

Bladder Cancer

Where the bladder and what is its function?

The bladder, a hollow organ in the lower part of the abdomen, serves as a reservoir for urine until it is discharged out of the body through the urethra.

What is bladder cancer?

This cancer usually begins in the cells that line the inside of the bladder. It mostly affects people older than 70 and occurs more often in men.

Bladder cancer is usually found in its early stages and it generally responds well to treatment when it's diagnosed early on. However, people who have been successfully treated for bladder cancer should be monitored after because it can return (recur) even years later.

What causes bladder cancer and what are its risk factors?

- Cigarette smoking is the biggest risk factor; it more than doubles the risk.
- Prior radiation exposure is the next most common risk factor (e.g., as treatment for cervical cancer, prostate cancer or rectal cancer).
- Certain chemotherapy drugs (e.g., cyclophosphamide) also increase the risk of bladder cancer.
- Environmental exposures: people who work with certain chemicals are at higher risk. Aromatic amines, used in dyes, are such chemicals. Extensive exposure to rubber, leather, some textiles, paint, and hairdressing supplies, typically related to occupational exposure, also appears to increase the risk.
- Infection with a parasite known as *Schistosoma haematobium*, which is more common in developing countries. (This organism is not found in the United States.)
- People who have frequent infections of the bladder, bladder stones, or other diseases of the urinary tract, or who have chronic need for a catheter in the bladder, may be at higher risk of squamous cell carcinoma.
- Patients with a previous bladder cancer are at increased risk to form new bladder tumors.
- Other risk factors include diets high in fried meats and animal fats, and older age. In addition, men have a three-fold higher risk than women.

What are the symptoms of bladder cancer?

The earliest sign for bladder cancer is usually blood in the urine, called hematuria, often without pain or other urinary symptoms. It may be very faint, a pink tinge, or the blood may be obvious. The blood may not always be present in the urine – it may come and go.

Many people dismiss this symptom, because it may go away for several weeks before it returns. In Men with blood in their urine should have a complete workup of their genitourinary tract, including the kidneys and bladder.

Other signs and symptoms of bladder cancer include:

- Burning, irritation, or pain when urinating
- Difficulty or inability to urinate
- Frequency: the need to urinate often
- Pain in the bladder area, bladder spasms

- Urgency: the intense need to urinate immediately

These signs and symptoms don't necessarily mean that you have bladder cancer. Speak with your doctor if you have any of these symptoms so that you can be sure to get a proper diagnosis and

How is bladder cancer detected?

When making a diagnosis, our experts will take the time to learn about your medical history and understand your overall health. We will likely need to run urine tests and do a cystoscopy a procedure that allows your doctor to obtain a tissue sample for biopsy.

Imaging tests are also important to confirming the diagnosis and determining which stage of cancer you have. Imaging tests we may suggest include the following:

- CT scans, which obtain cross-sectional pictures of the body and can determine whether the cancer cells are confined to the bladder or have spread to other parts of the body.
- MRI, which can help in determining whether the cancer has invaded the muscle in the bladder wall and, if so, how deeply.

What if prostate cancer is diagnosed?

Fortunately, most prostate cancers have not spread at the time they are diagnosed, and the cancer is most often confined to the prostate gland.

To help predict the aggressiveness of the prostate cancer, your physician will look at your PSA levels before the biopsy and will also calculate the "Gleason Score."

From the PSA levels and the Gleason Score, a treatment plan is devised. For men with a low risk of the cancer having spread outside the gland, staging studies such as bone scans and computed tomography scans are not needed. Men with cancer with a higher likelihood of spreading may require these staging studies to determine where the cancer may have spread.

What are the treatment options for prostate cancer?

Surgical options

Surgery is a common treatment option for bladder cancer. The type of surgery chosen will depend on the stage of the cancer.

- **Transurethral resection of the bladder is used most often for early stage disease (TA, T1, or CIS).** It is done under general or spinal anesthesia. In this procedure, a special telescope called a resectoscope is inserted through the urethra into the bladder. The tumor is then trimmed away with the resectoscope, using a wire loop, and the raw surface of the bladder is then fulgurated (destroyed with an electric current).
- **Partial cystectomy is the removal of a section of the bladder.** It is used for a single tumor that invades the bladder wall in only one region of the bladder. This type of surgery retains most of the bladder. Chemotherapy or radiation therapy is often used in combination. Only a minority of patients will qualify for this bladder-sparing procedure.
- **Radical cystectomy is complete removal of the bladder.** If your cancer has spread into the muscle layer of the bladder wall or beyond, the best chance for a long-term cure may be a radical cystectomy in which we remove the entire bladder and other nearby organs. Our surgeons may also take out the surrounding lymph nodes to help prevent the cancer from coming back or metastasizing (spreading) to other areas of the body.

