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## Treating Bladder Cancer

If you've been diagnosed with bladder cancer, your treatment team will discuss your options with you. It's important to weigh the benefits of each treatment option against the possible risks and side effects.

### How is bladder cancer treated?

Depending on the stage of the cancer and other factors, treatment options for people with bladder cancer can include:

- [Bladder Cancer Surgery](#)
- [Intravesical Therapy for Bladder Cancer](#)
- [Chemotherapy for Bladder Cancer](#)
- [Radiation Therapy for Bladder Cancer](#)
- [Immunotherapy for Bladder Cancer](#)
- [Targeted Therapy Drugs for Bladder Cancer](#)

### Common treatment approaches

Many times, the best option might include more than one of type of treatment. Surgery, alone or with other treatments, is used to treat most bladder cancers. Early-stage bladder tumors can often be removed. But a major concern in people with early-stage bladder cancer is that new cancers often form in other parts of the bladder over time. Taking out the entire bladder (called *radical cystectomy*) is one way to avoid this, but it causes major side effects. If the entire bladder is not removed, other treatments may be used to try to reduce the risk of new cancers. Whether or not other treatments are given, close follow-up is needed to watch for signs of new cancers in the bladder.

- [Treatment of Bladder Cancer, by Stage](#)

## Who treats bladder cancer?

Based on your treatment options, you might have different types of doctors on your treatment team. These doctors could include:

- **Urologists:** surgeons who specialize in treating diseases of the urinary system and male reproductive system
- **Radiation oncologists:** doctors who treat cancer with radiation therapy
- **Medical oncologists:** doctors who treat cancer with medicines such as chemotherapy and immunotherapy

You might have many other specialists on your treatment team as well, including physician assistants, nurse practitioners, nurses, nutrition specialists, social workers, and other health professionals.

- [Health Professionals Associated With Cancer Care<sup>1</sup>](#)

## Making treatment decisions

It's important to discuss all of your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. Some important things to consider include:

- Your age and expected life span
- Any other serious health conditions you have
- The [stage<sup>2</sup>](#) and grade of your cancer
- The likelihood that treatment will cure your cancer (or help in some other way)
- Your feelings about the possible side effects from treatment

You may feel that you must make a decision quickly, but it's important to give yourself time to absorb the information you have just learned. It's also very important to ask questions if there is anything you're not sure about.

If time permits, it is often a good idea to seek a second opinion. A second opinion can give you more information and help you feel more confident about the treatment plan you choose.

- [Questions To Ask About Bladder Cancer<sup>3</sup>](#)
- [Seeking a Second Opinion<sup>4</sup>](#)

## Help getting through cancer treatment

People with cancer need support and information, no matter what stage of illness they may be in. Knowing all of your options and finding the resources you need will help you make informed decisions about your care.

Whether you are thinking about treatment, getting treatment, or not being treated at all, you can still get supportive care to help with pain or other symptoms. Communicating with your cancer care team is important so you understand your diagnosis, what treatment is recommended, and ways to maintain or improve your quality of life.

Different types of programs and support services may be helpful, and can be an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services – including rides to treatment, lodging, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

- [Palliative Care](#)<sup>5</sup>
- [Find Support Programs and Services in Your Area](#)<sup>6</sup>

## Choosing to stop treatment or choosing no treatment at all

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it's important to talk to your doctors and you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- [If Cancer Treatments Stop Working](#)<sup>7</sup>

*The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of*

*your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.*

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## Bladder Cancer Surgery

Surgery is part of the treatment for most bladder cancers. The type of surgery done depends on the stage (extent) of the cancer. It also depends on your choices based on the long-term side effects of some kinds of surgery.

### Transurethral resection of bladder tumor (TURBT)

A transurethral resection of bladder tumor (TURBT) or a transurethral resection (TUR) is often used to find out if someone has bladder cancer and, if so, whether the cancer has spread into (invaded) the muscle layer of the bladder wall.

TURBT is also the most common treatment for early-stage or superficial (non-muscle invasive) bladder cancers. Most patients have superficial cancer when they're first diagnosed, so this is usually their first treatment. Sometimes, a second, more extensive TURBT is done to better ensure that all the cancer has been removed. The goal is to take out the cancer cells and nearby tissues down to the muscle layer of the bladder wall.

### How TURBT is done

This surgery is done using an instrument put in through your urethra, so it there's no cutting into the abdomen (belly). You'll get either general anesthesia (drugs are used to make you sleep) or regional anesthesia (the lower part of your body is numbed).

A type of thin, rigid cystoscope called a **resectoscope** is put into your bladder through your urethra. The resectoscope has a wire loop at the end that's used to remove any abnormal tissues or tumors. The removed tissue is sent to a lab for testing.

After the tumor is removed, more steps may be taken to try to ensure that the cancer has been completely destroyed. For instance, the tissue in the area where the tumor

was may be burned while looking at it with the resectoscope. This is called fulguration. Cancer cells can also be destroyed using a high-energy laser through the resectoscope.

### **Possible side effects**

The side effects of TURBT are generally mild and don't usually last long. Right after TURBT you might have some bleeding and pain when you urinate. You can usually go home the same day or the next day and can return to your usual activities within a week or two.

Even if the TURBT removes the tumor completely, bladder cancer often comes back (recurs) in other parts of the bladder. This might be treated with another TURBT. But if TURBT needs to be repeated many times, the bladder can become scarred and not be able to hold much urine. This can lead to side effects like frequent urination, or even incontinence (loss of control of urine).

