

National Cancer Institute

What You Need
To Know About™

Bladder Cancer

**U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES**

National Institutes of Health

National Cancer Institute Services

This is only one of many free booklets for people with cancer.

You may want more information for yourself, your family, and your doctor.

NCI offers comprehensive research-based information for patients and their families, health professionals, cancer researchers, advocates, and the public.

- **Call** NCI's Cancer Information Service at **1-800-4-CANCER (1-800-422-6237)**
- **Visit** us at **<http://www.cancer.gov>** or **<http://www.cancer.gov/espanol>**
- **Chat** using **LiveHelp**, NCI's instant messaging service, at **<http://www.cancer.gov/livehelp>**
- **E-mail** us at **cancergovstaff@mail.nih.gov**
- **Order** publications at **<http://www.cancer.gov/publications>** or by calling **1-800-4-CANCER**
- **Get help** with quitting smoking at **1-877-44U-QUIT (1-877-448-7848)**

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About This Booklet

This National Cancer Institute (NCI) booklet is about *cancer** that starts in the bladder.

Each year in the United States, more than 52,000 men and 18,000 women are diagnosed with bladder cancer. Most are over 70 years old.

More than 9 of 10 Americans with bladder cancer have a type called *transitional cell cancer* (TCC). This booklet is about TCC of the bladder.

TCC begins in the *cells* on the surface of the inner lining of the bladder. These cells are called *transitional cells*. They are able to stretch when the bladder is full and shrink when it's emptied.

Learning about medical care for bladder cancer can help you take an active part in making choices about your care. This booklet tells about:

- Diagnosis and staging
- Treatment and rehabilitation
- Taking part in research studies

This booklet has lists of questions that you may want to ask your doctor. Many people find it helpful to take a list of questions to a doctor visit. To help remember what your doctor says, you can take notes. You may also want to have a family member or friend go with you when you talk with the doctor—to take notes, ask questions, or just listen.

*Words in *italics* are in the Dictionary on page 29. The Dictionary explains these terms. It also shows how to pronounce them.

For the latest information about bladder cancer, please visit NCI's Web site at <http://www.cancer.gov/cancertopics/types/bladder>. Also, NCI's Cancer Information Service can answer your questions about cancer. We can also send you NCI booklets and fact sheets. Call 1-800-4-CANCER (1-800-422-6237) or chat with us online using **LiveHelp**, NCI's instant messaging service at <http://www.cancer.gov/livehelp>.

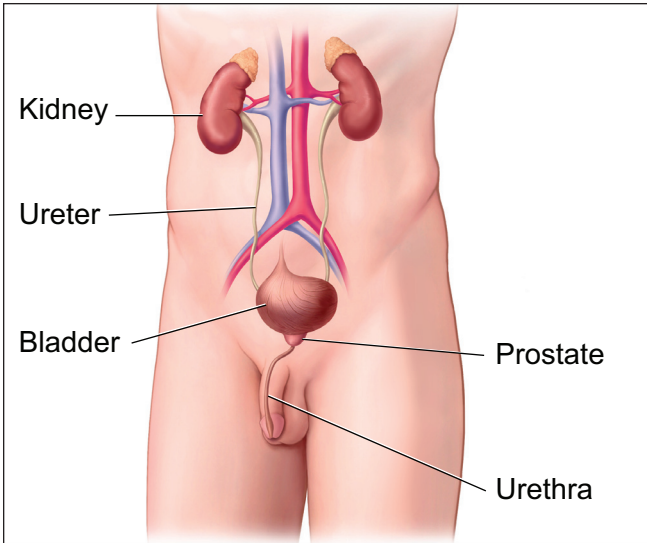
The Bladder

Your bladder is a hollow *organ* in the lower *abdomen*. It stores *urine*, the liquid waste made by the *kidneys*.

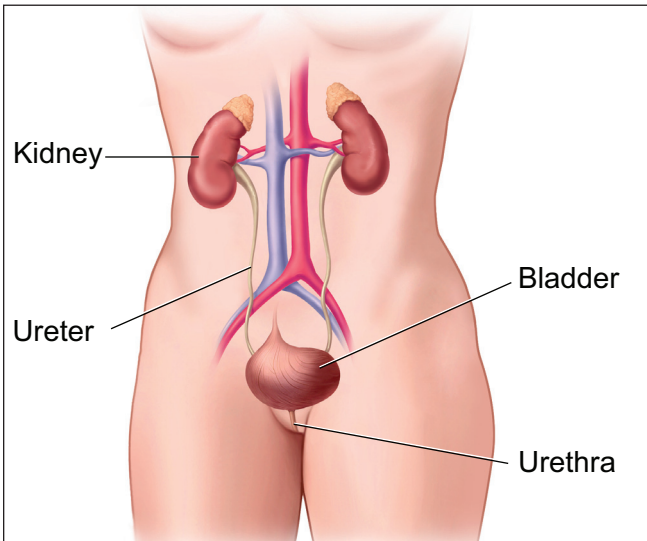
Your bladder is part of the *urinary tract*. Urine passes from each kidney into the bladder through a long tube called a *ureter*. Urine leaves the bladder through a shorter tube (the *urethra*).

The wall of the bladder has layers of *tissue*:

- **Inner layer:** The inner layer of tissue is also called the lining. As your bladder fills up with urine, the transitional cells on the surface stretch. When you empty your bladder, these cells shrink.
- **Middle layer:** The middle layer is muscle tissue. When you empty your bladder, the muscle layer in the bladder wall squeezes the urine out of your body.
- **Outer layer:** The outer layer covers the bladder. It has fat, *fibrous* tissue, and blood vessels.



This picture shows the bladder and nearby organs in a man.



