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Bladder Cancer *By Robert S. Hollabaugh, Jr. MD*

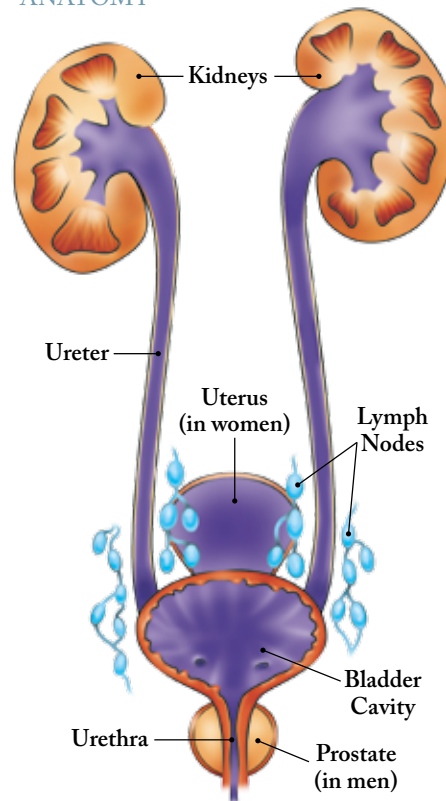
Bladder cancer is one of the most common cancers in the United States. It develops as an abnormal growth of cells on the lining of the urinary bladder. One or more bladder cancers may develop at the same time in different parts of the bladder. While the cause of bladder cancer is not always known, it is 3 times more likely to develop in smokers than in nonsmokers. Experts believe that smoking causes 50% to 60% of bladder cancer in men and 25% of bladder cancer in women. The most common symptoms found in patients with bladder cancer include blood in the urine, pain during urination, urinating small amounts frequently, or frequent **urinary tract infections** (UTIs). More commonly, however, such symptoms are caused by other, less dangerous diagnoses.

Diagnosis

A concern about the possibility of bladder cancer is raised when blood is detected in the urine. While many other things can cause blood in the urine, your physician will usually want to rule out the possibility of cancer if no other definite cause can be established. A simple urinalysis can easily detect the presence of blood in the urine. Any amount of blood in the urine is significant, not just grossly bloody urine.

To check for the possibility of bladder cancer, a urologist will look into the bladder with a small scope (**cystoscopy**). With minimal discomfort, a small, flexible scope is introduced thru the urinary channel and guided into

ANATOMY



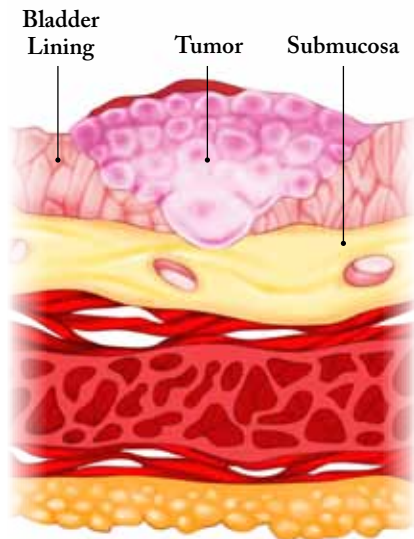
the bladder. Often, this can be done in the office setting with minimal local anesthesia. The tumors are very easy to identify visually by inspecting the lining of the bladder. Any suspicious growth in the bladder will be recommended for biopsy. Biopsy has to be done in a surgery center or hospital under full anesthesia. Washings from the bladder

can be evaluated to see if malignant cells are present. A special immunofluorescent monoclonal antibody test can be performed on urine, called FISH, which can detect genetic changes that are highly associated with bladder cancer. In addition to these tests, CT scans can be used to see if bladder cancer has spread to any other organs in the body. PET scans can also be used to assess for any spread of bladder cancer.

