

# 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](#)

## 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](#) 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](#)

- [Seeking a Second Opinion](#)

## Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the-art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they're not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials.

- [Clinical Trials](#)

## Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn't mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor's medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be harmful.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision.

- [Complementary and Integrative Medicine](#)

## Help getting through cancer treatment

People with cancer need support and information, no matter what part of their journey they may be on. 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 caring, trained cancer helpline specialists.

- [Palliative Care](#)
- [Programs & Services](#)

### **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 as 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](#)

*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 your cancer care team any questions you may have about your treatment options.*

# Bladder Cancer Surgery

- [Transurethral resection of bladder tumor \(TURBT\)](#)
- [Cystectomy](#)
- [Risks and side effects of cystectomy](#)
- [More information about 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 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 people 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>.

### **More information about Surgery**

For more general information about surgery as a treatment for cancer, see [Cancer Surgery](#)<sup>6</sup>.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)<sup>7</sup>.

### **Hyperlinks**

1. [www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/urostomy.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/urostomy.html)
2. [www.cancer.org/cancer/managing-cancer/treatment-](http://www.cancer.org/cancer/managing-cancer/treatment-)

- [types/surgery/ostomies/urostomy.html](#)
3. [www.cancer.org/cancer/managing-cancer/side-effects/fertility-and-sexual-side-effects/sexuality-for-men-with-cancer.html](http://www.cancer.org/cancer/managing-cancer/side-effects/fertility-and-sexual-side-effects/sexuality-for-men-with-cancer.html)
  4. [www.cancer.org/cancer/managing-cancer/side-effects/fertility-and-sexual-side-effects/sexuality-for-women-with-cancer.html](http://www.cancer.org/cancer/managing-cancer/side-effects/fertility-and-sexual-side-effects/sexuality-for-women-with-cancer.html)
  5. [www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/urostomy.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/urostomy.html)
  6. [www.cancer.org/cancer/managing-cancer/treatment-types/surgery.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/surgery.html)
  7. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)
  8. [www.cancer.org/cancer/types/bladder-cancer/references.html](http://www.cancer.org/cancer/types/bladder-cancer/references.html)

## References

American Society of Clinical Oncology. Bladder Cancer: Treatment Options. 10/2017. Accessed at [www.cancer.net/cancer-types/bladder-cancer/treatment-options](http://www.cancer.net/cancer-types/bladder-cancer/treatment-options) on January 16, 2019.

Cattaneo F, Motterle G, Zattoni F, Morlacco A, Dal Moro F. The Role of Lymph Node Dissection in the Treatment of Bladder Cancer. *Front Surg*. 2018;5:62.

Crabb SJ, Douglas J. The latest treatment options for bladder cancer. *Br Med Bull*. 2018 Oct 29.

Encyclopedia of Surgery. Cystectomy. Accessed at [www.surgeryencyclopedia.com/Ce-Fi/Cystectomy.html](http://www.surgeryencyclopedia.com/Ce-Fi/Cystectomy.html) on January 16, 2019

National Cancer Institute. Bladder Cancer Treatment (PDQ®)—Health Professional Version. November 16, 2018. Accessed at [www.cancer.gov/types/bladder/hp/bladder-treatment-pdq](http://www.cancer.gov/types/bladder/hp/bladder-treatment-pdq) on January 16, 2019.

National Cancer Institute. Bladder Cancer Treatment (PDQ®)—Patient Version. October 19, 2018. Accessed at [www.cancer.gov/types/bladder/patient/bladder-treatment-pdq](http://www.cancer.gov/types/bladder/patient/bladder-treatment-pdq) on January 16, 2019.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Bladder Cancer, Version 5.2018 -- July 3, 2018. Accessed at [www.nccn.org/professionals/physician\\_gls/pdf/bladder.pdf](http://www.nccn.org/professionals/physician_gls/pdf/bladder.pdf) on January 16, 2019.

[See all references for Bladder Cancer](#)

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# Intravesical Therapy for Bladder Cancer

- [When is intravesical therapy used?](#)
- [Types of intravesical therapy](#)

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 given through a tube (urinary catheter) that's been put into your bladder through your urethra.

