-based chemotherapy (for example, 5-FU, FOLFOX, FOLFIRI), or with other conventional chemotherapy (capecitabine, CAPOX).
- Patients with the MSS biomarker have a higher risk of cancer recurrence. Talk to your medical team about how you will be checked for recurrence during follow up care.

**If you have the MSI-High biomarker, this means that your cells have deficient mismatch repair (dMMR), and they are unable to fix DNA mismatch mistakes. Your MMR genes may have mutations or other changes.**

- MSI-High occurs in about 15% of colorectal cancers. It is less common in stage IV/metastatic cancer.
- Patients with MSI-High have a better overall prognosis than patients with MSS.
- Fluorouracil-based chemotherapy is less effective in patients with MSI-High.
- Immunotherapy treatment (for example, pembrolizumab, ipilimumab, nivolumab) is effective against colorectal cancers with MSI-High.

If you have MSI-High, you should be tested for Lynch Syndrome. 3-5% of patients with MSI-High have a hereditary mutation in one of the MMR genes which causes Lynch Syndrome. These patients are at higher risk for developing other cancers. Biological relatives of patients with Lynch Syndrome (siblings, children) are at risk of having MMR gene mutations too.

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