



# Genetic Testing for Bladder Cancer

## What You Should Know

*Urology Care*  
**FOUNDATION™**  
*The Official Foundation of the  
 American Urological Association*

### What is bladder cancer?

The bladder is the organ where the body stores urine before it leaves the body. When cells of the bladder grow abnormally, they can convert to bladder cancer. A person with bladder cancer will have one or more tumors in his/her bladder.

Most bladder cancers are found in the tissue that lines the inner surface of the bladder; the bladder muscle is not involved. This type of cancer is called non-muscle invasive bladder cancer or NMIBC.

Bladder cancer gets worse when it grows into or through other layers of the bladder wall. Over time, the cancer may grow outside the bladder into tissues close by or into other organs of the body. This type of cancer is called muscle invasive bladder cancer or MIBC.

### How common is bladder cancer?

Bladder cancer is more common as a person grows older. It is found most often in the age group of 75-84, but younger people can also be affected. Lifestyle factors and genetics can add to your risk of developing bladder cancer.

### Testing for Bladder Cancer

If your health care provider believes you may have or may be at risk for bladder cancer, you may be referred to see a urologist. Your urologist will do a full medical history and physical exam. Further tests may include:

- **Urine Microscopy/Cytology:** The red and white blood cell content of your urine will be checked. This test will also check for cancer cells.

- **Comprehensive Metabolic Panel (CMP):** This panel measures 14 different substances in your blood to provide information about your body's chemical balance and metabolism.
- **X-rays, CT scan or MRI:** Diagnostic imaging tests help your doctor make an accurate diagnosis and choose the best treatment plan.
- **Retrograde Pyelogram:** This X-ray test with bladder inspection (cystoscopy) evaluates your bladder, ureters and kidneys.
- **Cystoscopy:** This very common procedure lets your doctor see inside your bladder. Your doctor will pass a tube through your urethra into your bladder. The tube has a light and camera optics so that your doctor can see more clearly.

If bladder cancer is suspected based on results from these tests, the next step may be to perform a biopsy. For a biopsy, your doctor will remove a piece of bladder tissue so a pathologist can look for cancer cells with the use of a microscope. This biopsy tissue may also undergo genetic alteration testing.

### What is genetic testing and biomarker tests?

So what is genetic testing and why is it important? Your family gives you your genes, which is the DNA that you inherit at birth and pass on through generations. They explain why a person has dark skin, blue eyes or red hair.

Your genes help determine if your body may experience important health conditions, for example, an increased potential for cancers, cardiovascular conditions, diabetes,

# Genetic Testing for Bladder Cancer

## What You Should Know

obesity, etc. Genetic testing is done to learn about a gene(s) and its role in disease.

In the cancer world, genetic/molecular testing looks for certain abnormalities a person may have inherited through his or her family or acquired that may increase their cancer risk or offer information on the cancer aggressiveness. These test findings are sometimes referred to as biomarkers and can be different depending on the type of cancer.

### Examples of bladder cancer biomarkers:

- Abnormal fibroblast growth factor receptor (FGFR)
- Homologous Recombinant Repair (HRR) gene alterations
- Tumor Mutational Burden (TMB)

The presence of these biomarkers may allow for recently approved therapies or clinical trials.

### Who should think about getting a genetic test?

If bladder cancer biomarkers are found, your urologist can make special recommendations for treatment that will work best for your health status and type of cancer. For example, patients who have HRR mutations may do well in a clinical trial with PARP inhibitor drugs. Patients with TMB mutations may do well in a clinical trial with checkpoint inhibitors or PD blockers. Patients with the FGFR gene mutation may do well with an FDA-approved drug called erdafitinib.

### Can genetic test timing and results lead to better health?

Bladder cancer can sometimes be hard to find and can become very serious if it is not caught early. Genetic/molecular testing may help identify risk of bladder cancer early on or even before it starts. If your results show genetic biomarkers for bladder cancer, you may be a good fit for specific treatment. Because genetic testing can help find what treatments may be good for you, these are sometimes called precision or tailored therapy and replace using a “one-size-fits-all” approach.

Genetic testing is not for everyone. It is important to talk with your doctor to determine if you would be a good fit and to discuss the many treatment options available to you.

### About the Urology Care Foundation

The Urology Care Foundation is the world's leading urologic foundation – and the official foundation of the American Urological Association. We provide information for those actively managing their urologic health and those ready to make health changes. Our information is based on the American Urological Association resources and is reviewed by medical experts. To learn more, visit the Urology Care Foundation's website, [UrologyHealth.org/UrologicConditions](https://UrologyHealth.org/UrologicConditions) or go to [UrologyHealth.org/FindAUrologist](https://UrologyHealth.org/FindAUrologist) to find a doctor near you.

### Disclaimer

This information is not a tool for self-diagnosis or a substitute for professional medical advice. It is not to be used or relied on for that purpose. Please talk to your urologist or health care provider about your health concerns. Always consult a health care provider before you start or stop any treatments, including medications. For copies of printed and other urologic conditions, visit [UrologyHealth.org/Download](https://UrologyHealth.org/Download) or call 800-828-7866.

*Patient resources provided by the generous support of*

 janssen Oncology