This picture shows the bladder and nearby organs in a woman.

Cancer Cells

Cancer begins in cells, the building blocks that make up tissues. Tissues make up the bladder and the other organs of the body.

Normal cells grow and divide to form new cells as the body needs them. When normal cells grow old or get damaged, they die, and new cells take their place.

Sometimes, this process goes wrong. New cells form when the body doesn't need them, and old or damaged cells don't die as they should. The buildup of extra cells often forms a mass of tissue called a growth or *tumor*.

Tumors in the bladder can be *benign* (not cancer) or *malignant* (cancer). Benign tumors are not as harmful as malignant tumors:

- **Benign tumors:**
 - are usually not a threat to life
 - can be treated or removed and usually don't grow back
 - don't invade the tissues around them
 - don't spread to other parts of the body
- **Malignant growths:**
 - may be a threat to life
 - usually can be removed but can grow back
 - can invade and damage nearby tissues and organs (such as the *prostate* in a man, or the *uterus* or *vagina* in a woman)
 - can spread to other parts of the body.

Bladder cancer cells can spread by breaking away from the original tumor. They can spread through the *blood vessels* to the liver, lungs, and bones. In addition, bladder cancer cells can spread through *lymph vessels* to nearby *lymph nodes*. After spreading, the cancer cells may attach to other tissues and grow to form new tumors that may damage those tissues. See the Staging section on page 11 for information about bladder cancer that has spread.

Risk Factors

When you get a diagnosis of bladder cancer, it's natural to wonder what may have caused the disease. Doctors can't always explain why one person gets bladder cancer and another doesn't.

However, we do know that people with certain *risk factors* may be more likely than others to develop bladder cancer. A risk factor is something that may increase the chance of getting a disease.

Studies have found the following risk factors for bladder cancer:

- **Smoking:** Smoking tobacco is the most important risk factor for bladder cancer. Smoking causes most of the cases of bladder cancer. People who smoke for many years have a higher risk than nonsmokers or those who smoke for a short time.

How to Quit Tobacco

Quitting is important for anyone who uses tobacco. Quitting at any time is good for your health.

For people who already have bladder cancer, quitting may reduce the chance of getting another type of cancer (such as lung, esophagus, or oral cancer), lung disease, or heart disease caused by tobacco. Quitting can also help cancer treatments work better.

There are many ways to get help:

- Ask your doctor about medicine or nicotine replacement therapy. Your doctor can suggest a number of treatments that help people quit.
- Ask your doctor or dentist to help you find local programs or trained professionals who help people stop using tobacco.
- Call NCI's **Smoking Quitline** at **1-877-44U-QUIT (1-877-448-7848)** or instant message us through **LiveHelp** (**<http://www.cancer.gov/livehelp>**). We can tell you about:
 - Ways to quit smoking
 - Groups that help smokers who want to quit
 - NCI publications about quitting smoking
 - How to take part in a study of methods to help smokers quit
- Go online to **Smokefree.gov** (**<http://www.smokefree.gov>**), a Federal Government Web site. It offers a guide to quitting smoking and a list of other resources.

- **Chemicals in the workplace:** Some people have a higher risk of bladder cancer because of cancer-causing chemicals in their workplace. Workers in the dye, rubber, chemical, metal, textile, and leather industries may be at risk of bladder cancer. Also at risk are hairdressers, machinists, printers, painters, and truck drivers.
- **Personal history of bladder cancer:** People who have had bladder cancer have an increased risk of getting the disease again.
- **Certain cancer treatments:** People with cancer who have been treated with certain drugs (such as *cyclophosphamide*) may be at increased risk of bladder cancer. Also, people who have had *radiation therapy* to the abdomen or pelvis may be at increased risk.
- **Arsenic:** Arsenic is a poison that increases the risk of bladder cancer. In some areas of the world, arsenic may be found at high levels in drinking water. However, the United States has safety measures limiting the arsenic level in public drinking water.
- **Family history of bladder cancer:** People with family members who have bladder cancer have a slightly increased risk of the disease.

Many people who get bladder cancer have none of these risk factors, and many people who have known risk factors don't develop the disease.

Symptoms

Bladder cancer may cause these common symptoms:

- Finding blood in your urine (which may make the urine look rusty or darker red)
- Feeling an urgent need to empty your bladder
- Having to empty your bladder more often than you used to
- Feeling the need to empty your bladder without results
- Needing to strain (bear down) when you empty your bladder
- Feeling pain when you empty your bladder

These symptoms may be caused by bladder cancer or by other health problems, such as an infection. People with these symptoms should tell their doctor so that problems can be diagnosed and treated as early as possible.

Diagnosis

If you have symptoms that suggest bladder cancer, your doctor will try to find out what's causing the problems.

You may have a physical exam. Also, you may have one or more of the following tests:

- **Urine tests:** The lab checks your urine for blood, cancer cells, and other signs of disease.
- **Cystoscopy:** Your doctor uses a thin, lighted tube (a *cystoscope*) to look directly into your bladder. It may be done at your doctor's office. This test can be uncomfortable because the doctor will insert the cystoscope into the bladder through your urethra. You may need *local anesthesia* for this test.
- **Biopsy:** Your doctor can remove samples of tissue with the cystoscope. A *pathologist* then examines the tissue under a microscope. The removal of tissue to look for cancer cells is called a biopsy. In most cases, a biopsy is the only sure way to tell whether cancer is present.

For a small number of patients, the doctor removes the entire area with cancer during the biopsy. For these patients, bladder cancer is diagnosed and treated at the same time.

Grade

If cancer cells are found in the tissue sample from the bladder, the pathologist studies the sample under a microscope to learn the grade of the tumor. The grade tells how much the tumor tissue differs from normal bladder tissue. It may suggest how fast the tumor is likely to grow.

