

Genetic Testing for Bladder Cancer

What You Should Know



What is Bladder Cancer?

The bladder is the organ where urine is stored before it leaves the body. When cells of the bladder grow abnormally, they can become bladder cancer. A person with bladder cancer will have one or more growths or tumors in their 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 can also be found in younger people. It is most common in men, but women can also have bladder cancer. Lifestyle factors and genetics can add to your risk of getting 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 details about your body's chemical balance and metabolism.

- **X-rays, CT scan or MRI:** Diagnostic imaging tests help your doctor make the right 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 the inner layer of your bladder 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 be tested for changes in the genes.

What is Genetic Testing and Biomarker Tests?

So what is genetic testing and why is it of value? Your genes are passed on to you by your parents at birth in your DNA. Your DNA is then passed on through generations of your family. Genes explain why a person has dark skin, blue eyes or red hair. Your genes also help determine if your body may experience important health conditions, for example, an increased risk of cancer, heart disease, diabetes or obesity, for example. Genetic testing is done to learn about a gene(s) and its role in disease.

When doctors are concerned about cancer, genetic testing may be used to look for certain abnormalities (mutations)



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a person may have been born with or changes in genes that happened later in life. An abnormal genetic test result may mean there is an increased cancer risk or may offer details on the cancer aggressiveness. These test findings are sometimes referred to as biomarkers and can be different based 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)

If a biomarker test is abnormal, you may be able to have newly approved therapies or sign up for clinical trials.

Who Should Think About Getting a Genetic Test?

If bladder cancer genetic tests results are abnormal, your urologist can make special suggestions for treatment that will work best for your health status and type of cancer. Patients with TMB mutations may do well in a clinical trial with drugs called immunotherapy. Patients with the FGFR gene mutations may do well with an FDA-approved drug called erdafitinib.

Can Genetic Test Timing and Results Lead to Better Health?

Bladder cancer can become very serious if it is not caught early. Genetic testing may help identify risk of bladder cancer early. 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 of great value to talk with your doctor to decide 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.

Disclaimer

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