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About Bladder Cancer

Overview and Types

If you've been diagnosed with bladder cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start..

- [What Is Bladder Cancer?](#)

Research and Statistics

See the latest estimates for new cases of and deaths linked to bladder cancer in the US and what research is currently being done.

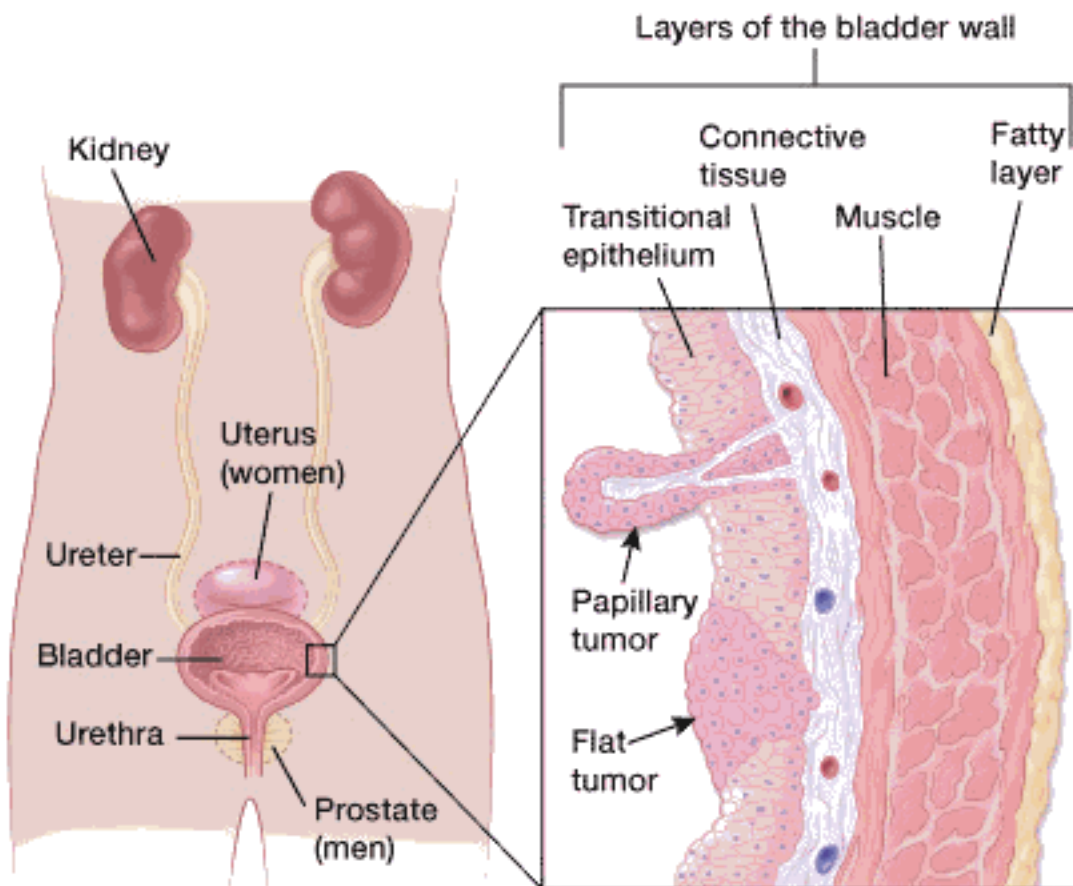
- [Key Statistics for Bladder Cancer](#)
 - [What's New in Bladder Cancer Research?](#)
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What Is Bladder Cancer?

Bladder cancer starts when cells that make up the urinary bladder start to grow out of control. As more cancer cells develop, they can form a tumor and, with time, spread to other parts of the body. (To learn more about how cancers start and spread, see [What Is Cancer?](#)¹)

The bladder is a hollow organ in the lower pelvis. It has flexible, muscular walls that can stretch to hold urine and squeeze to send it out of the body. The bladder's main job is to

store urine. Urine is liquid waste made by the 2 kidneys and then carried to the bladder through 2 tubes called **ureters**. When you urinate, the muscles in the bladder contract, and urine is forced out of the bladder through a tube called the **urethra**.



Types of bladder cancer

Urothelial carcinoma (transitional cell carcinoma)

Urothelial carcinoma, also known as transitional cell carcinoma (TCC), is by far the most common type of bladder cancer. In fact, if you have bladder cancer it's almost certain to be a urothelial carcinoma. These cancers start in the urothelial cells that line the inside of the bladder.