Tumors with higher grades tend to grow faster than those with lower grades. They are also more likely to spread. Doctors use tumor grade along with other factors to suggest treatment options.

You may want to ask the doctor these questions before having a biopsy:

- Why do I need a biopsy?
- How long will it take? Will I be awake? Will it hurt?
- What are the chances of infection or bleeding after the biopsy? Are there any other risks?
- How soon will I know the results? How do I get a copy of the pathology report?
- If I do have cancer, who will talk with me about treatment? When?

Staging

If bladder cancer is diagnosed, your doctor needs to learn the extent (stage) of the disease to help you choose the best treatment.

Staging is a careful attempt to find out the following:

- Whether the tumor has invaded the muscle layer of the bladder
- Whether the tumor has invaded nearby tissues
- Whether the cancer has spread, and if so, to what parts of the body

Your doctor may order these tests:

- **Blood tests:** Blood tests can show how well the liver and kidneys are working.
- **Chest x-ray:** An x-ray of the chest can show a tumor in the lung.
- **IVP:** A dye that shows up on x-rays is injected into your blood vessel. The dye collects in your urine, which makes the bladder and the rest of the urinary tract show up on x-rays.
- **CT scan:** An x-ray machine linked to a computer takes a series of detailed pictures of your abdomen. You may receive an injection of *contrast material* so your urinary tract and lymph nodes show up clearly in the pictures. The CT scan can show cancer in the bladder, lymph nodes, or elsewhere in the abdomen.

- **MRI:** A large machine with a strong magnet linked to a computer is used to make detailed pictures of your urinary tract and lymph nodes. You may receive an injection of contrast material. MRI can show cancer in the bladder, lymph nodes, or other tissues in the abdomen.
- **Ultrasound:** The ultrasound device uses sound waves that can't be heard by humans. The sound waves make a pattern of echoes as they bounce off internal organs. The echoes create a picture of your kidneys and other organs in the abdomen. The picture can show a tumor or blockage in the urinary tract.

When cancer spreads from its original place to another part of the body, the new tumor has the same kind of abnormal cells and the same name as the original (primary) tumor. For example, if bladder cancer spreads to the liver, the cancer cells in the liver are actually bladder cancer cells. The disease is *metastatic* bladder cancer, not liver cancer. It's treated as bladder cancer, not as liver cancer. Doctors sometimes call the new tumor in the liver "distant" disease.

These are the stages of bladder cancer:

- **Stage 0:** The cancer cells are found only on the surface of the inner lining of the bladder. The doctor may call this *carcinoma in situ*.
- **Stage I:** The tumor has grown deeper into the inner lining of the bladder. But it hasn't invaded the muscle layer of the bladder.
- **Stage II:** The tumor has invaded the muscle layer of the bladder.
- **Stage III:** The tumor has grown through the muscle layer to reach tissues near the bladder, such as the prostate, uterus, or vagina.

- **Stage IV:** The tumor has invaded the wall of the pelvis or abdomen, but cancer is not found in any lymph nodes. Or, the cancer cells have spread to at least one lymph node or to parts of the body far away from the bladder, such as the liver, lungs, or bones.

Treatment

Treatment options for people with bladder cancer are *surgery*, *chemotherapy*, *biological therapy*, and *radiation therapy*. You may receive more than one type of treatment.

The treatment that's right for you depends mainly on the following:

- The location of the tumor in the bladder
- Whether the tumor has invaded the muscle layer or tissues outside the bladder
- Whether the tumor has spread to other parts of the body
- The grade of the tumor
- Your age and general health

You may have a team of specialists to help plan your treatment. Your doctor may refer you to a specialist, or you may ask for a referral. You may want to see a *urologist*, a *surgeon* who specializes in treating problems in the urinary tract. Other specialists who treat bladder cancer include *urologic oncologists* (surgeons who specialize in cancers of the urinary tract), *medical oncologists*, and *radiation oncologists*.

Your health care team may also include an *oncology nurse* and a *registered dietitian*. If your treatment involves surgery to remove the bladder, a *wound, ostomy and continence nurse* may also be part of your team.

Your health care team can describe your treatment choices, the expected results of each, and the possible *side effects*. Because cancer therapy often damages healthy cells and tissues, side effects are common. These side effects depend on many factors, including the type and extent of treatment. Side effects may not be the same for each person, and they may even change from one treatment session to the next. Before treatment starts, ask your health care team about possible side effects and how treatment may change your normal activities. You and your health care team can work together to develop a treatment plan that meets your needs.

At any stage of disease, *supportive care* is available to control pain and other symptoms, to relieve the side effects of treatment, and to ease emotional concerns. Information about such care is available on NCI's Web site at <http://www.cancer.gov/cancertopics/coping> and from NCI's Cancer Information Service at **1-800-4-CANCER (1-800-422-6237)** or at **LiveHelp** (<http://www.cancer.gov/help>).

You may want to talk with your doctor about taking part in a *clinical trial*. Clinical trials are research studies testing new treatments. They are an important option for people with all stages of bladder cancer. See the Taking Part in Cancer Research section on page 28.

You may want to ask your doctor these questions before you begin treatment:

- What is the stage of the disease? Has the tumor invaded the muscle layer of the bladder or spread to other organs?
- What are my treatment choices? Which do you suggest for me? Why?
- What are the expected benefits of each kind of treatment?
- What can I do to prepare for treatment?
- Will I need to stay in the hospital? If so, for how long?
- What are the risks and possible side effects of each treatment? How can side effects be managed?
- What is the treatment likely to cost? Will my insurance cover it?
- How will treatment affect my normal activities?
- Would a research study (clinical trial) be a good choice for me?
- Can you recommend other doctors who could give me a second opinion about my treatment options?
- How often should I have checkups?