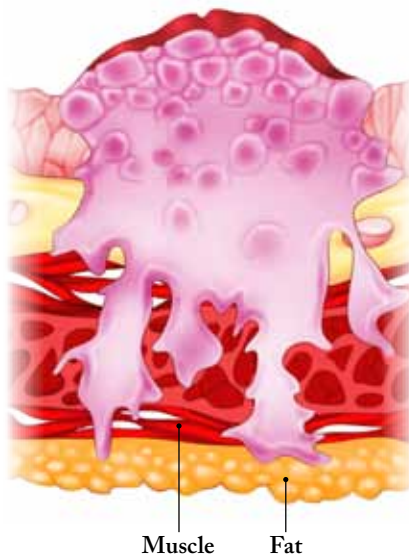
Treatments for Bladder Cancer

The treatment of bladder cancer depends on a number of factors: how large the cancer is, how invasive it is, and how far it has spread. Bladder cancer is curable if it is diagnosed while the cancer is still contained in the bladder, and more than 80% of bladder cancers are diagnosed at this early stage. In general treatments are broken down depending on whether the cancer is "Superficial" or "Invasive." Superficial cancers can usually be trimmed out of the bladder with a simple outpatient procedure. In certain cases, medication can be placed into the bladder to help decrease the chances of the cancer ever growing back inside the bladder. As an analogy, superficial bladder cancers are like weeds in the garden. Periodic inspection can detect the "weeds" and trimming out the tumors or "weeding the garden" usually controls them. Much like weeds, bladder cancers can come back. This is thought to be due to the fact that whatever has caused the initial cancers has been exposed to the entire lining of the bladder. Even when the

BLADDER CANCER STAGES



SUPERFICIAL



MUSCLE INVASIVE



METASTATIC

original tumors have been removed, the rest of the lining of the bladder has already been exposed and may be in the process of forming tiny new tumors that will not show up till later. Invasive cancers are much more dangerous and usually require chemotherapy and major surgery (removal of the entire bladder). Because most bladder cancer is detected at the superficial stage, most cases can be treated effectively without removing the entire bladder.

The choice of treatment and the long-term outcome (prognosis) for people who have bladder cancer depends on the stage and grade of cancer. Your physician also considers your age, overall health, and quality of life when developing your treatment plan. Common considerations for treatment of bladder cancer may include: (1) Trimming the tumor followed by observation/surveillance, (2) Surgery to remove the bladder, (3) Surgery in combination with radiation therapy/chemotherapy, or (4) Chemotherapy alone.

SURVEILLANCE

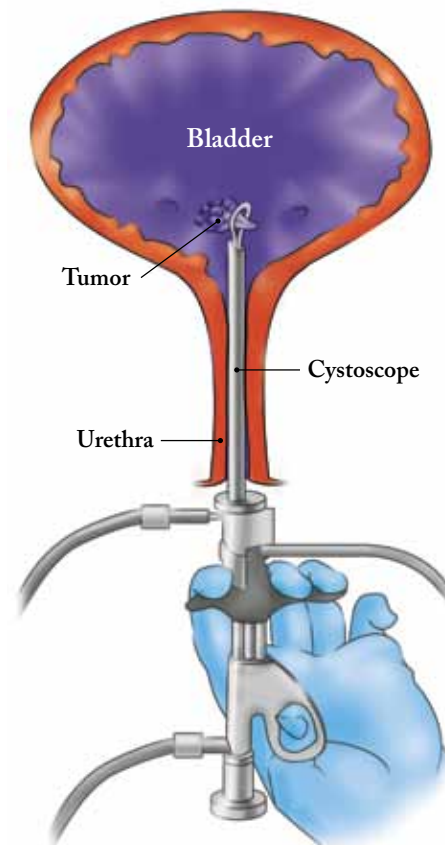
Bladder cancer can commonly recur after it has been trimmed out initially, so an important part of treatment follow-up is to have regular cystoscopic examinations for surveillance. This allows new tumors to be

diagnosed while they are still small, contained on the surface of the bladder (superficial), and easily treated. The usual follow-up regimen involves scoping the bladder in the office every 3 months for several years, and then yearly for life. This regimen is commonly used for cases involving minimally aggressive, superficial cancers.

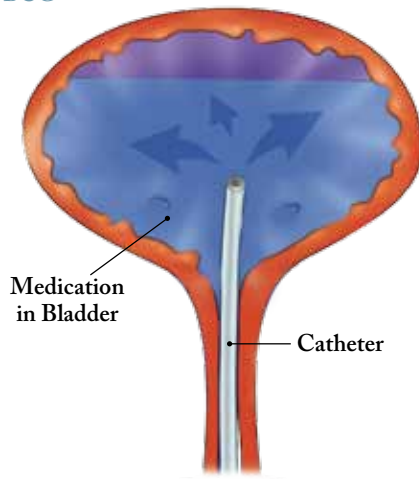
TRANSURETHRAL RESECTION

Surgery is used to treat most stages of bladder cancer. Small bladder tumors that remain near the surface (superficial) may be trimmed out or burned with a low-voltage electrified probe (electrocautery) during a cystoscopy. Transurethral resection (TUR) is used to remove larger bladder tumors or tumors that penetrate more deeply into the tissues. Tumors that have spread outside the bladder have to be treated by other means, (primarily chemotherapy). TUR is usually performed in a surgery center or outpatient center of a hospital. Most patients go home the same day. In most cases a catheter is left in the bladder for a few hours but is removed before going home. In some cases, a catheter may be required for several days, particularly if the tumor was large. In general, patients need to be off any blood thinners for this type of surgery, as the lining of the bladder is highly prone to bleeding.