In patients with a long history of recurrent, non-invasive low-grade tumors (slow-growing tumors that keep coming back), the surgeon may just use fulguration to burn small tumors that are seen during cystoscopy (rather than removing them). This can often be done using local anesthesia (numbing medicine) in the doctor's office. It's safe but can be mildly uncomfortable.

## **Cystectomy**

When bladder cancer is invasive, all or part of the bladder may need to be removed. This operation is called a cystectomy. Most of the time, chemotherapy is given before cystectomy is done. General anesthesia (where you are in a deep sleep) is used for either type of cystectomy.

### **Partial cystectomy**

If the cancer has invaded the muscle layer of the bladder wall but is not very large and is only in one place, it can sometimes be removed along with part of the bladder wall without taking out the whole bladder. The hole in the bladder wall is then closed with stitches. Nearby lymph nodes are also removed and tested for cancer spread. Only a small portion of people with cancer that has invaded the muscle can have this surgery. The main advantage of this surgery is that the person keeps their bladder and doesn't need reconstructive surgery (see below). But the remaining bladder may not hold as much urine, which means they'll have to urinate more often. With this type of surgery, the main concern is that bladder cancer can still come back (recur) in another part of the bladder wall.

## Radical cystectomy

If the cancer is larger or is in more than one part of the bladder, a radical cystectomy will be needed. This operation removes the entire bladder and nearby lymph nodes. In men, the prostate and seminal vesicles are also removed. In women, the ovaries, fallopian tubes (tubes that connect the ovaries and uterus), the uterus (womb), cervix, and a small part of the vagina are removed too.

Most of the time, cystectomy is done through a cut (incision) in the belly (abdomen). You'll need to stay in the hospital for about a week after the surgery. You can usually go back to your normal activities after several weeks.

In some cases, the surgeon may operate through many smaller incisions using special long, thin instruments, one of which has a tiny video camera on the end to see inside your body. This is called **laparoscopic**, or “keyhole” surgery. The surgeon may either hold the instruments directly or may sit at a control panel in the operating room and use robotic arms to do the surgery (sometimes known as a **robotic cystectomy**). This type of surgery may result in less pain and quicker recovery because of the smaller cuts. But it hasn't been around as long as the standard type of surgery, so it's not yet clear if it works as well.

It's important that any type of cystectomy be done by a surgeon with experience in treating bladder cancer. If the surgery is not done well, the cancer is more likely to come back.

## Reconstructive surgery after radical cystectomy

If your whole bladder is removed, you'll need another way to store urine and pass it out of your body. Several types of reconstructive surgery can be done.

### Incontinent diversion

One option may be to remove and clean a short piece of your intestine and then connect it to the ureters (the tubes that carry urine out of the kidneys). This creates a passageway, known as an **ileal conduit**, for urine to pass from the kidneys to the outside of the body. Urine flows from the kidneys through the ureters into the ileal conduit. One end of the conduit is connected to the skin on the front of the belly (abdomen) by an opening called a **stoma**. (This is also called a [urostomy](#)<sup>1</sup>.)

After this procedure, a small bag sticks to the skin of your belly around the stoma to collect the urine. Urine slowly drains out non-stop, so the bag must be on all the time.

It's emptied whenever it's full. This is called an incontinent diversion, because you cannot control the flow of urine out of your body.

### **Continent diversion**

Another way for urine to drain is a continent diversion. A pouch is made from a piece of intestine that's attached to the ureters. One end of the pouch is connected to an opening (stoma) in your skin on the front of your belly. A one-way valve is created at this opening. This allows urine to be stored in the pouch. You then empty it several times a day by putting a thin drainage tube (catheter) into the stoma through the valve. Some people prefer this method because there's no bag on the outside.

### **Neobladder**

This method routes the urine back into the urethra, so you pass urine the same way. To do this, the surgeon creates a new bladder (neobladder) from a piece of intestine. As with the incontinent and continent diversions, the ureters are connected to the neobladder. The difference is that the neobladder is also sewn to the urethra. This lets you urinate normally on a schedule. (You won't have the urge to urinate, so a schedule is needed.) Over time, most people regain the ability to urinate normally during the day, but incontinence at night may be a problem.

If the cancer has spread or can't be removed with surgery, a diversion may be made without taking out the bladder. In this case, the purpose of the surgery is to prevent or relieve blockage of urine flow, rather than try to cure the cancer.

### **Risks and side effects of cystectomy**

The risks with any type of cystectomy are much like those with any major surgery. Problems during or shortly after surgery can include:

- Reactions to anesthesia
- Bleeding
- Blood clots in the legs or lungs
- Damage to nearby organs
- Infection

Most people will have at least some pain after the operation, which can be controlled with pain medicines.

## Effects of cystectomy on urination

Bladder surgery can affect how you pass urine. If you have had a partial cystectomy, this might be limited to having to go more often (because your bladder can't hold as much urine).

If you have a radical cystectomy, you'll need reconstructive surgery (described above) to create a new way for urine to leave your body. Depending on the type of reconstruction, you might need to learn how to empty your urostomy bag or put a catheter into your stoma. Aside from these changes, urinary diversion and urostomy can also lead to:

- Infections
- Urine leaks
- Incontinence
- Pouch stones
- Blockage of urine flow
- Absorption problems (depends on the amount of intestine that was used)

The physical changes that come from removing the bladder and having a urostomy can affect your quality of life, too. Discuss your feelings and concerns with your health care team.