Surgery

Surgery is an option for most people with bladder cancer. You and your surgeon can talk about the types of surgery and which may be right for you:

- **Transurethral resection (TUR):** The doctor uses a cystoscope to treat early bladder cancer (Stage 0 or Stage I). No *incision* (cut) into your body is needed, but *general anesthesia* or *spinal anesthesia* is usually given.

The doctor inserts the cystoscope into the bladder through your urethra. The cutting tool is slipped through the cystoscope. A small wire loop at the end of the tool removes the cancer and burns away remaining cancer cells with an electric current.

TUR may need to be repeated. Also, chemotherapy or biological therapy may be given after this type of surgery.

For a few days after TUR, you may have some blood in your urine and difficulty or pain when passing urine. Otherwise, TUR generally causes few problems.

- **Open surgery:** The surgeon makes an incision into your body to remove the cancer from your bladder.
 - **Part of the bladder** (called a *partial cystectomy*): For some people with a single, small tumor in the bladder, the surgeon does not remove the entire bladder. The surgeon removes the tumor, the part of the bladder containing the tumor, and nearby lymph nodes.

After part of the bladder is removed, you may not be able to hold as much urine in your bladder as before surgery. You may need to empty your bladder more often. This problem usually gets better with time.

- **All of the bladder** (called a *radical cystectomy*): For bladder cancer that has invaded the muscle layer (Stage II or some Stage III), the most common type of surgery is radical cystectomy. The surgeon removes the entire bladder, nearby lymph nodes, and part of the urethra. In addition, the surgeon usually removes the prostate from a man and may remove the uterus from a woman. Other nearby tissues may also be removed.
- When the entire bladder is removed, the surgeon makes another way for urine to be collected from the kidneys and stored. You may wear a flat bag outside the body under your clothes, or the surgeon may use part of your *intestine* to create a pouch inside the body. The Rehabilitation section on page 23 has more information.
- When the prostate or uterus is removed, a man can no longer father a child and a woman can no longer get pregnant. Also, a man may be unable to have sex after surgery. If the surgeon removes part of a woman's vagina, sex may be difficult.
- Because bladder cancer surgery may affect your sex life, it may help you and your partner to talk about your feelings and help one another find ways to share intimacy during and after treatment. See Sources of Support on page 26 for more information.

It takes time to heal after surgery, and the time needed to recover is different for each person. It's common to feel weak or tired for a while.

Also, you may have pain or discomfort for the first few days. Medicine can help control your pain. Before surgery, you should discuss the plan for pain relief with your doctor or nurse. After surgery, your doctor can adjust the plan if you need more pain control.

After TUR or partial cystectomy, the urethra needs time to heal. You'll have a *catheter*. A catheter is a tube put through the urethra into the bladder to drain urine. You'll have the catheter for 5 days to 3 weeks. Your nurse or doctor will show you how to care for it.

You may want to ask your doctor these questions before having surgery:

- What type of surgery do you recommend for me? Why?
- Will lymph nodes and other tissues be removed? Why?
- How will I feel after surgery?
- If I have pain, how will you control it?
- How long will I be in the hospital?
- Will I have any long-term effects because of the surgery?
- If my bladder is removed, who will teach me how to store urine in a pouch or bag?
- If my bladder is removed, will I need to wear a medical alert bracelet for the rest of my life?

Chemotherapy

Chemotherapy uses drugs to kill cancer cells. It may be used to treat bladder cancer before or after surgery.

You may receive chemotherapy in different ways:

- **Into the bladder:** After TUR for early bladder cancer, the doctor inserts a tube (catheter) through your urethra to put a liquid drug in the bladder. The drug remains in your bladder for several hours. This treatment may be given once a week for six weeks.

- **By mouth:** Some drugs are pills that you can swallow. They may be given before or after surgery.
- **Into a vein:** For cancer that has invaded the muscle of the bladder or spread to other tissues, drugs are usually given by vein (*intravenous*). The drugs enter the bloodstream and travel throughout your body. Chemotherapy may be given before or after surgery.

You may have your treatment in an outpatient part of the hospital, at the doctor's office, or at home. Rarely, you may need to stay in the hospital.

Chemotherapy is usually given in cycles. Each cycle has a treatment period followed by a rest period.

The side effects depend mainly on how the drug is given. If the drugs are given into the bladder, the side effects are usually mild. For a few days after treatment, you may need to empty your bladder more often. You may have blood in your urine. Also, you may have pain when emptying your bladder. Some people get a rash. These problems usually go away after treatment.

If the drugs are given by vein or taken by mouth, the side effects depend mainly on which drugs are given and how much. Chemotherapy kills fast-growing cancer cells, but the drugs can also harm normal cells that divide rapidly:

- **Blood cells:** When drugs lower the levels of healthy blood cells, you're more likely to get infections, bruise or bleed easily, and feel very weak and tired. Your health care team will check for low levels of blood cells. If your levels are low, your health care team may stop the chemotherapy for a while or reduce the dose of the drug. There are also medicines that can help your body make new blood cells.
- **Cells in hair roots:** Chemotherapy may cause hair loss. If you lose your hair, it will grow back after treatment, but the color and texture may be changed.

- **Cells that line the digestive system:** Chemotherapy can cause a poor appetite, nausea and vomiting, diarrhea, or mouth and lip sores. Your health care team can give you medicines and suggest other ways to help with these problems. They usually go away when treatment ends.

Some drugs used for bladder cancer may also cause tingling or numbness in your hands and feet. Your health care team can suggest ways to control many of these side effects.

You may wish to read the NCI booklet *Chemotherapy and You*.