## When is intravesical therapy used?

Intravesical therapy is used mainly for some early-stage bladder cancers that are still only in (or very close to) the inner lining of the bladder (where almost all bladder cancers start). Drugs given directly into the bladder affect the cells lining the inside of the bladder and 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, aren't treated by intravesical therapy. Drugs put into the bladder also can't reach any cancer cells in other parts of the body.

## To treat non-muscle invasive bladder cancer (NMIBC)

These early-stage cancers have not grown deep enough to reach the muscle layer of the bladder wall (nor have they spread to other parts of the body). They are:

- Only in the inner lining of the bladder (called carcinoma in situ (CIS) or stage 0 cancer), or
- Have grown only into the layer below the lining (stage I bladder cancer)

Most often, intravesical therapy is used after [transurethral resection of bladder tumor \(TURBT\)](#). A dose of intravesical chemotherapy (see below) is usually given within 24 hours of the procedure.

If further intravesical treatments (immunotherapy or chemotherapy) are needed, they're usually started a few weeks later. Treatment schedules vary, depending on the risk of the bladder cancer coming back after treatment, which treatment is used, how well the cancer responds to the treatment, and other factors. For some low-risk cancers, no further treatment might be needed. For higher-risk cancers, intravesical therapy might be given weekly (or less often) for up 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

These cancers have reached the muscle layer of the bladder wall. If a transurethral resection of bladder tumor (TURBT) is done as the initial surgery (which isn't often), a dose of intravesical chemotherapy is often given within 24 hours. But intravesical therapy isn't likely to be helpful for most stage II or higher bladder cancers because they have already spread beyond the inner lining of the bladder wall.

Sometimes if surgery can't be done for a stage II or III bladder cancer for some reason, [chemotherapy \(given into the blood\)](#) and [radiation therapy](#) might be the first treatments, after which intravesical immunotherapy might be used if the cancer has shrunk enough. More advanced bladder cancers are rarely treated with intravesical therapy.

## Types of intravesical therapy

There are 2 main types of intravesical therapy:

- Immunotherapy
- Chemotherapy

### Intravesical immunotherapy

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

#### ***Bacillus Calmette-Guerin (BCG)***

BCG is the most common intravesical immunotherapy for treating early-stage bladder cancer.

BCG is a germ that's related to the one that causes tuberculosis (TB), but it doesn't usually cause serious disease. When BCG is put into the bladder as a liquid through a catheter, it helps "turn on" the immune system cells there, which then attack the bladder cancer cells.

**Side effects of BCG:** Treatment with BCG can cause a wide range of symptoms. It's common to have flu-like symptoms, such as fever, aches, chills, and fatigue, which 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.

While getting BCG doesn't usually make people very sick, serious BCG infections are

more likely in people who have a weakened immune system, so this treatment typically isn't recommended for these people.

If a serious infection does happen, one sign of this can be a high fever that doesn't go away. 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.

### ***Nadofaragene firadenovec (Adstiladrin)***

This treatment is made up of a virus that contains the gene to make interferon alfa-2b, an important immune system protein. When the virus is put into the bladder as part of a liquid, it delivers the gene into the cells lining the bladder wall. The cells then start making extra interferon alfa-2b, which helps the body's immune system attack the cancer cells. Because this treatment involves adding a gene to some cells in the body, it can be thought of as a type of **gene therapy**.

Adstiladrin can be used to treat NMIBC that is at high risk of returning and that isn't being helped by treatment with BCG. It is typically given once every 3 months.

**Side effects of Adstiladrin:** Some people getting this treatment might have side effects such as feeling tired, having bladder spasms, feeling the need to urinate often, or having blood in the urine.

The virus used in this treatment doesn't usually cause disease in people with normally functioning immune systems – it's just a way to get the gene inside the cells. Still, this is a live virus that might cause more serious infections in people who have weakened immune systems. Because of this, this treatment typically isn't recommended for people with a weakened immune system.

### **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.

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** and **gemcitabine** are the drugs 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.

**Valrubicin** or other chemo drugs might also be options in some situations.

**Side effects of intravesical chemo:** 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 affect other parts of the body. This helps people avoid many of the side effects linked to chemo.

