Immunohistochemistry (IHC) for Microsatellite Instability Fact Sheet

Frequently Asked Questions

What is Lynch Syndrome?

Lynch syndrome is a hereditary cancer syndrome associated with a significantly increased lifetime risk for colon, uterine, ovarian, stomach, and other cancers. If identified, patients can receive additional screening and prevention measures to help prevent cancer in the future.

How is IHC useful in identifying patients with Lynch syndrome?

IHC looks at the four mismatch repair proteins associated with Lynch syndrome. If these proteins are not present in the tumor, this means that the colon cancer could be due to Lynch syndrome.

Why was this test done on my patient?

Norton Hospital routinely performs IHC for Lynch syndrome on all colorectal resection specimens in order to maximize the identification of patients who are at increased risk for a second cancer and who have family members at significantly increased risk for cancer. Recent studies in the scientific literature have indicated this is the most effective way to identify patients with Lynch syndrome. This process has been approved by the Medical Executive Committee.

How is this information helpful to me and my patient?

Individuals with Lynch syndrome are at a significantly increased risk for developing cancer in the future. This information will be helpful in determining the ongoing management of your patient and may also aid in treatment decisions or eligibility for research studies. Patients can benefit from this information by understanding the cause of their cancer, their risk for subsequent cancers, and the risks for their family members. The family members of a patient can also be tested for Lynch syndrome, giving them the ability to make screening and prevention decisions that can prevent cancer in the future or allow it to be diagnosed at the earliest possible stage, when the cancer is most treatable.

What happens next?

If the IHC is normal, this makes it unlikely that the patient has Lynch syndrome. If you still feel the patient needs a referral to the Genetic Counseling Service, please contact the service at 629-4363. If the IHC result is abnormal, the Genetic Counseling Service has been notified and will contact you directly to develop a plan for informing the patient of this result. You may also contact the Genetic Counseling Service directly.

The back of this sheet contains interpretations for the various IHC test results.

IHC for Lynch Syndrome Result Interpretation Charts

MLH1 Positive (Protein Expressed)

MSH2 Positive (Protein Expressed)

MSH6 Positive (Protein Expressed)

PMS2 Positive (Protein Expressed)

This test result indicates that **ALL** four genes are functioning normally. This patient is **very unlikely** to have Lynch Syndrome

MLH1 Negative (Protein Not Expressed)

MSH2 Positive (Protein Expressed)

MSH6 Positive (Protein Expressed)

PMS2 Negative (Protein Not Expressed)

This test result indicates that **MLH1** or **PMS2** are **NOT** functioning due to loss of heterozygosity (LOH). **Patient has a 20% chance to have a deleterious MLH1 mutation and a 80% chance to have loss of expression due to hypermethylation of the MLH1 gene.**

MLH1 Positive (Protein Expressed)

MSH2 Negative (Protein Not Expressed)

MSH6 Negative (Protein Not Expressed)

PMS2 Positive (Protein Expressed)

This test result indicates that **MSH2** or **MSH6** are **NOT** functioning due to LOH. Patients with this test result have essentially an 100% chance to test positive for a deleterious mutation in the **MSH2** gene.

MLH1 Positive (Protein Expressed)

MSH2 Positive (Protein Expressed)

MSH6 Negative (Protein Not Expressed)

PMS2 Positive (Protein Expressed)

This test result indicates that **MSH6** is **NOT** functioning due to LOH. This patient will essentially have a 100% chance to test positive for a deleterious **MSH6** mutation.

MLH1 Positive (Protein Expressed)

MSH2 Positive (Protein Expressed)

MSH6 Positive (Protein Expressed)

PMS2 Negative (Protein Not Expressed)

This test result indicates that **PMS2** is **NOT** functioning due to LOH. This patient will essentially have a 100% chance to test positive for a deleterious **PMS2** mutation.

Please contact the Norton Cancer Institute's Genetic Counseling Services with additional questions or concerns:

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