Urothelial cells also line other parts of the urinary tract, such as the part of the kidney that connects to the ureter (called the renal pelvis), the ureters, and the urethra. People with bladder cancer sometimes have tumors in these places, too, so all of the urinary

tract needs to be checked for tumors.

Other types of bladder cancer

Other types of cancer can start in the bladder, but these are all much less common than urothelial (transitional cell) cancer.

Squamous cell carcinoma

In the US, only about 1% to 2% of bladder cancers are squamous cell carcinomas. Seen with a microscope, the cells look much like the flat cells that are found on the surface of the skin. Nearly all squamous cell carcinomas of the bladder are invasive.

Adenocarcinoma

Only about 1% of bladder cancers are adenocarcinomas. These cancer cells have a lot in common with gland-forming cells of colon cancers. Nearly all adenocarcinomas of the bladder are invasive.

Small cell carcinoma

Less than 1% of bladder cancers are small-cell carcinomas. They start in nerve-like cells called neuroendocrine cells. These cancers often grow quickly and usually need to be treated with chemotherapy like that used for [small cell carcinoma of the lung](#).²

Sarcoma

Sarcomas start in the muscle cells of the bladder, but they are very rare. More information can be found in [Soft Tissue Sarcoma](#)³ and [Rhabdomyosarcoma](#).⁴

These less common types of bladder cancer (other than sarcoma) are treated a lot like TCCs, especially early-stage tumors, but if chemotherapy is needed, different drugs might be used.

Start and spread of bladder cancer

The wall of the bladder has many several layers. Each layer is made up of different kinds of cells (see [Bladder Cancer Stages](#)⁵ for details on the different layers).

Most bladder cancers start in the innermost lining of the bladder, which is called the

urothelium or transitional epithelium. As the cancer grows into or through the other layers in the bladder wall, it has a higher stage, becomes more advanced, and can be harder to treat.

Over time, the cancer might grow outside the bladder and into nearby structures. It might spread to nearby lymph nodes, or to other parts of the body. (When bladder cancer spreads, it tends to go to distant lymph nodes, the bones, the lungs, or the liver.)

Invasive vs. non-invasive bladder cancer

Bladder cancers are often described based on how far they have spread into the wall of the bladder:

- **Non-invasive** cancers are only in the inner layer of cells (the transitional epithelium). They have not grown into the deeper layers.
- **Invasive** cancers have grown into deeper layers of the bladder wall. These cancers are more likely to spread and are harder to treat.

A bladder cancer can also be described as **superficial or non-muscle invasive**. These terms include both non-invasive tumors as well as any invasive tumors that have not grown into the main muscle layer of the bladder.

Papillary vs. flat cancer

Bladder cancers are also divided into 2 subtypes, papillary and flat, based on how they grow (see the image above).

- **Papillary carcinomas** grow in slender, finger-like projections from the inner surface of the bladder toward the hollow center. Papillary tumors often grow toward the center of the bladder without growing into the deeper bladder layers. These tumors are called non-invasive papillary cancers. Very low-grade (slow growing), non-invasive papillary cancer is sometimes called papillary urothelial neoplasm of low-malignant potential (PUNLMP) and tends to have a very good outcome.
- **Flat carcinomas** do not grow toward the hollow part of the bladder at all. If a flat tumor is only in the inner layer of bladder cells, it's known as a non-invasive flat carcinoma or a flat carcinoma in situ (CIS).

If either a papillary or flat tumor grows into deeper layers of the bladder, it's called an invasive urothelial (or transitional cell) carcinoma.

Hyperlinks

1. www.cancer.org/cancer/cancer-basics/what-is-cancer.html
2. www.cancer.org/cancer/small-cell-lung-cancer.html
3. www.cancer.org/cancer/soft-tissue-sarcoma.html
4. www.cancer.org/cancer/rhabdomyosarcoma.html
5. www.cancer.org/cancer/bladder-cancer/detection-diagnosis-staging/staging.html

References

American Society of Clinical Oncology. Bladder Cancer: Introduction. 10/2017. Accessed at www.cancer.net/cancer-types/bladder-cancer/introduction on December 5, 2018.

National Cancer Institute. Bladder Cancer Treatment (PDQ®)—Patient Version. October 19, 2018. Accessed at www.cancer.gov/types/bladder/patient/bladder-treatment-pdq on December 5, 2018.

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

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Key Statistics for Bladder Cancer

How common is bladder cancer?