To learn a lot more about urostomies, see [Urostomy Guide](#)<sup>2</sup>.

## Sexual effects of radical cystectomy in men

Radical cystectomy removes the prostate gland and seminal vesicles. Since these glands make most of the seminal fluid, removing them means that a man will no longer make semen. He can still have an orgasm, but it will be “dry.”

After surgery, many men have nerve damage that affects their ability to have erections. In some men this may improve over time. For the most part, the younger a man is, the more likely he is to regain the ability to have full erections. If this issue is important to you, discuss it with your doctor before surgery. Newer surgical techniques may help lower the chance of erection problems.

For more on sexual issues and ways to cope with them, see [Sex and the Man With Cancer](#).<sup>3</sup>



## Sexual effects of radical cystectomy in women

This surgery often removes the front part of the vagina. This can make sex less comfortable for some women, though most of the time it's still possible. One option is to have the vagina rebuilt (called vaginal reconstruction). There's more than one way to do this, so talk with your surgeon about the pros and cons of each method. Whether or not you have reconstruction, there are many ways to make sex more comfortable.

Radical cystectomy can also affect a woman's ability to have an orgasm if the nerve bundles that run along each side of the vagina are damaged. Talk with your doctor about whether these nerves can be left in place during surgery.

If the surgeon takes out the end of the urethra where it opens outside the body, the clitoris can lose some of its blood supply, which might affect sexual arousal. Talk with your surgeon about whether the end of the urethra can be spared.

For more on ways to cope with these and other sexual issues, see [Sex and the Woman With Cancer](#)<sup>4</sup>.

## Sexual effects of urostomy

It's normal for both men and women to be concerned about having a sex life with a urostomy. Having your ostomy pouch fit correctly and emptying it before sex reduces the chances of a major leak. A pouch cover or small ostomy pouch can be worn with a sash to keep the pouch out of the way. Wearing a snug fitting shirt may be more comfortable. Choose sexual positions that keep your partner's weight from rubbing against the pouch. For more tips, see [Urostomy Guide](#)<sup>5</sup>.

[Cancer Surgery](#)<sup>6</sup> has a lot more information about surgery as a treatment for cancer.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery/ostomies/urostomy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery/ostomies/urostomy.html)
2. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery/ostomies/urostomy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery/ostomies/urostomy.html)
3. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/sexuality-for-men-with-cancer.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/sexuality-for-men-with-cancer.html)
4. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/sexuality-for-women-with-cancer.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/sexuality-for-women-with-cancer.html)

5. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery/ostomies/urostomy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery/ostomies/urostomy.html)
6. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery.html)

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See all references for Bladder Cancer ([www.cancer.org/cancer/bladder-cancer/references.html](http://www.cancer.org/cancer/bladder-cancer/references.html))

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# Intravesical Therapy for Bladder Cancer

With intravesical therapy, the doctor puts a liquid drug right into your bladder rather than giving it by mouth or injecting it into your blood. The drug is put in through a soft catheter that's put into your bladder through your urethra. The drug stays in your bladder for up to 2 hours. This way, the drug can affect the cells lining the inside of your bladder without having major effects on other parts of your body.

## When is intravesical therapy used?

### After TURBT

Intravesical therapy is commonly used after [transurethral resection of bladder tumor \(TURBT\)](#). It's often done within 24 hours of the TURBT procedure. Some experts say it should be done within 6 hours. The goal is to kill any cancer cells that may be left in the bladder.

### To treat non-invasive bladder cancer

These cancers are only in the lining of the bladder. They may be called non-invasive (stage 0), or minimally invasive (stage I) bladder cancers. They have not spread into deeper layers on the bladder wall muscles or to other parts of the body. Intravesical chemotherapy is used for these early-stage cancers because drugs given this way mainly affect the cells lining the inside of the bladder. They have little to no effect on cells elsewhere. This means that any cancer cells outside of the bladder lining, including those that have grown deeply into the bladder wall, are not treated by intravesical therapy. Drugs put into the bladder also can't reach cancer cells in the kidneys, ureters, and urethra, or those that have spread to other parts of the body.

One dose of intravesical chemotherapy might be the only treatment needed for non-invasive cancers.

Low-risk non-invasive (low-grade) bladder cancers grow slowly. They may be treated with 1 dose of intravesical chemo after TURBT. It's used to help keep the cancer from coming back.

Intravesical chemotherapy or immunotherapy may be used for intermediate non-invasive bladder cancers. Some studies suggest that immunotherapy works best. It's done once a week for 6 weeks, and may be repeated for another 6 weeks if needed. This is called induction therapy. After a 4- to 6-week break, maintenance treatments are then done for

at least 1 year.

High-risk non-invasive bladder cancers might be fast-growing (high-grade), big, or there may be more than 1 tumor. They're treated with induction intravesical immunotherapy. If there's a good response to induction therapy, it's followed by 3 years of maintenance intravesical immunotherapy.

Intravesical immunotherapy maintenance treatment schedules vary. For instance, treatment may be done for 3 to 6 weeks every month, every 3 months, or twice a year. It can be done for 1 to 3 years. Your doctor will talk with you about the best plan based on the details of your bladder cancer and how it responds to treatment.