Biological Therapy

People with early bladder cancer may receive a treatment called biological therapy. The treatment is *BCG solution*, which is a liquid containing weakened *bacteria*. The bacteria help your body's natural defenses (the *immune system*) to kill cancer cells in the bladder.

Several weeks after TUR, the doctor inserts a tube through your urethra to put a liquid treatment in your bladder. You'll be asked to hold the liquid treatment in your bladder for about two hours.

BCG solution is usually given once a week for six weeks. This treatment helps keep the cancer from coming back.

You may feel unusually tired during the treatment period. Also, BCG solution can irritate the bladder. You may feel an urgent need to empty your bladder, and you may need to empty your bladder more often. Also, you may have pain, especially when emptying your bladder. You may have blood in your urine, nausea, a fever, or chills. Tell your health care team about any problems that you have during the treatment period.

It may help to know that the side effects usually go away when treatment is over. You may want to read the NCI fact sheet *Biological Therapies for Cancer*.

You may want to ask your doctor these questions about chemotherapy or biological therapy:

- Why do I need this treatment?
- Which drug or drugs will I have?
- How do the drugs work?
- When will treatment start? When will it end?
- Will I have any long-term side effects?

Radiation Therapy

Radiation therapy uses high-energy rays to kill cancer cells. It may be given after surgery. Usually it's given along with chemotherapy for cancer that has invaded the muscle layer of the bladder. However, it is sometimes given instead of surgery or chemotherapy.

The radiation comes from a large machine. The machine aims beams of radiation at the bladder area in the abdomen.

You'll go to a hospital or clinic 5 days a week for several weeks to receive radiation therapy. Each treatment session takes about 30 minutes.

Although radiation therapy is painless, it may cause other side effects. The side effects include nausea, vomiting, or diarrhea. Also, you may feel very tired during radiation therapy. Your health care team can suggest ways to treat or control these side effects.

You may find it helpful to read the NCI booklet *Radiation Therapy and You*.

You may want to ask your doctor these questions about radiation therapy:

- Why do I need this treatment?
- When will the treatments begin? When will they end?
- How will I feel during treatment?
- How will we know if the radiation treatment is working?
- Will I have any long-term side effects?

Second Opinion

Before starting treatment, you may want a second opinion about your diagnosis, the stage of cancer, and the treatment plan. Some people worry that the doctor will be offended if they ask for a second opinion. Usually the opposite is true. Most doctors welcome a second opinion. And many health insurance companies will pay for a second opinion if you or your doctor requests it. Some companies require a second opinion.

If you get a second opinion, the second doctor may agree with your first doctor's diagnosis and treatment plan. Or the second doctor may suggest another approach. Either way, you have more information and perhaps a greater sense of control. You can feel more confident about the decisions you make, knowing that you've looked at all of your options.

It may take some time and effort to gather your medical records and see another doctor. In most cases, it's not a problem to take several weeks to get a second opinion. The delay in starting treatment usually will not make treatment less effective. To make sure, you should discuss this delay with your doctor.

There are many ways to find a doctor for a second opinion. You can ask your doctor, a local or state medical society, or a nearby hospital or medical school for names of specialists.

Also, you can get information about treatment centers near you from NCI's Cancer Information Service at **1-800-4-CANCER (1-800-422-6237)** or **LiveHelp** (<http://www.cancer.gov/livehelp>).

Other sources can be found in the NCI fact sheet *How To Find a Doctor or Treatment Facility If You Have Cancer*.

Rehabilitation

Your health care team will help you return to normal activities as soon as possible. The goals of rehabilitation depend on the extent of disease and surgery.

If the surgeon removes your bladder, you'll need a new way to store urine. After your bladder is removed, the surgeon uses a piece of your *small intestine* or *large intestine* to make a new path for urine to exit the body or be stored. With this piece of intestine, the surgeon can either make a tube that carries urine from the ureters to the outside of the body or create a new bladder that holds urine inside the body.

Your health care team can tell you more about the following options:

- **Bag worn outside your body under your clothing:**

The surgeon can attach a small piece of intestine to the ureters and to a *stoma* (an opening in the wall of the abdomen). Urine drains from the ureters through the piece of intestine to the stoma. A flat bag fits over the stoma to collect urine, and special glue holds the bag in place. The bag is emptied several times a day.

- **New bladder or pouch inside your body:** The surgeon can create a new bladder or pouch made from a piece of your intestine. The surgeon connects the pouch to the ureters so that urine can flow from the ureters and can be stored in the pouch in the pelvis. The surgeon also connects the pouch either to your urethra or to a stoma in the wall of your abdomen:

- **New bladder connected to your urethra:**

Because the pouch is joined to your urethra, you will be able to empty your new bladder much as you did before.

- **New bladder connected to a stoma:** The surgeon creates a new path for urine to leave your body. The pouch is joined to the stoma, and you will use a catheter (a soft tube) to empty your bladder several times a day. You will not need to wear a bag over the stoma.

At first, you will empty your bladder every two or three hours. But later on, you should be able to hold the urine for four to six hours.

A wound, ostomy and continence nurse or another member of your health care team will visit you before surgery to describe what to expect. The nurse or doctor will teach you how to care for yourself after surgery. If

you need an ostomy, the nurse or doctor will help you decide where the opening should be on your abdomen and will teach you how to care for the stoma after surgery.

Ask your health care team about your physical, emotional, or sexual concerns. Often they can provide information about resources and support groups.

Nutrition

It's important for you to take very good care of yourself before, during, and after cancer treatment. Taking care of yourself includes eating well so you get the right amount of calories to maintain a good weight. You also need enough protein to keep up your strength. Eating well may help you feel better and have more energy.