- For men, the surgeon will also remove the prostate and seminal vesicles (tube-like glands behind the bladder that secrete many components of sperm) as part of a radical cystectomy.
- For women, the surgeon will remove the uterus, fallopian tubes, ovaries, anterior (front) vaginal wall, and urethra as part of a radical cystectomy.
- Sexual health is an important consideration when planning treatment, and our surgeons use approaches to preserve sexual function as much as possible. For some women, we can use techniques to spare the vagina. For some men, our surgeons can use nerve-sparing techniques to maintain their ability to have an erection. You also have the full support of our sexual health team, who are experts in helping cancer patients manage these side effects.
- Because the bladder is removed, a procedure called a urinary diversion must be done so that urine can exit the body. A pouch constructed of intestine may be made inside the body, or a leak-proof bag worn outside the body may be used to collect urine. The procedure typically requires a hospital stay of 5 to 6 days, give or take a few either way.

Chemotherapy

Chemotherapy refers to the use of any of a group of drugs whose main effect is either to kill or slow the reproduction of rapidly multiplying cells. Cancer cells absorb chemotherapy drugs faster than normal cells do (but all cells are exposed to the chemotherapy drug). Chemotherapy drugs are delivered intravenously (through a vein) or can be delivered intravesically (directly into the bladder through a catheter threaded through the ureter), depending on the stage of the cancer.

Some common chemotherapy drugs that are used for the treatment of bladder cancer are methotrexate, vinblastine, doxorubicin, cyclophosphamide, paclitaxel, carboplatin, cisplatin, ifosfamide, and gemcitabine. Many of these drugs are used in combinations.

Side effects can occur with chemotherapy, and their severity depends on the particular drug used and the ability of the patient to tolerate the drugs. Common side effects from chemotherapy include:

- nausea and vomiting
- loss of appetite
- hair loss
- tiredness from anemia
- vulnerability to infections, and
- ulcers or sores in the mouth.

Chemotherapy can be used alone, but is often used with surgery or radiation therapy.

Intravesical therapy

Bladder cancer may be treated with intravesical (into the bladder through a tube inserted into the urethra) immunotherapy or chemotherapy.

Immunotherapy refers to using the body's own immune system to attack the cancer cells. A vaccine called Bacillus Calmette-Guérin (BCG) is commonly used for this purpose in the intravesical treatment of stages Ta, T1, or carcinoma in situ (limited to the innermost lining) bladder cancers. In the procedure, a solution containing BCG is retained in the bladder for a few hours before being drained.

Intravesical BCG is usually given once a week for 6 weeks, but sometimes long-term maintenance therapy is needed. Bladder irritation, pain or burning during urination, and low-grade fever and chills are possible side effects of intravesical BCG.

Intravesical chemotherapy with mitomycin C is another treatment option. Because the chemotherapy is given directly into the bladder, other cells in the body aren't exposed to the chemotherapy, which reduces the chances for side effects from the chemotherapy. It's also often given as a single dose after a tumor has been removed via cystoscopy.

Radiation therapy

Radiation therapy damages the DNA of cancer cells by bombarding them with high-energy X-rays or other types of radiation. It may be an alternative to surgery or used in combination with surgery or chemotherapy. Radiation therapy can be delivered externally or internally.

In external radiation therapy, the radiation source is a machine outside the body that directs a focused beam of radiation at the tumor. With better imaging technologies in use today, computer-guided radiation delivered from several angles minimizes radiation exposure to surrounding tissues and organs, limiting damage to these tissues. Fatigue, swelling of soft tissues, and skin irritation are common side effects of external radiation.

Internal radiation therapy is not often used for bladder cancer. A radioactive pellet is inserted into the bladder through the urethra or an incision in the lower abdomen. Internal radiation requires a hospital stay during the course of treatment, which can be several days, after which the pellet is removed.