### **To treat higher-stage, invasive bladder cancers**

One dose of intravesical chemotherapy is done within 24 hours of TURBT. But other types of treatment are usually the next steps for Stage II to IV (2 to 4) bladder cancers because they have spread beyond the lining layer of the bladder wall.

Sometimes induction and maintenance intravesical immunotherapy is used after radiation and systemic (in the blood) chemo for stage II cancers if surgery can't be done. It's seldom used for stage III. When it is, it's used along with other treatments in cases where surgery can't be done. Stage IV bladder cancers are rarely treated with intravesical therapy.

### **Types of intravesical therapy**

There are 2 types of intravesical therapy:

- Immunotherapy
- Chemotherapy

#### **Intravesical immunotherapy**

Immunotherapy causes the body's own immune system to attack the cancer cells.

**Bacillus Calmette-Guerin** or **BCG** is the most common intravesical immunotherapy for treating early-stage bladder cancer. It's used to help keep the cancer from growing and to help keep it from coming back.

BCG is a germ that's related to the one that causes tuberculosis (TB), but it doesn't

usually cause serious disease. BCG is put right into the bladder through a catheter. It reaches the cancer cells and "turns on" the immune system. The immune system cells are attracted to the bladder and attack the bladder cancer cells. BCG must come in contact with the cancer cells to work. This is why it's used for intravesical therapy.

Treatment with BCG can cause a wide range of symptoms. It's common to have flu-like symptoms, such as fever, achiness, chills, and fatigue. These can last for 2 to 3 days after treatment. It also commonly causes a burning feeling in the bladder, the need to urinate often, and even blood in the urine. Rarely, BCG can spread into the blood and through the body, leading to a serious infection. This can happen even years after treatment. One sign of this can be a high fever that isn't helped by Tylenol or medicines like it. If this happens, call your doctor right away. You might want to ask about other serious side effects you should watch for and call your doctor about.

### **Intravesical chemotherapy**

For this treatment, chemotherapy (chemo) drugs are put right into the bladder through a catheter. These drugs kill actively growing cancer cells. Many of these same drugs can also be given systemically (usually into a vein) to treat more advanced stages of bladder cancer. Intravesical chemotherapy is most often used when intravesical immunotherapy doesn't work. It's seldom used for more than 1 year.

The chemotherapy solution might be heated up before it's put into the bladder. Some experts believe that this makes the drug work better and helps it get into the cancer cells. When the chemo is heated, it might be called hyperthermic intravesical therapy.

**Mitomycin** is the drug used most often for intravesical chemotherapy. Delivery of mitomycin into the bladder along with heating the inside of the bladder, a treatment called **electromotive mitomycin therapy**, may work even better than giving intravesical mitomycin the usual way.

**Gemcitabine** may cause fewer side effects than mitomycin and is less likely to be absorbed into the blood.

**Valrubicin** might be used if BCG stops working. But not all experts agree on this treatment.

The main side effects of intravesical chemo are irritation and a burning feeling in the bladder, and blood in the urine.

A major advantage of giving chemo right into the bladder instead of injecting it into the bloodstream is that the drugs usually do not reach and effect other parts of the body.

This helps people avoid many of the side effects linked to chemo.

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See all references for Bladder Cancer ([www.cancer.org/cancer/bladder-cancer/references.html](http://www.cancer.org/cancer/bladder-cancer/references.html))

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# Chemotherapy for Bladder Cancer

Chemotherapy (chemo) is the use of drugs to treat cancer. Chemo for bladder cancer can be given in 2 different ways:

## Intravesical chemotherapy

For this treatment, the chemo drug is put right into the bladder. This type of chemo is used for bladder cancer that's only in the lining of the bladder. It's described in [Intravesical Therapy for Bladder Cancer](#).

## Systemic chemotherapy

When chemo drugs are given in pill form or injected into a vein (IV) or muscle (IM), the drugs go into the bloodstream and travel throughout the body. This is called systemic chemotherapy. Systemic chemo can affect cancer cells anywhere in the body.

## When is chemotherapy used?

Systemic chemo can be used :

- Before surgery to try to shrink a tumor so that it's easier to remove and to help lower the chance the cancer will come back. Giving chemo before surgery is called **neoadjuvant therapy**.
- After [surgery](#) (or sometimes after [radiation therapy](#)). This is called **adjuvant therapy**. The goal of adjuvant therapy is to kill any cancer cells that may remain after other treatments. This can lower the chance that the cancer will come back later.
- In people getting radiation therapy, to help the radiation work better.
- As the main treatment for bladder cancers that have spread to distant parts of the body.

## Which chemo drugs are used to treat bladder cancer?

Chemo drugs may be used alone or in combination, depending on what they're being used for, a person's overall health, and other factors.

When chemo is given **with radiation**, the most common drugs used include:

- Cisplatin
- Cisplatin plus fluorouracil (5-FU)
- Mitomycin with 5-FU

When chemo is used **without radiation**, the most common combinations include:

- Gemcitabine and cisplatin
- Dose-dense methotrexate, vinblastine, doxorubicin (Adriamycin), and cisplatin (DDMVAC)
- Cisplatin, methotrexate, and vinblastine (CMV)
- Gemcitabine and paclitaxel

For some people, the side effects of getting more than one chemo drug might be too much to handle. For those people, treatment with a single drug, such as gemcitabine or cisplatin, may be an option. Other drugs sometimes used alone for bladder cancer include, docetaxel, paclitaxel, doxorubicin, methotrexate, ifosfamide, and pemetrexed.