Sometimes, especially during or soon after treatment, you may not feel like eating. You may be uncomfortable or tired. You may find that foods don't taste as good as they used to. In addition, the side effects of treatment (such as poor appetite, nausea, vomiting, or mouth blisters) can make it hard to eat well.

Your doctor, a registered dietitian, or another health care provider can suggest ways to help you meet your nutrition needs. Also, the NCI booklet *Eating Hints* has many useful ideas and recipes.

Follow-up Care

You'll need regular checkups (such as every 3 to 6 months) after treatment for bladder cancer. Checkups help ensure that any changes in your health are noted and treated if needed.

If you have any health problems between checkups, you should contact your doctor.

Bladder cancer may come back after treatment. Your doctor will check for return of cancer. Checkups may include a physical exam, blood tests, urine tests, cystoscopy, or CT scans.

NCI has publications to help answer questions about follow-up care and other concerns. You may find it helpful to read the NCI booklet *Facing Forward: Life After Cancer Treatment*. You may also want to read the NCI fact sheet *Follow-up Care After Cancer Treatment*.

Sources of Support

Learning that you have bladder cancer can change your life and the lives of those close to you. These changes can be hard to handle. It's normal for you, your family, and your friends to need help coping with the feelings that a diagnosis of cancer can bring.

Concerns about treatments and managing side effects, hospital stays, and medical bills are common. You may also worry about caring for your family, keeping your job, or continuing daily activities.

Here's where you can go for support:

- Doctors, nurses, and other members of your health care team can answer questions about treatment, working, or other activities.
- Social workers, counselors, or members of the clergy can be helpful if you want to talk about your feelings or concerns. Often, social workers can suggest resources for financial aid, transportation, home care, or emotional support.
- Support groups also can help. In these groups, patients or their family members meet with other patients or their families to share what they have learned about coping with the disease and the effects of treatment. Groups may offer support in person, over the telephone, or on the Internet. You may want to talk with a member of your health care team about finding a support group.
- NCI's Cancer Information Service at **1-800-4-CANCER (1-800-422-6237)** and at **LiveHelp** (<http://www.cancer.gov/livehelp>) can help you locate programs, services, and NCI publications. They can send you a list of organizations that offer services to people with cancer.
- Your doctor or a sex counselor may be helpful if you and your partner are concerned about the effects of bladder cancer on your sex life. Ask your doctor about possible treatment of side effects and whether these effects are likely to last. Whatever the outlook, you and your partner may find it helps to discuss your concerns.

For tips on coping, you may want to read the NCI booklet *Taking Time: Support for People With Cancer*.

Taking Part in Cancer Research

Doctors all over the world are conducting many types of clinical trials (research studies in which people volunteer to take part). Clinical trials are designed to find out whether new treatments are safe and effective.

Even if the people in a trial do not benefit directly, they may still make an important contribution by helping doctors learn more about bladder cancer and how to control it. Although clinical trials may pose some risks, doctors do all they can to protect their patients.

Doctors are studying new drugs and drug combinations. If you're interested in being part of a clinical trial, talk with your doctor. You may want to read the NCI booklet *Taking Part in Cancer Treatment Research Studies*. It describes how treatment studies are carried out and explains their possible benefits and risks.

NCI's Web site includes a section on clinical trials at **<http://www.cancer.gov/clinicaltrials>**. It has general information about clinical trials as well as detailed information about specific ongoing studies of bladder cancer. NCI's Cancer Information Service at **1-800-4-CANCER (1-800-422-6237)** and at **LiveHelp** at **<http://www.cancer.gov/livehelp>** can answer questions and provide information about clinical trials.

Dictionary

Definitions of thousands of terms are on NCI's Web site in NCI's Dictionary of Cancer Terms. You can access it at <http://www.cancer.gov/dictionary>.

Abdomen (AB-doh-men): The area of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

Arsenic: A poisonous chemical used to kill weeds and pests. Also used in cancer therapy.

Bacteria (bak-TEER-ee-uh): A large group of single-cell microorganisms. Some cause infections and disease in animals and humans. The singular of bacteria is bacterium.

BCG solution (suh-LOO-shun): A form of biological therapy for superficial (not invasive) bladder cancer. The solution is made from a weakened form of the bacterium *Mycobacterium bovis* (bacillus Calmette-Guérin) that does not cause disease but stimulates the body's immune system.

Benign (beh-NINE): Not cancerous. Benign tumors may grow larger but do not spread to other parts of the body. Also called nonmalignant.

Biological therapy (BY-oh-LAH-jih-kul THAYR-uh-pee): Treatment to boost or restore the ability of the immune system to fight cancer, infections, and other diseases. Also called immunotherapy.

Biopsy (BY-op-see): The removal of cells or tissues for examination by a pathologist. The pathologist may study the tissue under a microscope or perform other tests on the cells or tissue.

Blood vessel: A tube through which the blood circulates in the body. Blood vessels include a network of arteries, arterioles, capillaries, venules, and veins.

Cancer (KAN-ser): A term for diseases in which abnormal cells divide without control and can invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymph systems.

Carcinoma in situ (KAR-sih-NOH-muh in SY-too): A group of abnormal cells that remain in the place where they first formed. They have not spread. These abnormal cells may become cancer and spread into nearby normal tissue. Also called stage 0 disease.

Catheter (KA-theh-ter): A flexible tube used to deliver fluids into or withdraw fluids from the body.

Cell (sel): The individual unit that makes up the tissues of the body. All living things are made up of one or more cells.

Chemotherapy (KEE-moh-THAYR-uh-pee): Treatment with drugs that kill cancer cells.

Clinical trial (KLIH-nih-kul TRY-ul): A type of research study that tests how well new medical approaches work in people. These studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called clinical study.

