



What is MSI High (MSI-H+) Cancer?

WHAT IS A BIOMARKER?

Biomarkers are things about cancer cells that make them different from normal cells. They can be measured in your blood, tissue, or bodily fluid. In cancer, biomarkers are often used to help choose the best treatment for you. These biomarkers can be proteins, genes, or gene changes called mutations. Biomarkers are often referred to by a 3- or 4-letter abbreviation, such as ALK or MSI-H.

Biomarkers tell your doctor the subtype of the cancer you have. They are sometimes called molecular markers, cancer markers, or tumor markers. Ask your doctor about **comprehensive biomarker testing**. If possible, ask to be tested before you start treatment. This testing should include MSI-H testing

If your tumor tests positive for the MSI-H biomarker, you have cancer with high microsatellite instability (MSI). This fact sheet explains what this means and how it may affect cancer treatment.

WHAT IS MSI-H?

MSI is microsatellite instability. A microsatellite is a short sequence of DNA. DNA contains genetic information. The sequence is repeated in each of your cells. The DNA in the cell stays the same in each repeat. If an error occurs, a normal gene is able to correct it. Sometimes a normal gene develops changes or mutations. It is no longer able to correct errors in the DNA. This makes the DNA, and the whole microsatellite, unstable. A cancer cell with a high level of MSI is described as “MSI high” or “MSI-High positive” (MSI-H+).

WHO HAS MSI-H+ CANCER?

MSI-H+ is most often found in cancers of the colon, endometrium, and stomach. It can occur in other cancers too. MSI-H+ can be associated with Lynch Syndrome, a condition in which higher risk of these and other cancers is passed down through families.

WHAT DO MSI-H TEST RESULTS MEAN?

A test for MSI-H will show the level of instability in the DNA of the cancer cells. The test compares normal tissue to tumor tissue for differences in size. A positive MSI-H test means that the tumor is very unstable. Doctors have found

that certain immunotherapy drugs are more likely to work against MSI-H+ cancers. This is because the immune system may be able to find and attack cancer cells with high MSI more easily.

HOW DO DOCTORS TREAT MSI-H POSITIVE CANCERS?

A positive test for the MSI-H biomarker means that you may be a good candidate for anti-PD-L1 immunotherapy. These drugs work by boosting the immune system to attack cancer cells. The drugs that target PD-L1 are called checkpoint inhibitors. Studies have shown that they can be effective against MSI-H+ cancer.

The U.S. Food and Drug Administration has approved one immunotherapy drug to treat MSI-H+ cancer. Others may be available through clinical trials. If you have advanced colon cancer, this drug may be your first treatment. With other cancers that are MSI-H+, this drug or others may be tried after other treatments or through clinical trials.

The following are common side effects of the drug used to treat MSI-H+ cancer. **It is very important to report new side effects and changes in side effects to your health care team right away. Most side effects can be managed if they are treated early.** In rare cases, they may lead to more serious conditions.

- Constipation
- Cough
- Diarrhea
- Fatigue
- Flu-like symptoms (chills, fever, headache, nausea)
- Loss of appetite
- Nausea
- Pain or soreness
- Rash or itching
- Shortness of breath

Rare but serious side effects may include:

- Colitis
- Hepatitis
- Swelling in the lungs (shortness of breath)
- Severe infections
- Severe skin problems
- Problems in the kidneys, hormone glands, liver, thyroid, or other organs

FOR INFORMATION ON COPING WITH SIDE EFFECTS, VISIT:

www.CancerSupportCommunity.org/SideEffects

Cancer Information, Survivorship, and Support

Cancer Support Community • 888-793-9355 • www.CancerSupportCommunity.org

American Cancer Society • 800-227-2345 • www.cancer.org

CancerCare • 800-813-4673 • www.cancer.org

Cancer.net • 888-651-3038 • www.cancer.net

National Cancer Institute (NCI) • 800-422-6237 • www.cancer.gov

NCI Clinical Trial Information • 800-422-6237 • www.cancer.gov/ClinicalTrials

Patient Advocate Foundation • 800-532-5274 • www.patientadvocate.org

Cancer Support Community Resources

Cancer Support Helpline® — Have questions, concerns or looking for resources? Call CSC's toll-free Cancer Support Helpline (888-793-9355), available in 200 languages Mon - Fri 9am - 9pm ET.

Open to Options® — Need help making a cancer treatment decision? Our trained specialists can help you create a list of questions to share with your doctor. Make an appointment by calling 888-793-9355 or by contacting your local CSC or Gilda's Club.

Frankly Speaking About Cancer® — Trusted information for cancer patients and their loved ones is available through publications, online, and in-person programs at

www.CancerSupportCommunity.org/FranklySpeakingAboutCancer.

Services at Local CSCs and Gilda's Clubs — With the help of 170 locations, CSC and Gilda's Club affiliates provide services free of charge to people touched by cancer. Attend support groups, educational sessions, wellness programs, and more at a location near you. www.CancerSupportCommunity.org/FindLocation

Cancer Experience Registry® — Help others by sharing your cancer patient or cancer caregiver experience via survey at www.CancerExperienceRegistry.org.

MyLifeLine — CSC's private, online community allows patients and caregivers to easily connect with friends and family to receive social, emotional, and practical support throughout the cancer journey and beyond. Sign up at www.MyLifeLine.org.

Grassroots Network — Make sure your voice is heard by federal and state policy makers on issues affecting cancer patients and survivors by joining our Network at www.CancerSupportCommunity.org/become-advocate.

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