Doctors give chemo in cycles, with each period of treatment followed by a rest period to allow the body time to recover. Each cycle typically lasts for a few weeks.

Most bladder cancers are transitional cell (urothelial) cancers, but there are other types as well, including squamous cell carcinoma, adenocarcinoma, and small cell carcinoma. These rare types of bladder cancer may be treated with drugs different from those listed above.

## Side effects of chemotherapy

Chemo drugs attack cells that are dividing quickly, which is why they work against cancer cells. But other cells in the body, such as those in the bone marrow (where new blood cells are made), the lining of the mouth and intestines, and the hair follicles, also divide quickly. These cells are also likely to be affected by chemo, which can lead to side effects.

The [side effects](#)<sup>1</sup> of chemo depend on the type and dose of drugs given and how long they are taken. When chemo and radiation are given at the same time, side effects tend to be worse. Common side effects of chemo include:

- Nausea and vomiting



- Loss of appetite
- Hair loss
- Mouth sores
- Diarrhea
- Constipation
- Increased risk of [infections](#)<sup>2</sup> (because of a shortage of white blood cells)
- Easy bleeding or bruising, even after minor cuts or injuries (due to a shortage of blood platelets)
- Fatigue (because of a shortage of red blood cells)

These side effects usually go away over time after treatment ends. There are often ways to lessen these side effects, some can even be prevented. For instance, drugs can be used to help prevent or reduce nausea and vomiting. Ask your health care team about the side effects your chemo drugs may cause and what can be done to prevent and/or treat them.

Some chemo drugs can cause other, less common side effects. For example, drugs like cisplatin, docetaxel, and paclitaxel can damage nerves. This can sometimes lead to symptoms (mainly in the hands and feet) such as pain, burning or tingling, sensitivity to cold or heat, or weakness. This is called [peripheral neuropathy](#)<sup>3</sup>.

Be sure to report any side effects to your medical team so that they can be treated right away. In some cases, the doses of the chemo drugs may need to be reduced or treatment may need to be delayed or stopped to keep side effects from getting worse.

To learn more, see the [Chemotherapy](#)<sup>4</sup> section of our website.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)
2. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/infections.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/infections.html)
3. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/peripheral-neuropathy.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/peripheral-neuropathy.html)
4. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html)

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See all references for Bladder Cancer ([www.cancer.org/cancer/bladder-cancer/references.html](http://www.cancer.org/cancer/bladder-cancer/references.html))

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## Radiation Therapy for Bladder Cancer

Radiation therapy uses high-energy radiation to kill cancer cells.

### When is radiation therapy used?

Radiation therapy can be used:

- As part of the treatment for some early-stage bladder cancers , after [surgery](#) that doesn't remove the whole bladder (such as TURBT)
- As the main treatment for people with earlier-stage cancers who can't have surgery or chemotherapy
- To try to avoid cystectomy (surgery to take out the bladder)
- As part of treatment for advanced bladder cancer (cancer that has spread beyond the bladder)
- To help prevent or treat symptoms caused by advanced bladder cancer

Radiation therapy is often given along with [chemotherapy](#) to help the radiation work

better. This is called **chemoradiation**.

## How is radiation therapy given?

The type of radiation most often used to treat bladder cancer is called **external beam radiation therapy**. It focuses radiation from a source outside of the body on the cancer.

Before your treatments start, your radiation team will take careful measurements to find the exact angles for aiming the radiation beams and the proper dose of radiation. This planning session, called **simulation**, usually includes getting imaging tests such as CT or MRI scans. This helps the doctor map where the tumor is in your body. You'll be asked to empty your bladder before simulation and before each treatment.

The treatment is a lot like getting an x-ray, but the radiation is stronger. Radiation doesn't hurt. Each treatment lasts only a few minutes, but the setup time – getting you into place for treatment – usually takes longer. Most often, radiation treatments are given 5 days a week for many weeks.

## Possible side effects of radiation therapy

[Side effects](#)<sup>1</sup> of radiation depend on the dose given and the area being treated. They tend to be worse when chemo is given along with radiation. They can include:

- Skin changes in areas getting radiation, ranging from redness to blistering and peeling
- Nausea and vomiting
- Bladder symptoms, like burning or pain when you urinate, feeling the need to go often, or blood in your urine
- Diarrhea
- Blood in stool and/or urine
- Tiredness (fatigue)
- Low blood counts, which can lead to fatigue, easy bruising or bleeding, or increased risk of infection

These effects usually go away over time after treatment, but some people can have longer-term problems. For instance:

- In some people radiation treatments can lead to **incontinence** (problems holding urine) later on.

- Radiation can damage the lining of the bladder. This is called **radiation cystitis** and can cause long-term problems such as blood in the urine or painful urination.
- Nearby nerves and blood vessels might be damaged, leading to erection problems in men.

If you have side effects from radiation therapy, talk to with your health care team. They can suggest ways to ease many of them.