Contrast material: A dye or other substance that helps show abnormal areas inside the body. It is given by injection into a vein, by enema, or by mouth. Contrast material may be used with x-rays, CT scans, MRI, or other imaging tests.

CT scan: A series of detailed pictures of areas inside the body taken from different angles. The pictures are created by a computer linked to an x-ray machine. Also called CAT scan, computed tomography scan, computerized axial tomography scan, and computerized tomography.

Cyclophosphamide (SY-kloh-FOS-fuh-mide): A drug that is used to treat many types of cancer and is being studied in the treatment of other types of cancer. Also called CTX and Cytosan.

Cystoscope (SIS-toh-SKOPE): A thin, tube-like instrument used to look inside the bladder and urethra. A cystoscope has a light and a lens for viewing and may have a tool to remove tissue.

Cystoscopy (sis-TOS-koh-pee): Examination of the bladder and urethra using a cystoscope, inserted into the urethra.

Fibrous: Containing or resembling fibers.

General anesthesia (JEN-rul A-nes-THEE-zhuh): A temporary loss of feeling and a complete loss of awareness that feels like a very deep sleep. It is caused by special drugs or other substances called anesthetics.

Immune system (ih-MYOON SIS-tem): The complex group of organs and cells that defends the body against infections and other diseases.

Incision (in-SIH-zhun): A cut made in the body to perform surgery.

Intestine (in-TES-tin): The long, tube-shaped organ in the abdomen that completes the process of digestion. The intestine has two parts, the small intestine and the large intestine. Also called bowel.

Intravenous (IN-truh-VEE-nus): Into or within a vein. Intravenous usually refers to a way of giving a drug or other substance through a needle or tube inserted into a vein. Also called IV.

IVP: A procedure in which x-ray images of the kidneys, ureters, and bladder are taken at regular times after a substance that shows up on x-rays is injected into a blood vessel. The substance outlines the kidneys,

ureters, and bladder as it flows through the system and collects in the urine. IVP is usually done to look for a block in the flow of urine. Also called intravenous pyelography (IN-truh-VEE-nus PY-eh-LAH-gruh-fee).

Kidney: One of a pair of organs in the abdomen. Kidneys remove waste from the blood (as urine), make a substance that stimulates red blood cell production, and play a role in blood pressure regulation.

Large intestine (in-TES-tin): The long, tube-like organ that is connected to the small intestine at one end and the anus at the other.

Local anesthesia (LOH-kul A-nes-THEE-zhuh): A temporary loss of feeling in one small area of the body caused by special drugs or other substances called anesthetics. The patient stays awake but has no feeling in the area of the body treated with the anesthetic.

Lymph node (limf node): A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Lymph nodes filter lymph (lymphatic fluid), and they store lymphocytes (white blood cells). They are located along lymphatic vessels. Also called lymph gland.

Lymph vessel (limf): A thin tube that carries lymph (lymphatic fluid) and white blood cells through the lymphatic system. Also called lymphatic vessel.

Malignant (muh-LIG-nunt): Cancerous. Malignant tumors can invade and destroy nearby tissue and spread to other parts of the body.

Medical oncologist (MEH-dih-kul on-KAH-loh-jist): A doctor who specializes in diagnosing and treating cancer using chemotherapy, hormonal therapy, biological therapy, and targeted therapy. A medical oncologist often is the main health care provider for someone who has cancer. A medical oncologist also gives supportive care and may coordinate treatment given by other specialists.

Metastatic (meh-tuh-STA-tik): Having to do with metastasis, which is the spread of cancer from the place where it started to other places in the body.

MRI: A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. MRI makes better images of organs and soft tissue than CT scans or other scanning techniques. MRI is especially useful for imaging the brain, the spine, the soft tissue of joints, and the inside of bones. Also called magnetic resonance imaging.

Oncology nurse (on-KAH-loh-jee): A nurse who specializes in treating and caring for people who have cancer.

Organ: A part of the body that performs a specific function. For example, the heart is an organ.

Partial cystectomy (PAR-shul sis-TEK-toh-mee): Surgery to remove part of the bladder (the organ that holds urine). Also called segmental cystectomy.

Pathologist (puh-THAH-loh-jist): A doctor who identifies diseases by studying cells and tissues under a microscope.

Prostate (PROS-tayt): A gland in the male reproductive system. The prostate surrounds the part of the urethra (the tube that empties the bladder) just below the bladder, and produces a fluid that forms part of the semen.

Radiation oncologist (RAY-dee-AY-shun on-KAH-loh-jist): A doctor who specializes in using radiation to treat cancer.

Radiation therapy (RAY-dee-AY-shun THAYR-uh-pee): The use of high-energy radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells and shrink tumors.

Radical cystectomy (RA-dih-kul sis-TEK-toh-mee): Surgery to remove all of the bladder (the organ that holds urine) as well as nearby tissues and organs.

Registered dietitian (dy-eh-TIH-shun): A health professional with special training in the use of diet and nutrition to keep the body healthy. A registered dietitian may help the medical team improve the nutritional health of a patient.

Risk factor: Something that increases the chance of developing a disease. Some examples of risk factors for cancer are age, a family history of certain cancers, use of tobacco products, being exposed to radiation or certain chemicals, infection with certain viruses or bacteria, and certain genetic changes.

Side effect: A problem that occurs when treatment affects healthy tissues or organs. Some common side effects of cancer treatment are fatigue, pain, nausea, vomiting, decreased blood cell counts, hair loss, and mouth sores.

Small intestine (in-TES-tin): The part of the digestive tract that is located between the stomach and the large intestine.