## Hyperlinks

1. [www.cancer.org/cancer/types/bladder-cancer/references.html](http://www.cancer.org/cancer/types/bladder-cancer/references.html)

## References

American Urological Association. Intravesical Administration of Therapeutic Medication. Jointly developed with the Society of Urologic Nurses and Associates (SUNA). Accessed at [www.auanet.org/guidelines/intravesical-administration-of-therapeutic-medication](http://www.auanet.org/guidelines/intravesical-administration-of-therapeutic-medication) on January 16, 2019.

de Jong JJ, Hendricksen K, Rosier M, Mostafid H, Boormans JL. Hyperthermic Intravesical Chemotherapy for BCG Unresponsive Non-Muscle Invasive Bladder Cancer Patients. *Bladder Cancer*. 2018;4(4):395-401.

Green DB, Kawashima A, Menias CO, et al. Complications of Intravesical BCG Immunotherapy for Bladder Cancer. *Radiographics*. 2019;39(1):80-94.

Manikandan R, Rodriguez O, Parada R, Palou Redorta J. Nonmuscle-invasive bladder cancer: what's changing and what has changed. *Urologia*. 2017;84(1):1-8.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Bladder Cancer, Version 5.2018 -- July 3, 2018. Accessed at

www.nccn.org/professionals/physician\_gls/pdf/bladder.pdf on January 16, 2019.

Peyton CC, Chipollini J, Azizi M, et al. Updates on the use of intravesical therapies for non-muscle invasive bladder cancer: how, when and what. *World J Urol*. 2018 Dec 7.

Porten SP, Leapman MS, Greene KL. Intravesical chemotherapy in non-muscle-invasive bladder cancer. *Indian J Urol*. 2015;31(4):297–303.

Werntz RP, Adamic B, Steinberg GD. Emerging therapies in the management of high-risk non-muscle invasive bladder cancer (HRNMIBC). *World J Urol*. 2018 Dec 4.

[See all references for Bladder Cancer](#)

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## Chemotherapy for Bladder Cancer

- [How is chemotherapy given?](#)
- [When is chemotherapy used?](#)
- [Which chemo drugs are used to treat bladder cancer?](#)
- [Side effects of chemotherapy](#)
- [More information about chemotherapy](#)

Chemotherapy (chemo) is the use of drugs to treat cancer.

### How is chemotherapy given?

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. 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 more advanced bladder cancers.

Doctors give systemic 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.

## 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 chemo drugs sometimes used to treat bladder cancer include, docetaxel, paclitaxel, doxorubicin, methotrexate, ifosfamide, and pemetrexed.

**Antibody-drug conjugates (ADCs):** These medicines are made up of a chemotherapy drug linked to a monoclonal antibody, which is a lab-made version of an immune system protein that's designed to attach to a specific target on cancer cells. Once inside the body, the antibody part of the ADC acts like a homing device, bringing the chemo directly to the cancer cells.

ADCs that can be used to treat bladder cancer include:

- Enfortumab vedotin (Padcev)
- Sacituzumab govitecan (Trodelvy)

For more on these drugs, see [Immunotherapy for Bladder Cancer](#).

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 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 (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**.

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.

## More information about chemotherapy

For more general information about how chemotherapy is used to treat cancer, see [Chemotherapy](#)<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/cancer/managing-cancer/treatment-types/chemotherapy.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/chemotherapy.html)

2. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)
3. [www.cancer.org/cancer/types/bladder-cancer/references.html](http://www.cancer.org/cancer/types/bladder-cancer/references.html)

## References

American Society of Clinical Oncology. Bladder Cancer: Treatment Options. 10/2017. Accessed at [www.cancer.net/cancer-types/bladder-cancer/treatment-options](http://www.cancer.net/cancer-types/bladder-cancer/treatment-options) on January 18, 2019.

Del Bene G, Calabrò F, Giannarelli D, et al. Neoadjuvant vs. Adjuvant Chemotherapy in Muscle Invasive Bladder Cancer (MIBC): Analysis From the RISC Database. *Front Oncol.* 2018;8:463.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Bladder Cancer, Version 5.2018 -- July 3, 2018. Accessed at [www.nccn.org/professionals/physician\\_gls/pdf/bladder.pdf](http://www.nccn.org/professionals/physician_gls/pdf/bladder.pdf) on January 18, 2019.