To learn more, see the [Radiation Therapy<sup>2</sup>](#) section of our website.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)
2. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation.html)

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See all references for Bladder Cancer ([www.cancer.org/cancer/bladder-cancer/references.html](http://www.cancer.org/cancer/bladder-cancer/references.html))

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# Immunotherapy for Bladder Cancer

Immunotherapy is the use of medicines to help a person's own immune system recognize and destroy cancer cells. Immunotherapy is sometimes used to treat bladder cancer .

## Intravesical BCG

BCG is a type of bacteria related to the one that causes tuberculosis. While it doesn't usually cause a person to get sick, it can help trigger an immune response. BCG can be put right into the bladder as a liquid. This activates immune system cells in the bladder, which then attack bladder cancer cells.

For more details on this treatment, see the section on [intravesical therapy](#).

## Immune checkpoint inhibitors (for advanced cancers)

An important part of the immune system is its ability to keep itself from attacking normal cells in the body. To do this, it uses “checkpoints” – molecules on immune cells that need to be turned on (or off) to start an immune response. Cancer cells sometimes use these checkpoints to keep from being attacked by the immune system. But newer [drugs that target these checkpoints](#)<sup>1</sup> hold a lot of promise as cancer treatments. At this time, these drugs are used to treat bladder cancers that have spread to other parts of the body (stage IV).

**Atezolizumab (Tecentriq<sup>®</sup>)**, **durvalumab (Imfinzi<sup>®</sup>)**, and **avelumab (Bavencio<sup>®</sup>)** are drugs that target PD-L1, a protein on cells (including some cancer cells) that helps keep the immune system from attacking them. By blocking PD-L1, these drugs boost the immune system's response against the cancer cells. This can shrink some tumors or slow their growth.

**Nivolumab (Opdivo<sup>®</sup>)** and **pembrolizumab (Keytruda<sup>®</sup>)** target PD-1, another protein that normally helps keep the immune system in check. Blocking PD-1 can allow the immune system to attack the cancer cells.

Any of these drugs can be used in people with advanced bladder cancer that starts growing again after chemotherapy. Atezolizumab and pembrolizumab can also be used in people who can't get the chemo drug cisplatin (due to things like hearing loss, kidney failure, or CHF).

These drugs are given as intravenous (IV) infusions, usually every 2 or 3 weeks.

## Possible side effects

Common [side effects](#)<sup>2</sup> of these drugs include:

- Fatigue
- Nausea
- Loss of appetite
- Fever
- Urinary tract infections (UTIs)
- Rash
- Diarrhea
- Constipation

Less often, more serious side effects can occur. These drugs work by basically taking the brakes off the body's immune system. Sometimes the immune system starts attacking other parts of the body, which can cause serious or even life-threatening problems in the lungs, intestines, liver, hormone-making glands, or other organs.

It's very important to report any new side effects to your health care team right away. If serious side effects do occur, treatment may need to be stopped and you may get high doses of steroids to suppress your immune system.

See the [cancer immunotherapy](#)<sup>3</sup> section of our website.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/immunotherapy/immune-checkpoint-inhibitors.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/immunotherapy/immune-checkpoint-inhibitors.html)
2. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)
3. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/immunotherapy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/immunotherapy.html)

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## Targeted Therapy Drugs for Bladder Cancer

As researchers have learned more about the changes inside cells that cause cancer, they have developed newer drugs that target some of these changes. These targeted drugs work differently from other types of treatment, such as chemotherapy (chemo). They may work in some cases when other treatments don't. Targeted drugs also often have different types of side effects.

### FGFR inhibitor

Fibroblast growth factor receptors (FGFRs) are a group of proteins on bladder cancer cells that can help them grow. In some bladder cancers, the cells have changes in *FGFR* genes (which control how much of the FGFR proteins are made). Drugs that target cells with *FGFR* gene changes (called FGFR inhibitors) can help treat some people with bladder cancer.

## Erdafitinib (Balversa)

This FGFR inhibitor can be used to treat locally advanced or metastatic bladder cancer that has certain changes in the *FGFR2* or *FGFR3* gene, and that is still growing despite treatment with chemo. It is taken by mouth as tablets, once a day.

**Common side effects** include mouth sores, feeling tired, changes in kidney or liver function, diarrhea, dry mouth, changes in fingernails or toenails, changes in mineral levels in the blood (such as phosphate and sodium), loss of appetite, changes in how things taste, low red blood cell counts (anemia), dry skin, dry eyes, and hair loss. Other side effects can include hand-foot syndrome (redness, swelling, peeling or tenderness on the hands or feet), constipation, belly pain, nausea, and muscle pain.

This drug can also cause **eye problems**, which can sometimes be serious, so people taking this drug need to have regular eye exams and should tell their health care provider right away if they have blurred vision, loss of vision or other visual changes.

## More information about targeted therapy

To learn more about how targeted drugs are used to treat cancer, see [Targeted Cancer Therapy](#)<sup>1</sup>.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)<sup>2</sup>.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/targeted-therapy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/targeted-therapy.html)
2. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)

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# Treatment of Bladder Cancer, by Stage

Most of the time, treatment of bladder cancer is based on the tumor's [clinical stage](#)<sup>1</sup> when it's first diagnosed. Stage means how deep it's thought to have grown into the bladder wall and whether it has spread beyond the bladder. Other factors, such as the size of the tumor, how fast the cancer cells are growing (grade), and a person's overall health and preferences, also affect treatment options.

