



# What Does It Mean to Have High TMB?

## 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 TMB-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 TMB-H testing.

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

## WHAT IS TMB-H?

TMB refers to **tumor mutational burden**. Mutations are changes in the DNA of a cancer cell that is not present in your normal cells. TMB is the number of mutations found in the DNA of cancer cells. A high number of mutations is considered “high TMB.”

## WHO HAS A HIGH LEVEL OF TMB?

TMB-H is a relatively new biomarker. It is found more often in solid tumor cancers such as lung, liver, kidney, bladder, head and neck, and skin cancers.

## WHAT DO THE RESULTS OF A TMB-H TEST MEAN?

A test for TMB will show the number of mutations found in the DNA of cancer cells. TMB-H means that the tumor has a high number of mutations. Doctors have found that certain immunotherapy drugs are more likely to work against TMB-H cancers. This is because the immune system may be able to find and attack cancer cells with high TMB more easily.

## HOW DO DOCTORS TREAT TMB-H CANCER?

A high level of tumor mutation burden means that you may be a good candidate for anti-PD1 or anti-PD-L1 immunotherapy. These drugs work by boosting the immune system to attack cancer cells. The drugs that target PD-1 or PD-L1 are checkpoint inhibitors. Studies have shown that they can be effective against some cancers with high TMB.

The U.S. Food and Drug Administration has approved one immunotherapy drug to treat TMB-H cancer. Others may be available through clinical trials. Your doctor may try other treatments before using these drugs on the basis of TMB-H status alone.

The following are common side effects of the drug used to treat TMB-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](http://www.CancerSupportCommunity.org/SideEffects)

# Cancer Information, Survivorship, and Support

**Cancer Support Community** • 888-793-9355 • [www.CancerSupportCommunity.org](http://www.CancerSupportCommunity.org)

**American Cancer Society** • 800-227-2345 • [www.cancer.org](http://www.cancer.org)

**CancerCare** • 800-813-4673 • [www.cancercare.org](http://www.cancercare.org)

**Cancer.net** • 888-651-3038 • [www.cancer.net](http://www.cancer.net)

**National Cancer Institute (NCI)** • 800-422-6237 • [www.cancer.gov](http://www.cancer.gov)

**NCI Clinical Trial Information** • 800-422-6237 • [www.cancer.gov/ClinicalTrials](http://www.cancer.gov/ClinicalTrials)

**Patient Advocate Foundation** • 800-532-5274 • [www.patientadvocate.org](http://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](http://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](http://www.CancerSupportCommunity.org/FindLocation)

**Cancer Experience Registry**® — Help others by sharing your cancer patient or cancer caregiver experience via survey at [www.CancerExperienceRegistry.org](http://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](http://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](http://www.CancerSupportCommunity.org/become-advocate)

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This booklet is available to download and print at [www.CancerSupportCommunity.org/biomarkers](http://www.CancerSupportCommunity.org/biomarkers). For print copies of this booklet or other information about coping with cancer, visit [Orders.CancerSupportCommunity.org](http://Orders.CancerSupportCommunity.org).

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