[See all references for Bladder Cancer](#)

Last Revised: April 4, 2023

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# Radiation Therapy for Bladder Cancer

- [When is radiation therapy used?](#)
- [How is radiation therapy given?](#)
- [Possible side effects of radiation therapy](#)
- [More information about radiation therapy](#)

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 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.

## More information about radiation therapy

To learn more about how radiation is used to treat cancer, see [Radiation 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/cancer/managing-cancer/treatment-types/radiation.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/radiation.html)
2. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)
3. [www.cancer.org/cancer/types/bladder-cancer/references.html](http://www.cancer.org/cancer/types/bladder-cancer/references.html)

## References

American Society of Clinical Oncology. Bladder Cancer: Treatment Options. 10/2017. Accessed at [www.cancer.net/cancer-types/bladder-cancer/treatment-options](http://www.cancer.net/cancer-types/bladder-cancer/treatment-options) on

January 18, 2019.

Crabb SJ, Douglas J. The latest treatment options for bladder cancer. *Br Med Bull*. 2018 Oct 29.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Bladder Cancer, Version 5.2018 -- July 3, 2018. Accessed at [www.nccn.org/professionals/physician\\_gls/pdf/bladder.pdf](http://www.nccn.org/professionals/physician_gls/pdf/bladder.pdf) on January 18, 2019.

[See all references for Bladder Cancer](#)

Last Revised: January 30, 2019

## Immunotherapy for Bladder Cancer

- [Intravesical immunotherapy](#)
- [Immune checkpoint inhibitors](#)
- [Antibody-drug conjugates](#)
- [More information about immunotherapy](#)

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

### Intravesical immunotherapy

These treatments are put directly into the bladder. They are used mainly for early-stage bladder cancers that haven't grown deeply into the wall of the bladder.

**Bacillus Calmette-Guerin (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 the bladder cancer cells.

**Nadofaragene firadenovec (Adstiladrin)** is made up of a virus that contains the gene to make interferon alfa-2b, an important immune system protein. When the virus is put into the bladder as part of a liquid, it delivers the gene into the cells lining the bladder wall. The cells then start making extra interferon alfa-2b, which helps the body's immune system attack the cancer cells.

For more details on these treatments, see [Intravesical Therapy for Bladder Cancer](#).

## Immune checkpoint inhibitors

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 “checkpoint” proteins 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, called **checkpoint inhibitors**, can help restore the immune response against cancer cells.

### PD-1 and PD-L1 inhibitors

**Avelumab (Bavencio)** targets PD-L1, a protein on cells (including some cancer cells) that helps keep the immune system from attacking them. By blocking PD-L1, this drug boosts the immune system's response against the cancer cells. This can shrink some tumors or slow their growth.

**Nivolumab (Opdivo)** and **pembrolizumab (Keytruda)** target PD-1, a protein on certain immune cells (called T cells) that normally helps keep these cells from attacking other cells in the body. Blocking PD-1 can allow the immune system to attack the cancer cells, which can shrink some tumors or slow their growth.

These drugs can be used in different situations to treat bladder cancer. For example:

- Any of these checkpoint inhibitors can be used in people with advanced bladder cancer that starts growing again after chemotherapy.
- Pembrolizumab can be used (either alone or with enfortumab vedotin - see below) to treat advanced bladder cancer.
- Avelumab can be used as an additional (maintenance) treatment in people with advanced bladder cancer that did not get worse during their initial chemotherapy treatments.
- Pembrolizumab can be used to treat certain bladder cancers that are not growing



into the muscle wall of the bladder, are not getting smaller with intravesical BCG, and are not being treated with a [cystectomy](#).

- Nivolumab might be offered to people with muscle-invasive bladder cancer (cancer that has invaded the muscle wall of the bladder) that has been removed with surgery but is at high risk of recurring (coming back). In this situation, it is given for one year.

These drugs are given as intravenous (IV) infusions, usually every 2 to 6 weeks, depending on the drug.

### Possible side effects

Side effects of these drugs can include:

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

Less often, more serious side effects can occur:

**Infusion reactions:** Some people might have an infusion reaction while getting one of these drugs. This is like an allergic reaction, and can include fever, chills, flushing of the face, rash, itchy skin, feeling dizzy, wheezing, and trouble breathing. It's important to tell your doctor or nurse right away if you have any of these symptoms while getting one of these drugs.