## Treating stage 0 bladder cancer

Stage 0 bladder cancer includes non-invasive papillary carcinoma (Ta) and flat non-invasive carcinoma (Tis or carcinoma in situ). In either case, the cancer is only in the inner lining layer of the bladder. It has not invaded (spread deeper into) the bladder wall.

This early stage of bladder cancer is most often treated with [transurethral resection](#) (TURBT) with fulguration followed by [intravesical therapy](#) within 24 hours.

### Stage 0a

Sometimes no further treatment is needed. [Cystoscopy](#)<sup>2</sup> is then done every 3 to 6 months to watch for signs that the cancer has come back.

For **low-grade** (slow-growing) non-invasive papillary (Ta) tumors, weekly intravesical chemotherapy may be started a few weeks after surgery. If the cancer comes back, the treatments can be repeated. Sometimes intravesical chemo is repeated over the next year to try to keep the cancer from coming back.

**High-grade** (fast-growing) non-invasive papillary (Ta) tumors are more likely to come back after treatment, so intravesical bacille Calmette-Guerin (BCG) is often used after surgery. Before it's given, TURBT is commonly repeated to be sure the cancer has not affected the muscle layer. BCG is usually started a few weeks after surgery and is given every week for several weeks. Intravesical BCG seems to be better than intravesical chemotherapy for high-grade cancers. It can help both keep these cancers from coming back and keep them from getting worse. But it also tends to have more [side effects](#)<sup>3</sup>. It, too, may be done for the next year or so.

Stage 0 bladder cancers rarely need to be treated with more extensive surgery. Partial or complete cystectomy (removal of the bladder) is considered only when there are many superficial cancers or when cancer continues to grow (or seems to be spreading) despite treatment.

## Stage 0is

For flat non-invasive (Tis) tumors, BCG is the treatment of choice after TURBT. Patients with these tumors often get 6 weekly treatments of intravesical BCG, starting a few weeks after TURBT. Some doctors recommend repeating BCG treatment every 3 to 6 months.

## Follow-up and outlook after treatment

After treatment for any stage 0 cancer, close follow-up is needed, with cystoscopy about every 3 months for a least a couple of years to look for signs of the cancer coming back or new bladder tumors.

The outlook for people with **stage 0a** (non-invasive papillary) bladder cancer is very good. These cancers can be cured with treatment. During long-term follow-up care, more superficial cancers are often found in the bladder or in other parts of the urinary system. Although these new cancers do need to be treated, they rarely are deeply invasive or life threatening.

The long-term outlook for **stage 0is** (flat non-invasive) bladder cancer is not as good as for stage 0a cancers. These cancers have a higher risk of coming back, and may return as a more serious cancer that's growing into deeper layers of the bladder or has spread to other tissues.

## Treating stage I bladder cancer

Stage I bladder cancers have grown into the connective tissue layer of the bladder wall (T1), but have not reached the muscle layer.

Transurethral resection (TURBT) with fulguration is usually the first treatment for these cancers. But it's done to help determine the extent of the cancer rather than to try to cure it. If no other treatment is given, many people will later get a new bladder cancer, which often will be more advanced. This is more likely to happen if the first cancer is high-grade (fast-growing).

Even if the cancer is found to be **low grade** (slow-growing), a second TURBT is often recommended several weeks later. If the doctor then feels that all of the cancer has been removed, [intravesical BCG](#) (preferred) or intravesical chemo is usually given. (Less often, close follow-up alone might be an option.) If all of the cancer wasn't removed, options are intravesical BCG or cystectomy (removal of part or all of the bladder).

If the cancer is **high grade**, if many tumors are present, or if the tumor is very large when it's first found, radical cystectomy may be recommended.

For people who aren't healthy enough for a cystectomy, [radiation therapy](#) (often along with [chemo](#)) might be an option, but the chances for cure are not as good.

## Treating stage II bladder cancer

These cancers have invaded the muscle layer of the bladder wall (T2a and T2b), but no farther. [Transurethral resection](#) (TURBT) is the first treatment for these cancers, but it's done to help determine the extent (stage) of the cancer rather than to try to cure it.

When the cancer has invaded the muscle, [radical cystectomy](#) (removal of the bladder) is the standard treatment. Lymph nodes near the bladder are often removed as well. If cancer is in only one part of the bladder, a [partial cystectomy](#) may be done instead. But this is possible in only a small number of patients.

Radical cystectomy may be the only treatment for people who are not well enough to get chemo. But most doctors prefer to give chemo before surgery because it's been shown to help patients live longer than surgery alone. When chemo is given first, surgery is delayed. This is not a problem if the chemo shrinks the bladder cancer, but it might be harmful if the tumor continues to grow during chemo.

If cancer is found in nearby lymph nodes, radiation may be needed after surgery. Another option is chemo, but only if it wasn't given before surgery.

Certain people may be able to have a second (and more extensive) transurethral resection (TURBT), followed by [radiation](#) and chemotherapy. While this lets patients keep their bladder, it's not clear if the outcomes are as good as they are after cystectomy, so not all doctors agree with this approach. If this treatment is used, frequent and careful follow-up exams are needed. Some experts recommend a repeat cystoscopy and biopsy be done during the chemo and radiation treatment. If cancer is still found in the biopsy sample, a cystectomy will likely be needed.

For patients who can't have surgery because of other serious health problems, TURBT, radiation, chemotherapy, or some combination of these may be options.

