

UROLOGICAL CONDITIONS

BLADDER CONDITIONS

URINARY TRACT INFECTIONS

UTIs are common infections that happen when bacteria, often from the skin or rectum, enter the urethra, and infect the urinary tract. The infections can affect several parts of the urinary tract, but the most common type is a bladder infection (cystitis). Kidney infection (pyelonephritis) is another type of UTI. In men, UTI usually presents as prostate infection or prostatitis.

Prostatitis is inflammation (swelling) of the prostate gland. It can be very painful and distressing, but will often get better eventually. The prostate is a small gland that lies between the penis and bladder. It produces fluid that's mixed with sperm to create semen. Prostatitis can come on at any age.

What are the signs of a urinary tract infection?

A UTI causes inflammation in the lining of your urinary tract. The inflammation may cause the following problems:

- Pain in your flank, abdomen, pelvic area or lower back.
- Pressure in the lower part of your pelvis.
- Cloudy, offensive smelling urine.
- Urinary incontinence.
- Frequent urination.
- Urge incontinence.
- Pain when you urinate
- Blood in your urine.

KIDNEY INFECTION

The mainstay of treatment of acute pyelonephritis is antibiotics, analgesics, and antipyretics. Nonsteroidal anti-inflammatory drugs (NSAIDs) work well to treat both pain and fever associated with acute pyelonephritis. In severe cases hospitalisation might be required.

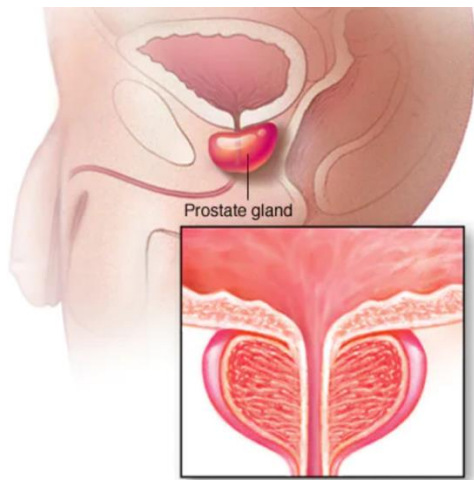
BLADDER INFECTION

Antibiotics usually are the first treatment for urinary tract infections. Your health and the type of bacteria found in your urine determine which medicine is used and how long you need to take it.

PROSTATE INFECTION

If you have acute or chronic bacterial prostatitis, you'll take antibiotics. Acute disease may require intravenous (IV) antibiotics in the hospital for a short period. The entire course of antibiotic treatment is usually 4 weeks — or longer in some cases.

If the prostate is enlarged, medication to allow easier voiding (Uromax) will facilitate the cure rate.



PELVIC PAIN SYNDROME

This condition consists of any type of pelvic pain that has lasted 6 months or longer. It's not to be confused with a bladder infection. The pain usually gets worse with a full bladder and presents with frequency and urgency. Often, there is a lack of an apparent physical cause sufficient to explain the pain. One of the causes of pelvic pain syndrome is interstitial cystitis, which is a non-bacterial inflammatory condition of the bladder. Treatment of this condition includes examination under anesthesia, with hydro-distention of the bladder, followed by a combination of pharmaceutical agents to alleviate the pain fibers of the bladder.

URINARY INCONTINENCE

Urinary incontinence means a person leaks urine by accident. While it can happen to anyone, urinary incontinence, also known as overactive bladder, is more common in older people, especially women. Bladder control issues can be embarrassing and cause people to avoid their normal activities.

There are six main types of urinary incontinence:

1. Stress incontinence. This is when urine leaks because you put pressure on your bladder by laughing, sneezing, exercising, lifting something heavy, etc.
2. Urge incontinence.
3. Overflow incontinence.
4. Functional incontinence.
5. Mixed incontinence.
6. Bedwetting.
7. Stress incontinence and Urge incontinence are the two most common types of urinary incontinence.

Stress incontinence happens when physical movement or activity — such as coughing, laughing, sneezing, running or heavy lifting — puts pressure (stress) on your bladder, causing you to leak urine. Stress incontinence is not related to psychological stress.

Urge incontinence is a type of urinary incontinence that causes an urgent, uncontrollable need to urinate several times during the day and night. You may leak urine before you get to the bathroom. An overactive bladder causes urge incontinence

Treatment

- Stress incontinence

Surgery is performed to restore the normal position of the bladder neck and urethra. There are two main types of operations for

incontinence: bladder neck suspension procedures and injecting bulking agents or "filler" procedures. Within the medical community, the comparative effectiveness of these procedures is still being debated but if done well can be up to 95% effective. If you are considering surgery, it is important that the decision be based on your individual circumstances, the amount of leakage and the exertion effort that cause the leakage.

- Urge incontinence

The best treatment for urge incontinence is behavior therapy in the form of pelvic floor muscle exercises. Medications, used as an adjunct to behavior therapy, can provide additional benefit.

Anticholinergic drugs form their mainstay of the pharmacological therapy.

These medications can calm an overactive bladder and may be helpful for urge incontinence. Examples include oxybutynin (Ditropan XL), tolterodine (Detrol), darifenacin (Enablex), fesoterodine (Toviaz), solifenacin (Vesicare) and trospium chloride.

RENAL STONES

Kidney stones (also called renal calculi, nephrolithiasis or urolithiasis) are hard deposits made of minerals and salts that form inside your kidneys. Diet, excess body weight, some medical conditions, and certain supplements and medications are among the many causes of kidney stones



What causes renal stones?