**Autoimmune reactions:** These drugs work by basically removing one of the safeguards on 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.

## Antibody-drug conjugates

Antibodies are proteins made by your immune system to help fight infections. Man-made versions, called **monoclonal antibodies**, can be designed to attach to a specific target, such as a protein on the surface of bladder cancer cells.

**Antibody-drug conjugates (ADCs)** are monoclonal antibodies that are linked to a chemo drug. Once inside the body, the antibody part of the ADC acts like a homing device, bringing the chemo directly to the cancer cells.

### Enfortumab vedotin (Padcev)

Bladder cancer cells usually have the Nectin-4 protein on their surface. Enfortumab vedotin is an anti-Nectin-4 antibody attached to a chemo drug. The antibody part brings the chemo drug to the bladder cancer cells with Nectin-4 on them. The chemo enters the cancer cells and kills them.

This drug can be used **along with the immunotherapy drug pembrolizumab** (see above) in people with advanced bladder cancer.

It can also be used **by itself** to treat people with advanced bladder cancer who:

- Have already been treated with a platinum chemo drug (such as cisplatin) and immunotherapy (specifically, a PD-1 or PD-L1 inhibitor), OR
- Can't be treated with cisplatin for some reason, and who have already had at least one type of drug treatment

Enfortumab vedotin is infused into a vein (IV), typically once a week for 2 or 3 weeks, followed by a week off.

**Common side effects** include fatigue, peripheral neuropathy (a type of nerve damage that can lead to numbness or tingling in the hands or feet), nausea, taste changes, decreased appetite, diarrhea, rash, hair loss, dry eyes or vision changes, dry skin, itching, and high blood sugar levels.

Less common but **more serious side effects** can include severe skin reactions, inflammation (swelling) in the lungs, and very high blood sugar levels.

### Sacituzumab govitecan (Trodelvy)

In this ADC, the monoclonal antibody part attaches to the Trop-2 protein on bladder cancer cells and brings the chemo directly to them. (Some bladder cancer cells have too much Trop-2, which helps them grow and spread.)

This ADC can be used in people with advanced bladder cancer who have already been treated with a platinum chemo drug (such as cisplatin) and immunotherapy (specifically, a PD-1 or PD-L1 inhibitor).

This drug is infused into a vein (IV) once a week for two weeks, followed by one week off, then restarted.

Some **common side effects** of this drug include nausea, vomiting, diarrhea, constipation, feeling tired, rash, loss of appetite, hair loss, low red blood cell counts, and belly pain.

**More serious side effects** can include very low white blood cell counts (with increased risk of infection) and severe diarrhea, as well as reactions when the drug is infused. Medications to lower the chances of an allergic reaction are normally given before treatment with this drug.

## More information about immunotherapy

To learn more about how drugs that work on the immune system are used to treat cancer, see [Cancer Immunotherapy<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/cancer/managing-cancer/treatment-types/immunotherapy.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy.html)
2. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)
3. [www.cancer.org/cancer/types/bladder-cancer/references.html](http://www.cancer.org/cancer/types/bladder-cancer/references.html)

## References

Ingersoll MA, Li X, Inman BA, et al. Immunology, Immunotherapy, and Translating Basic Science into the Clinic for Bladder Cancer. *Bladder Cancer*. 2018;4(4):429-440.

National Cancer Institute. Bladder Cancer Treatment (PDQ®)—Health Professional Version. November 16, 2018. Accessed at [www.cancer.gov/types/bladder/hp/bladder-treatment-pdq](http://www.cancer.gov/types/bladder/hp/bladder-treatment-pdq) on January 18, 2019.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Bladder Cancer, Version 5.2018 -- July 3, 2018. Accessed at [www.nccn.org/professionals/physician\\_gls/pdf/bladder.pdf](http://www.nccn.org/professionals/physician_gls/pdf/bladder.pdf) on January 18, 2019.

Petrylak DP, Balar AV, O'Donnell PH, McGregor BA, Heath EI, Yu EY, et al. EV-201: Results of enfortumab vedotin monotherapy for locally advanced or metastatic urothelial cancer previously treated with platinum and immune checkpoint inhibitors. *J Clin Oncol*. 2019; 37:18\_suppl, 4505-4505.