## Treating stage III bladder cancer

These cancers have reached the outside of the bladder (T3) and might have grown into nearby tissues or organs (T4) and/or lymph nodes (N1, N2, or N3). They have not

spread to distant parts of the body.

**Transurethral resection** (TURBT) is often done first to find out how far the cancer has grown into the bladder wall. Chemotherapy followed by **radical cystectomy** (removal of the bladder and nearby lymph nodes) is then the standard treatment. **Partial cystectomy** is rarely an option for stage III cancers.

**Chemotherapy** (chemo) before surgery (with or without radiation) can shrink the tumor, which may make surgery easier. Chemo can also kill any cancer cells that could already have spread to other areas of the body and help people live longer. It can be especially useful for T4 tumors, which have spread outside the bladder. When chemo is given first, surgery to remove the bladder is delayed. The delay is not a problem if the chemo shrinks the cancer, but it can be harmful if it continues to grow during chemo. Sometimes the chemo shrinks the tumor enough that intravesical therapy or chemo with radiation is possible instead of surgery.

Some patients get chemo after surgery to kill any cancer cells left after surgery that are too small to see. Chemo given after cystectomy may help patients stay cancer-free longer, but so far it's not clear if it helps them live longer. If cancer is found in nearby lymph nodes, radiation may be needed after surgery. Another option is chemo, but only if it wasn't given before surgery.

An option for some patients with single, small tumors (some T3) might be treatment with a second (and more extensive) transurethral resection (TURBT) followed by a combination of chemo and **radiation**. If cancer is still found when cystoscopy is repeated, cystectomy might be needed.

For patients who can't have surgery because of other serious health problems, treatment options might include TURBT, intravesical therapy, radiation, chemotherapy, **immunotherapy**, or some combination of these.

## Treating stage IV bladder cancer

These cancers have reached the abdominal or pelvic or abdominal wall (T4b), may have spread to nearby lymph nodes (any N), and/or have spread to distant parts of the body (M1). Stage IV cancers are very hard to get rid of completely.

**Chemotherapy** (with or without **radiation**) is usually the first treatment if the cancer has not spread to distant parts of the body (M0). The tumor is then rechecked. If it appears to be gone, chemo with or without radiation or cystectomy are options. If there are still signs of cancer in the bladder, chemo with or without radiation, changing to another kind

of chemo, adding an immunotherapy drug, or cystectomy may be recommended.

Chemo with or without radiation is the first treatment when bladder cancer has spread to distant parts of the body (M1). After this treatment the cancer is rechecked. If it looks like it's gone, a boost of radiation to the bladder may be given or cystectomy might be done. If there are still signs of cancer, chemo, radiation, both at the same time, and immunotherapy might be options.

In most cases [surgery](#) (even radical cystectomy) can't remove all of the cancer, so treatment is usually aimed at slowing the cancer's growth and spread to help people live longer and feel better. If surgery is a treatment option, it's important to understand the goal of the operation – is it to try to cure the cancer, help a person live longer, or help prevent or relieve symptoms from the cancer?

People who can't tolerate chemo because of other health problems might be treated with radiation therapy or with an immunotherapy drug. Urinary diversion without cystectomy is sometimes done to prevent or relieve a blockage of urine that could cause severe kidney damage.

Because treatment is unlikely to cure these cancers, many experts recommend taking part in a [clinical trial](#)<sup>4</sup>.

## Treating bladder cancer that progresses or recurs

If cancer continues to grow during treatment (progresses) or comes back after treatment (recurs), treatment options will depend on where and how much the cancer has spread, what treatments have already been used, and the patient's overall health and desire for more treatment. It's important to understand the goal of any further treatment – if it's to try to cure the cancer, to slow its growth, or to help relieve symptoms – as well as the likely benefits and risks.

For instance, non-invasive bladder cancer often comes back in the bladder. The new cancer may be found either in the same place as the original cancer or in other parts of the bladder. These tumors are often treated the same way as the first tumor. But if the cancer keeps coming back, a [cystectomy](#) (removal of the bladder) may be needed.

Cancers that recur in distant parts of the body can be harder to remove with surgery and other treatments, such as [chemotherapy](#), [immunotherapy](#), [targeted therapy](#), or [radiation therapy](#), might be needed. For more on dealing with a recurrence, see our section called [Understanding Recurrence](#)<sup>5</sup>.

At some point, it may become clear that standard treatments are no longer controlling the cancer. If the patient wants to continue getting treatment, taking part in a [clinical trial](#)<sup>6</sup> of newer bladder cancer treatments might be recommended. While these are not always the best option for every person, they can benefit current, as well as future patients.

*The treatment information in this document is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.*

## Hyperlinks

1. [www.cancer.org/cancer/bladder-cancer/detection-diagnosis-staging/staging.html](http://www.cancer.org/cancer/bladder-cancer/detection-diagnosis-staging/staging.html)
2. [www.cancer.org/treatment/understanding-your-diagnosis/tests/endoscopy/cystoscopy.html](http://www.cancer.org/treatment/understanding-your-diagnosis/tests/endoscopy/cystoscopy.html)
3. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)
4. [www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html](http://www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html)
5. [www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html](http://www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html)
6. [www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html](http://www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html)

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See all references for Bladder Cancer ([www.cancer.org/cancer/bladder-cancer/references.html](http://www.cancer.org/cancer/bladder-cancer/references.html))

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