

Immunotherapy and Bladder Cancer

Urology Care
FOUNDATION™

*The Official Foundation of the
American Urological Association*

WHAT IS IMMUNOTHERAPY?

The immune system is a natural part of our body. It includes different organs, cells and proteins. Except for the nervous system, it is the most complex system in the human body.

The immune system's job is to stop foreign or damaged material and cells before they cause trouble. Most of the time, our immune system can find foreign invaders like bacteria and viruses and destroy them. Cancer is different. It begins as uncontrolled growth of normal body cells. In other words, the immune system may not see cancer cells as foreign. They can hide and grow.

Immunotherapy is any treatment that makes the immune system stronger and "smarter." For cancer, it helps the body destroy cancer cells. The field of immuno-oncology studies how the immune system interacts with cancer. It uses that information to make new treatments called immunotherapies.

Immunotherapies for cancer make changes to our immune system to help activate it. They can block the signals (or "checkpoints") that allow cancer cells to hide, and/or rev up immune cells to attack.

Hundreds of new immunotherapy treatments are being tested for cancer, including bladder cancer. A small percent of people have had success with new treatments so far, but this research offers a great hope for the future.

WHAT IMMUNOTHERAPY TREATMENTS ARE USED FOR BLADDER CANCER OR OTHER UROLOGIC CANCERS?

- **Bacillus Calmette-Guérin or BCG** is an immunotherapy used to treat bladder cancers found only in the bladder. BCG is a weak form of the tuberculosis bacteria. It causes the immune system to act against cancer cells in the bladder. It can be very helpful in treating non-muscle invasive (before it has grown deep into the tissue) bladder cancer. Non-muscle invasive BCG refractory bladder cancer does not seem to react to BCG. BCG is also being studied in other types of cancer. This treatment has been around for 40 years. Still, we don't understand why it works for some people and not others.

BCG is a liquid given through a small catheter (tube) directly into the bladder (an "intravesical" treatment). This is repeated weekly for six weeks.

- **Immune Checkpoint Inhibitors** are drugs used to treat advanced bladder cancer that's spread outside the bladder or cancer that started to grow again after chemotherapy. It works by blocking the checkpoints on the surface of cancer cells. Checkpoints are molecules on immune cells that need to be turned on (or off) to start an immune response. Cancer cells can use checkpoints to hide from the immune system. Checkpoint proteins found on T cells (the immune system's killer cells) or on cancer cells include PD-1/PD-L1 and CTLA-4. When checkpoints are blocked, T cells can find and attack the cancer. Many clinical trials for these drugs focus on treating advanced bladder cancer.

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The newest immunotherapies approved for bladder cancer are all immune checkpoint inhibitors. Most are given by IV every two or three weeks.

The immune checkpoint inhibitors used for bladder cancer at this time are:

- **Atezolizumab (Tecentriq), durvalumab (Imfinzi) and avelumab (Bavencio).** These are drugs that target PD-L1 on some cancer cells to stop them from hiding. They can boost the immune response. This can help shrink some tumors or slow their growth.
- **Nivolumab (Opdivo) and pembrolizumab (Keytruda).** These drugs target PD-1, a protein that normally protects cells from the immune system. Blocking PD-1 can help the immune system attack certain cancer cells. This can help shrink some tumors or slow their growth.

WHO IS A GOOD CANDIDATE FOR IMMUNOTHERAPY?

You can ask your doctor if immunotherapy or a clinical trial would be helpful for you. Doctors will consider these factors:

- Size and number of tumors
- How aggressive this type of tumor is
- Grade of the tumor(s) (high grade is more aggressive)
- If tumors have recurred
- Overall health of the patient
- If the immunotherapy or clinical trial available can match your needs

Other Considerations

- BCG is mainly used to treat patients with non-muscle invasive bladder cancer.
- Checkpoint inhibitors are offered to late stage or metastatic patients at this time.
- Immunotherapy is an option for advanced bladder cancer patients who can't have a major operation.
- Patients who can't have chemotherapy (because of other health problems) may benefit from immunotherapy.
- People with advanced bladder cancer that returns,

or grows again after chemotherapy, may opt for immunotherapy.

- People with autoimmune diseases may not be good candidates for checkpoint inhibitors.
- Some clinical trials are giving immunotherapy to patients earlier in the process (such as, at the time of surgery).

WHAT HAPPENS AFTER TREATMENT?

Patients who get immunotherapy can often continue their normal life, including work and exercise, while on treatment. Some patients report feeling tired while on immunotherapy. Other side effects may include thyroid problems, nausea, rash, diarrhea, or inflammation in other organs. With advanced bladder cancer, the benefits of immunotherapy usually outweigh the risks.

Immunotherapy treatment doesn't work for all people. Each patient is different, so you'll want to make a personal follow-up plan. For very aggressive cancers, clinical trials are often recommended as a next step since they may offer additional hope.

With advanced cancer, often people don't feel well and the hope is that this treatment can make them feel better.

A worthy goal for all patients is to try to feel better, longer. You can do things that make you feel healthier like eating well, exercising daily, avoiding cigarettes, and reducing stress.

ABOUT THE UROLOGY CARE FOUNDATION

The Urology Care Foundation is the world's leading urologic Foundation. It is the official Foundation of the American Urological Association. We share information about urologic health to support people who wish to make healthy changes in their lives. Our information is based on American Urological Association guidelines and is reviewed by medical experts.

To learn more, visit the Urology Care Foundation's website, UrologyHealth.org/UrologicConditions or go to UrologyHealth.org/FindAUrologist to find a doctor near you.

DISCLAIMER:

This information is not a tool for self-diagnosis or a substitute

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for professional medical advice. It is not to be used or relied on for that purpose. Please talk to your urologists or healthcare provider about your health concerns. Always consult a health care provider before you start or stop any treatments, including medications.

For copies of printed materials about Muscle Invasive Bladder Cancer and other urologic conditions, visit **UrologyHealth.org/Order**.

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