Tripathi A, Plimack ER. Immunotherapy for Urothelial Carcinoma: Current Evidence and Future Directions. *Curr Urol Rep*. 2018;19(12):109.

Werntz RP, Adamic B, Steinberg GD. Emerging therapies in the management of high-risk non-muscle invasive bladder cancer (HRNMIBC). *World J Urol*. 2018 Dec 4.

[See all references for Bladder Cancer](#)

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## Targeted Therapy Drugs for Bladder Cancer

- [FGFR inhibitor](#)
- [Antibody-drug conjugates](#)
- [More information about targeted therapy](#)

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.

## Antibody-drug conjugates

Antibody-drug conjugates (ADCs) might also be considered a form of targeted therapy. These medicines are made up of a chemo drug linked to a monoclonal antibody, which is a lab-made version of an immune system protein that's designed to attach to a specific target on cancer cells. Once inside the body, the antibody part of the ADC acts like a homing device, bringing the chemo directly to the cancer cells.

ADCs that can be used to treat bladder cancer include:

- **Enfortumab vedotin (Padcev)**
- **Sacituzumab govitecan (Trodelvy)**

For more on these drugs, see [Immunotherapy for Bladder Cancer](#).

## 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/cancer/managing-cancer/treatment-types/targeted-therapy.html](http://www.cancer.org/cancer/managing-cancer/treatment-types/targeted-therapy.html)
2. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)

## References

US Food and Drug Administration. FDA approves first targeted therapy for metastatic bladder cancer [Press Release]. Accessed at <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm635906.htm> on April 15, 2019.

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# Treatment of Bladder Cancer, by Stage

- [Treating stage 0 bladder cancer](#)
- [Treating stage I bladder cancer](#)
- [Treating stage II bladder cancer](#)
- [Treating stage III bladder cancer](#)
- [Treating stage IV bladder cancer](#)

- [Treating bladder cancer that progresses or recurs](#)

Most often, treatment of bladder cancer is based on the tumor's [clinical stage](#)<sup>1</sup> when it's first diagnosed. This includes 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 chemotherapy](#) 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 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, intravesical BCG is the treatment of choice after TURBT. Patients with these tumors often get 6 weekly treatments of 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 at 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 almost always 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 quite 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 typically 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.

For people who have had surgery, but the features of the tumor show it is at high risk of coming back, the [immunotherapy drug](#) nivolumab (Opdivo) might be offered. When given after surgery, nivolumab is given for up to one year.

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 people who have had surgery to remove the cancer, but the features of the tumor show it is at high risk of coming back, the [immunotherapy drug](#) nivolumab (Opdivo) might be offered. When given after surgery, nivolumab is given for up to one year.

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 pelvic or abdominal wall (T4b) and/or have spread to distant lymph nodes (M1a) or other parts of the body (M1b). Stage IV cancers are very hard to get rid of completely.

**If the cancer has not spread to distant parts of the body (M0):** It's very unlikely these cancers could be removed completely with surgery, so medicines are usually the first treatment. Treatment options might include:

- [Chemotherapy](#), which usually includes the drug cisplatin, if a person can tolerate it. If not, other chemo drugs might be used.
- Chemotherapy, followed by the [immunotherapy](#) drug avelumab (Bavencio)
- The immunotherapy drug pembrolizumab (Keytruda) plus the antibody-drug conjugate enfortumab vedotin (Padcev)
- Pembrolizumab alone
- Chemoradiation ([radiation therapy](#) plus a chemo drug to help it work better)

After a few cycles of treatment, the cancer is typically rechecked with [tests](#)<sup>4</sup> such as cystoscopy, TURBT, and imaging tests. Further treatment at this point might include chemotherapy and/or immunotherapy, chemoradiation, or [cystectomy](#) (removal of the bladder), if it can be done.

**If the cancer has spread to distant parts of the body (M1):** It's very unlikely these cancers could be removed completely with surgery, so medicines are usually the first treatment. Treatment options might include:

- [Chemotherapy](#), which usually includes the drug cisplatin, if a person can tolerate it. If not, other chemo drugs might be used.
- Chemotherapy, followed by the [immunotherapy](#) drug avelumab (Bavencio)
- The immunotherapy drug pembrolizumab (Keytruda) plus the antibody-drug conjugate enfortumab vedotin (Padcev)
- Pembrolizumab alone

After a few cycles of treatment, the cancer will probably be rechecked with [tests](#)<sup>5</sup> such as cystoscopy, TURBT, and imaging tests.