TRANSURETHRAL RESECTION



BCG



INTRAVESICAL THERAPY

Intravesical Therapy involves putting medications or chemicals into the bladder that then soak into the lining of the bladder to help treat cancers. These agents can boost or heighten the response of your body's immune system. Intravesical therapy is most often used for superficial bladder cancer, rather than invasive cancer. It may be used after a transurethral resection (TUR) to prevent cancer recurrence. BCG is an example of this. BCG (Bacillus Calmette-Guerin) is a live bacteria that is the cousin of Tuberculosis. When it is put into the bladder, it stimulates a strong immune response to areas of exposure. The immune response will attack the bacteria, and will also attack any other abnormal cells, like cancer, that may be present. It is usually put in the bladder with a catheter once a week for six weeks in a row. In some cases, BCG will be used as an ongoing maintenance therapy, with three doses every 3 months. Because BCG is a live bacteria, it can cause an infection itself. Usually the effects of BCG are minimal and consist of mild urinary burning for a day or so after instillation. Rarely, high fevers and major illness result from BCG, which require immediate medical attention. Care has to be taken to dispose of the BCG properly when it is voided out of the bladder. This is accomplished by pouring some chlorox into the toilet after emptying BCG from the bladder. Other agents, including Valstar, Mitomycin, and Thiotepa, can also be used as an intravesical treatment to help control superficial bladder cancer. Surveillance cystoscopy is still needed every three months, even after intravesical therapy, to monitor the possibility of a cancer recurrence.

CHEMOTHERAPY

For cancer that has deeply invaded the bladder or spread to lymph nodes or other organs, chemotherapy is usually recommended. Chemotherapy uses medications to poison or destroy cancer cells. Recent studies show that chemotherapy given before cystectomy (neoadjuvant) may increase the effectiveness of the overall treatment. Different regimens of chemotherapy may be given orally or intravenously (IV), usually in an outpatient or office setting. An oncologist (cancer specialist) will work with your urologist to decide about the timing and administration of chemotherapy. Side effects differ depending on the medications used, patient age, and overall health, but some common side effects of cancer treatment include nausea, vomiting, fatigue, hair loss, stress, or sleep problems. Many studies are currently being done evaluating different regimens of chemotherapy and the prognosis associated with each.

RADIATION THERAPY

Radiation therapy, which uses high-dose X-rays or other high-energy rays to destroy cancer cells, is another, less common, option for certain types of bladder cancer. Radiation therapy also is used as palliative care to relieve symptoms, control bleeding, and preserve kidney function.

CYSTECTOMY

Surgical removal of the bladder (cystectomy) is recommended for the more invasive stages of cancer that are still confined to the bladder. Cystectomy is a major operative procedure, and may be too risky for older patients or patients with complex medical histories. In males, the bladder and prostate gland are removed together. In females, the bladder, uterus, and a portion of the vagina are removed together. Once the bladder is removed, a new route for urine drainage (urinary diversion) has to be created. In males, sexual function is commonly damaged with this extensive pelvic surgery. Rarely, the rectum is damaged or involved by the cancer requiring a colostomy (bowels emptying onto the skin). In females, removal of a portion of the vagina can narrow the vaginal space making sex very difficult or painful. Other risks of cystectomy include infection, bleeding, damage to intestines, poor healing of intestines, kidney failure, and wound hernias. As with any major surgery

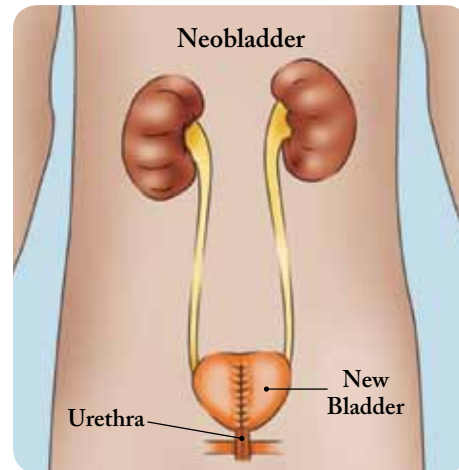
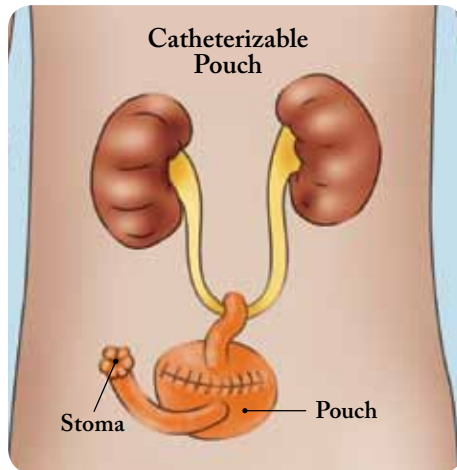
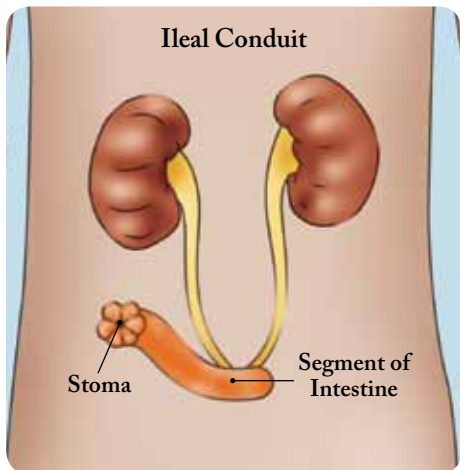
under anesthesia, there is a possibility of heart attack, stroke, pulmonary embolus, and even death. Because of the duration of the operation, usually 4-6 hours, patients are usually monitored in the Intensive Care Unit for several days, and can expect to be in the hospital for 7-10 days.