The American Cancer Society's estimates for bladder cancer in the United States for 2019 are:

- About 80,470 new cases of bladder cancer (about 61,700 in men and 18,770 in women)

- About 17,670 deaths from bladder cancer (about 12,870 in men and 4,800 in women)

The rates of new bladder cancers and deaths linked to bladder cancer and have been dropping slightly in women in recent years. In men, incidence rates have been decreasing, but death rates have been stable.

Bladder cancer is the fourth most common cancer in men, but it's less common in women.

Risk of bladder cancer

Bladder cancer occurs mainly in older people. About 9 out of 10 people with this cancer are over the age of 55. The average age at the time of diagnosis is 73.

Overall, the chance men will develop this cancer during their life is about 1 in 27. For women, the chance is about 1 in 89. (But each person's chances of getting bladder cancer can be affected by certain [risk factors](#)¹.)

Whites are more likely to be diagnosed with bladder cancer than African Americans or Hispanic Americans.

Extent of cancer at the time of diagnosis

About half of all bladder cancers are first found while the cancer is still found only in the inner layer of the bladder wall. (These are **non-invasive** or **in situ cancers**.) About 1 in 3 bladder cancers have spread into deeper layers but are still only in the bladder. In most of the remaining cases, the cancer has spread to nearby tissues or lymph nodes outside the bladder. Rarely (in about 4% of cases), it has spread to distant parts of the body. Black patients are slightly more likely to have more advanced disease when they're diagnosed, compared to whites.

Survival statistics are discussed in [Survival Rates for Bladder Cancer](#)².

Visit the American Cancer Society's [Cancer Statistics Center](#)³ for more key statistics.

Hyperlinks

1. www.cancer.org/cancer/bladder-cancer/causes-risks-prevention/risk-factors.html
2. www.cancer.org/cancer/bladder-cancer/detection-diagnosis-staging/survival-

[rates.html](#)

3. <https://cancerstatisticscenter.cancer.org/>

References

American Cancer Society. Cancer Facts & Figures 2019. Atlanta, Ga: American Cancer Society; 2019.

Howlader N, Noone AM, Krapcho M, Miller D, Bishop K, Kosary CL, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). SEER Cancer Statistics Review, 1975-2014, National Cancer Institute. Bethesda, MD, https://seer.cancer.gov/csr/1975_2014/, based on November 2016 SEER data submission, posted to the SEER web site, April 2017.

Cancer Stat Facts: Bladder Cancer, 2010-2014. National Cancer Institute, Bethesda, MD. <https://seer.cancer.gov/statfacts/html/lungb.html>. Accessed on January 5, 2018.

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

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What's New in Bladder Cancer Research?

Research on bladder cancer is taking place in many university hospitals, medical centers, and other institutions around the world. Each year, scientists find out more about what causes the disease, how to find it as soon as possible, and how to better treat it. Most experts agree that treatment in a clinical trial should be considered for any type or stage of bladder cancer. This way people can get the best treatment available now and may also get the new treatments that are thought to be even better. The new and promising treatments discussed here are only available in [clinical trials](#)¹.

Understanding genetic changes in bladder cancer

Scientists have learned a lot about the differences between normal cells and bladder cancer cells. They're also learning how these differences help cancer cells grow and spread to other parts of the body.

Researchers are now looking for tests that find genetic changes in bladder cancer cells to help predict a person's prognosis (outlook). These gene changes might also help doctor's choose the best treatment, or be useful in finding bladder cancers that come back (recur) after treatment.

Researchers also hope this knowledge can be used to develop new ways to treat bladder cancer, and maybe ways to test for it, too.

Urine tests to look for bladder cancer

Several newer tests look for substances in urine that might help show if a person has bladder cancer. These tests are mostly used to help diagnose bladder cancer or to look for cancer that has come back (cancer recurrence) in people who have already been treated. Researchers are now looking to see if these tests might be helpful even earlier, to screen for bladder cancer in people who don't have symptoms. (See [Can Bladder Cancer Be Found Early?²](#))

Bladder cancer treatment

Many new types of treatment are now being studied for bladder cancer.

Surgery

Some surgeons are using a newer way to do a cystectomy (taking out the bladder) in which they sit at a control panel in the operating room and use robotic arms to do the surgery. This approach, known as a **robotic cystectomy**, lets the surgeon operate through several small cuts (incisions) instead of one large one. This may shorten the time a person needs to be in the hospital and help patients recover faster after surgery.

This type of surgery is already used to treat other cancers, such as prostate cancer, but it's not yet clear if it's as good as, or maybe even better than, standard surgery for removing the bladder. This approach is being studied to see if this is the case.