If there are no signs of cancer or if it has shrunk significantly, chemoradiation or cystectomy (removal of the bladder) might be an option in some cases. If surgery is a treatment option, it's important to understand the goal of the operation – whether it's to try to cure the cancer, to help a person live longer, or to help prevent or relieve symptoms from the cancer.

If the first treatment doesn't shrink the cancer or if it stops working (or if it does shrink the cancer and cystectomy isn't an option for some reason), further treatment with medicines (chemo and/or immunotherapy) might still be helpful. Another option might be a [targeted therapy drug](#). (See the next section for more on further treatment options.)

Because these cancers are hard to cure with current treatments, many experts recommend considering taking part in a [clinical trial](#)<sup>6</sup> that's testing a newer treatment. Talk to your doctor if this is something you think you might be interested in.

## 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-muscle 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. For some non-invasive tumors that keep growing even with BCG treatment, other options might include [immunotherapy](#) with pembrolizumab (Keytruda) or [intravesical immunotherapy](#) with nadofaragene firadenovec (Adstiladrin).

Cancers that recur in distant parts of the body can be harder to remove with surgery, so other treatments, such as [chemotherapy](#), [immunotherapy](#), [targeted therapy](#), or [radiation therapy](#), might be needed. For more on dealing with a recurrence, see [Understanding Recurrence](#)<sup>7</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>8</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.

## Hyperlinks

1. [www.cancer.org/cancer/types/bladder-cancer/detection-diagnosis-staging/staging.html](http://www.cancer.org/cancer/types/bladder-cancer/detection-diagnosis-staging/staging.html)
2. [www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/cystoscopy.html](http://www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/cystoscopy.html)
3. [www.cancer.org/cancer/managing-cancer/side-effects.html](http://www.cancer.org/cancer/managing-cancer/side-effects.html)
4. [www.cancer.org/cancer/types/bladder-cancer/detection-diagnosis-staging/how-diagnosed.html](http://www.cancer.org/cancer/types/bladder-cancer/detection-diagnosis-staging/how-diagnosed.html)
5. [www.cancer.org/cancer/types/bladder-cancer/detection-diagnosis-staging/how-diagnosed.html](http://www.cancer.org/cancer/types/bladder-cancer/detection-diagnosis-staging/how-diagnosed.html)
6. [www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html](http://www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html)
7. [www.cancer.org/cancer/survivorship/long-term-health-concerns/recurrence.html](http://www.cancer.org/cancer/survivorship/long-term-health-concerns/recurrence.html)
8. [www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html](http://www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html)

## References

American Society of Clinical Oncology. Bladder Cancer: Treatments by Stage. 10/2017. Accessed at [www.cancer.net/cancer-types/bladder-cancer/treatments-stage](http://www.cancer.net/cancer-types/bladder-cancer/treatments-stage) on January 25, 2019.

DeGeorge KC, Holt HR, Hodges SC. Bladder Cancer: Diagnosis and Treatment. *Am Fam Physician*. 2017;96(8):507-514.

National Cancer Institute. Bladder Cancer Treatment (PDQ®)—Health Professional Version. November 16, 2018. Accessed at [www.cancer.gov/types/bladder/hp/bladder-treatment-pdq](http://www.cancer.gov/types/bladder/hp/bladder-treatment-pdq) on January 25, 2019.

National Cancer Institute. Bladder Cancer Treatment (PDQ®)—Patient Version. October 19, 2018. Accessed at [www.cancer.gov/types/bladder/patient/bladder-treatment-pdq](http://www.cancer.gov/types/bladder/patient/bladder-treatment-pdq) on January 25, 2019.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Bladder Cancer, Version 5.2018 -- July 3, 2018. Accessed at [www.nccn.org/professionals/physician\\_gls/pdf/bladder.pdf](http://www.nccn.org/professionals/physician_gls/pdf/bladder.pdf) on January 25, 2019.

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