URINARY DIVERSIONS AND RECONSTRUCTIONS

Once the bladder is removed, a new route for urine drainage (urinary diversion) has to be created. Most commonly, a portion of intestines (ileum) is used to create an "ileal conduit" or "urostomy" that takes urine from the kidneys to the skin surface. A "urostomy" (urinary opening) is created on the skin. An external appliance (plastic bag device) can stick to the skin and catch the urine, which then can be emptied as needed.

In some cases, a longer piece of intestine can be crafted into an actual "replacement bladder" and attached onto the normal water channel. These "neobladders" offer an internal reservoir for storage of urine, rather than an external bag. While the "neobladder" will not contract like a natural bladder, your body can learn to empty it with certain training techniques. In some cases, a catheter has to be inserted regularly to facilitate emptying of the "neobladder." For some people, this internal storage is more natural, as there doesn't have to be a "urostomy" with it. The downside is that these more complex urinary diversions are more prone to complications, and have to be surgically repaired more often than the simpler conduits. Candidates for "neobladder" have to be highly motivated and responsible individuals that are willing to accept the higher risks associated with the complex reconstructions. For instance, if the "neobladder" does not empty well, self catheterization is a must. Those who would be unwilling to perform self cath as a lifetime responsibility should not even consider "neobladder." In addition, some cases of advanced cancer may not be candidates for "neobladder" as the risk of recurrence may be too high. In any case, your doctor will discuss with you various options for urinary diversion depending on the specifics of your case. Prior gastrointestinal disease, prior intestinal surgery, or prior kidney failure will influence the decision regarding urinary diversion.

URINARY DIVERSIONS



The initial thought of a “urostomy” is often fear and dread. Patients often think that they could not bear to “wear a bag.” After the fact, most patients acknowledge that the “urostomy” is not nearly as bad or difficult as they had imagined. Most people can resume all activities in which they formerly participated, including exercise, sports, and even swimming.

Emotions

If you have recently been diagnosed with bladder cancer, you may experience a wide variety of emotions in reaction to your diagnosis. Most people feel some denial, anger, and grief. There is no “normal” or “right” way to react to a diagnosis of cancer. You can take steps, though, to manage your emotional reaction after learning that you have bladder cancer. Some people find that talking with family and friends is comforting, while others may need to spend time alone to understand their feelings about their disease. If your emotions are interfering with your ability to make decisions about your health and to move forward with your life, it is important to talk with your physician. “Running away” or “burying your head in the sand” will only

delay decisions about the very treatments that can help you. Your cancer treatment center may offer counseling services. You may also contact your local chapter of the American Cancer Society to help you find a support group. Talking with other people who have had similar feelings after a diagnosis such as yours can help you accept and deal with your disease. It can also be comforting to talk with others who have gone thru treatments and have real life experience with bladder cancer treatments and urinary diversions.

STOMA (UROSTOMY)



Stop Smoking

Smoking is the number one risk factor for bladder cancer as well as recurrent bladder cancer. To continue smoking will lessen the chances that your bladder cancer treatments will work. If there were ever a reason to quit, this is it. There are all sorts of treatments that can help you quit, so be sure to talk to your doctor about quitting smoking.

What increases your risk of developing bladder cancer?

Tobacco use is the main risk factor for bladder cancer. Other risk factors include:

- » Being older than 40.
- » Being male. Men are 4 times more likely than women to develop bladder cancer.
- » Work exposure to cancer-causing chemicals, such as those used in leather, wood, rubber, and textile industries.
- » Schistosomiasis, which is an infection with the parasite *Schistosoma haematobium*. This parasite is found in developing countries and rarely occurs in the United States.

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