Another key area of research is looking at how to best use other treatments along with surgery to save as much of the bladder as possible. Researchers are using different combinations of chemo, radiation, and immunotherapy to preserve the bladder.

Intravesical therapy

Researchers are looking at a number of new medicines to see if putting them into the bladder after surgery can help lower the risk of the cancer coming back. The hope is to find some that are better and/or safer than currently used drugs. New drugs are also needed to treat bladder cancer that doesn't respond to BCG therapy. There's a lot of research being done in this area.

Current studies are also looking at using different chemo drugs for intravesical therapy, as well as different ways to do the treatments. For instance, studies are looking at combinations of drugs to see if there's a better cancer cell response, as well as adding a gel to the drugs to keep the drugs in contact with the cancer cells for a longer time.

See [Intravesical Therapy for Bladder Cancer](#)³ for more on how drugs are put right into the bladder to treat this cancer.

Photodynamic therapy

Some researchers are trying to find out if photodynamic therapy (PDT) might be useful in treating early-stage bladder cancers. In PDT, a light-sensitive drug is injected into the blood. It collects in the cancer cells over a few days. Then a special type of laser light is focused on the inner lining of the bladder through a cystoscope. The light changes the drug in the cancer cells into a new chemical that can kill them.

An advantage of PDT is that it can kill cancer cells with very little harm to nearby normal cells. One drawback is that the chemical must be activated by light, so only cancers near the surface of the bladder lining can be treated in this way. The light can't reach cancers that have grown deeper into the bladder wall or have spread to other organs.

You can read more about this kind of treatment in [Photodynamic Therapy](#)⁴.

Targeted therapy

As researchers have learned more about the changes in bladder cells that cause them to become cancer, they've begun to look at drugs that target these changes. Targeted therapy drugs are already used to treat many other kinds of cancer. These drugs work differently from standard chemo drugs. They may work in some cases when chemo drugs don't, and they tend to have different (and often less severe) side effects.

Some of these drugs that are being studied for bladder cancer include rogaratinib, lapatinib (Tykerb[®]), and erlotinib (Tarceva[®]).

Other drugs target the blood vessels that allow tumors to grow. These are called **anti-angiogenesis drugs**. Examples include bevacizumab (Avastin[®]), sorafenib (Nexavar[®]), cabozantinib (Cometriq[®]), and pazopanib (Votrient[®]), which are already used for some other types of cancer. They are now being studied for use against bladder cancer, usually combined with chemotherapy.

Gene therapy

Gene therapy – adding or changing the actual genes inside cancer cells or other cells in the body – is a new treatment method being tested for bladder cancer. One approach to gene therapy uses special viruses that have been altered in the lab. The virus is put into the bladder and infects the bladder cancer cells. When this infection occurs, the virus injects a gene into the cells that can help immune system cells to attack the cancer. This and many other approaches to gene therapy are still in the early stages of development.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
2. www.cancer.org/cancer/bladder-cancer/detection-diagnosis-staging/detection.html
3. www.cancer.org/cancer/bladder-cancer/treating/intravesical-therapy.html
4. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/photodynamic-therapy.html

References

Chandrasekar T, Erlich A, Zlotta AR. Molecular Characterization of Bladder Cancer. *Curr Urol Rep*. 2018;19(12):107.

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

El-Achkar A, Souhami L, Kassouf W. Bladder Preservation Therapy: Review of Literature and Future Directions of Trimodal Therapy. *Curr Urol Rep*. 2018;19(12):108.

Giulietti M, Occhipinti G, Righetti A, et al. Emerging Biomarkers in Bladder Cancer Identified by Network Analysis of Transcriptomic Data. *Front Oncol*. 2018;8:450.

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.

Narayan VM, Adejoro O, Schwartz I, et al. The Prevalence and Impact of Urinary Marker Testing in Patients with Bladder Cancer. *J Urol*. 2018;199(1):74-80.

Nykopp TK, da Costa JB, Mannas M, Black PC. Current Clinical Trials in Non-muscle Invasive Bladder Cancer. *Curr Urol Rep*. 2018;19:101.

Sokolov I, Dokukin ME, Kalaparthi V, et al. Noninvasive diagnostic imaging using machine-learning analysis of nanoresolution images of cell surfaces: Detection of bladder cancer. *Proc Natl Acad Sci U S A*. 2018 Dec 3.

U.S. National Institutes of Health. U.S. National Library of Medicine. ClinicalTrials.gov. Accessed January 21, 2019.

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.

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