Spinal anesthesia (SPY-nul A-nes-THEE-zhuh): A temporary loss of feeling in the abdomen and/or the lower part of the body. Special drugs called anesthetics are injected into the fluid in the lower part of the spinal column to cause the loss of feeling. The patient stays awake during the procedure. Also called SAB, spinal block, and subarachnoid block.

Stoma (STOH-muh): A surgically created opening from an area inside the body to the outside.

Supportive care: Care given to improve the quality of life of patients who have a serious or life-threatening disease. The goal of supportive care is to prevent or treat as early as possible the symptoms of a disease,

side effects caused by treatment of a disease, and psychological, social, and spiritual problems related to a disease or its treatment. Also called comfort care, palliative care, and symptom management.

Surgeon: A doctor who removes or repairs a part of the body by operating on the patient.

Surgery (SER-juh-ree): A procedure to remove or repair a part of the body or to find out whether disease is present. An operation.

Tissue (TISH-oo): A group or layer of cells that work together to perform a specific function.

Transitional cell (tran-ZIH-shuh-nul sel): A cell that varies in shape depending on whether the tissue is being stretched. They line hollow organs such as the bladder.

Transitional cell cancer (tran-ZIH-shuh-nul sel KAN-ser): Cancer that forms in transitional cells in the lining of the bladder, ureter, or renal pelvis (the part of the kidney that collects, holds, and drains urine).

Transurethral resection (TRANZ-yoo-REE-thrul ree-SEK-shun): Surgery using a special instrument inserted through the urethra. Also called TUR.

Tumor (TOO-mer): An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Tumors may be benign (not cancer), or malignant (cancer). Also called neoplasm.

Ultrasound (UL-truh-SOWND): A procedure in which high-energy sound waves are bounced off internal tissues or organs and make echoes. The echo patterns are shown on the screen of an ultrasound machine, forming a picture of body tissues called a sonogram. Also called ultrasonography.

Ureter (YER-eh-ter): The tube that carries urine from the kidney to the bladder.

Urethra (yoo-REE-thruh): The tube through which urine leaves the body. It empties urine from the bladder.

Urinary tract (YOOR-in-air-ee): The organs of the body that produce and discharge urine. These include the kidneys, ureters, bladder, and urethra.

Urine (YOOR-in): Fluid containing water and waste products. Urine is made by the kidneys, stored in the bladder, and leaves the body through the urethra.

Urologic oncologist (YOOR-uh-LAH-jik on-KAH-loh-jist): A doctor who specializes in treating cancers of the urinary system.

Urologist (yoo-RAH-loh-jist): A doctor who specializes in diseases of the urinary organs in females and the urinary and sex organs in males.

Uterus (YOO-ter-us): The small, hollow, pear-shaped organ in a woman's pelvis. This is the organ in which a fetus develops. Also called womb.

Vagina (vuh-JY-nuh): The muscular canal extending from the uterus to the exterior of the body. Also called birth canal.

Wound, ostomy and continence nurse (woond OS-toh-mee KAHN-tih-nents): A registered nurse who has additional education and training in how to care for people who have a wound, an ostomy (surgery to create an opening in the abdomen for a new path for urine or stool), or incontinence (inability to control either the flow of urine from the bladder or the escape of stool from the rectum).

X-ray: A type of high-energy radiation. In low doses, x-rays are used to diagnose diseases by making pictures of the inside of the body. In high doses, x-rays are used to treat cancer.

National Cancer Institute Publications

NCI provides publications about cancer, including the booklets and fact sheets mentioned in this booklet. Many are available in both English and Spanish.

You may read these publications online and print your own copy. Also, people in the United States and its territories may order NCI publications:

- **By telephone:** People in the United States and its territories may order these and other NCI publications by calling the NCI's Cancer Information Service at **1-800-4-CANCER (1-800-422-6237)**.
- **On the Internet:** Many NCI publications may be viewed, downloaded, and ordered from **<http://www.cancer.gov/publications>**. This Web site also explains how people outside the United States can mail or fax their requests for NCI booklets.

Cancer Treatment and Supportive Care

- *How To Find a Doctor or Treatment Facility If You Have Cancer* (also in Spanish)
- *Chemotherapy and You* (also in Spanish)
- *Radiation Therapy and You* (also in Spanish)
- *Pain Control* (also in Spanish)
- *Eating Hints* (also in Spanish)

Coping with Cancer

- *Taking Time: Support for People with Cancer*

Life After Cancer Treatment

- *Facing Forward: Life After Cancer Treatment* (also in Spanish)
- *Follow-up Care After Cancer Treatment*
- *Facing Forward: Ways You Can Make a Difference in Cancer*

Advanced or Recurrent Cancer

- *Coping With Advanced Cancer*
- *When Cancer Returns*

Complementary Medicine

- *Thinking about Complementary & Alternative Medicine*

Caregivers

- *When Someone You Love Is Being Treated for Cancer: Support for Caregivers*
- *When Someone You Love Has Advanced Cancer: Support for Caregivers*
- *Facing Forward: When Someone You Love Has Completed Cancer Treatment*
- *Caring for the Caregiver: Support for Cancer Caregivers*

Quitting Smoking

- *Clearing the Air: Quit Smoking Today*

Research Studies

- *Taking Part in Cancer Treatment Research Studies*
- *Providing Your Tissue for Research: What You Need To Know*
- *Donating Tissue for Cancer Research: Biospecimens and Biorepositories*

The National Cancer Institute

The National Cancer Institute (NCI), part of the National Institutes of Health, is the Federal Government's principal agency for cancer research and training. NCI conducts and supports basic and clinical research to find better ways to prevent, diagnose, and treat cancer. The Institute also supports education and training for cancer research and treatment programs. In addition, NCI is responsible for communicating its research findings to the medical community and the public.

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