Possible causes include drinking too little water, exercise (too much or too little), obesity, weight loss surgery, or eating food with too much salt or sugar. Infections and family history might be important in some people. Eating too much fructose correlates with increasing risk of developing a kidney stone.

Symptoms of kidney stones

- sharp pains in your back, side, lower abdomen, or groin.
- pink, red, or brown blood in your urine, also called hematuria.
- a constant need to urinate.
- pain while urinating.
- inability to urinate or can only urinate a small amount.
- cloudy or bad-smelling urine.

Treatment for Kidney Stones

Health care professionals usually treat kidney stones based on their size, location, and what type they are.

Small kidney stones may pass through your urinary tract without treatment. If you're able to pass a kidney stone, a health care professional may ask you to catch the kidney stone in a special container. A health care professional will send the kidney stone to a lab to find out what type it is. A health care professional may advise you to drink plenty of liquids if you are able to help move a kidney stone along. The health care professional also may prescribe pain medicine.

Larger kidney stones or kidney stones that block your urinary tract or cause great pain may need urgent treatment. If you are vomiting and dehydrated, you may need to go to the hospital and get fluids through an IV.

Kidney stone removal

A urologist can remove the kidney stone or break it into small pieces with the following treatments:

Shock wave lithotripsy. The doctor can use shock wave lithotripsy to blast the kidney stone into small pieces. The smaller pieces of the kidney stone then pass through your urinary tract. A doctor can give you anesthesia during this outpatient procedure.

Laser treatment. During cystoscopy, the doctor uses a cystoscope to look inside the urethra and bladder to find a stone in your urethra or kidney. During ureteroscopy, the doctor uses a ureteroscope, which is longer and thinner than a cystoscope, to see detailed images of the lining of the ureters and kidneys. The doctor inserts the cystoscope or ureteroscope through the urethra to see the rest of the urinary tract. Once the stone is found, it can be removed or laser it into smaller pieces. The doctor performs these procedures in the hospital with anesthesia. You can typically go home the same day.

Percutaneous nephrolithotomy. The doctor uses a thin viewing tool, called a nephroscope, to locate and remove the kidney stone. The doctor inserts the tool directly into your kidney through a small cut made in your back. For larger kidney stones, the doctor also may use a laser to break the kidney stones into smaller pieces.

After these procedures, sometimes the urologist may leave a thin flexible tube, called a ureteral stent, in your urinary tract to help urine flow or a stone to pass. Once the kidney stone is removed, your doctor sends the kidney stone or its pieces to a lab to find out what type it is.

The health care professional also may ask you to collect your urine for 24 hours after the kidney stone has passed or been removed. The health care professional can then measure how much urine you produce in a day, along with mineral levels in your urine. You are more likely to form stones if you don't make enough urine each day or have a problem with high mineral levels.

Prevention of kidney stones

To help prevent future kidney stones, you also need to know what caused your previous kidney stones. Once you know what type of kidney stone you had, a health care professional can help you to make changes in your diet and liquid intake to prevent further stone episodes.

Drinking liquids

In most cases, drinking enough liquids each day is the best way to help prevent most types of kidney stones. Drinking enough liquids keeps your urine diluted and helps flush away minerals that might form stones.

Though water is best, other liquids such as citrus drinks may also help prevent kidney stones. Some studies show that citrus drinks, such as lemonade and orange juice, protect against kidney stones because they contain citrate, which stops crystals from turning into stones.

Unless you have kidney failure, you should drink six to eight glasses a day. If you previously had cystine stones, you may need to drink even more.

The amount of liquid you need to drink depends on the weather and your activity level. If you live, work, or exercise in hot weather, you may need more liquid to replace the fluid you lose through sweat.

Medicines

If you have had a kidney stone, a health care professional also may prescribe medicines to prevent future kidney stones. Depending on the type of kidney stone you had and what type of medicine the health care professional prescribes, you may have to take the medicine for a few weeks, several months, or longer.

For example, if you had infective stones, you may have to take an oral antibiotic for 1 to 6 weeks, or possibly longer.

If you had another type of stone, you may have to take a potassium citrate tablet 1 to 3 times daily. You may have to take potassium citrate for months or even longer until a health care professional says you are no longer at risk for kidney stones.

ADRENAL GLAND CONDITIONS

- **Adrenal mass**

These glands are paired organs that lie adjacent to the upper part of each kidney. They are important because they produce a number of important hormones for body function. These include cortisol, and adrenalin. It is very possible for an adrenal gland to develop a

mass/tumor in its substance. These masses can be divided into cancerous and non-cancerous conditions. These can be further divided into hormone producing masses or hormone non-producing masses. If the mass produces an excess of hormones, it can lead to systemic diseases. In general, masses that is increasing in size, larger than 4cm or hormone producing masses, must be surgically removed.

- **Pheochromocytoma**

This is a very serious mass growing in the adrenal gland that produces an excessive amount of adrenalin. The main symptom is high, uncontrollable blood pressure. The only treatment would be surgical removal of the adrenal gland. Due to the dangers of this condition, it is recommended that it is referred to an experienced laparoscopic urologist/surgeon. This is to prevent complications during the operation. The internationally preferred operation would be laparoscopy or key hole surgery. Patient usually goes home 2 days after the procedure.



The adrenal gland is demonstrated in this diagram to be on top of both kidneys.

PROSTATE CONDITIONS

Benign prostatic hyperplasia—also called BPH—is a condition in men in which the prostate gland is enlarged and not cancerous. Benign prostatic hyperplasia is also called benign prostatic hypertrophy or benign prostatic obstruction. The

prostate goes through two main growth periods as a man ages. The actual cause of prostate enlargement is unknown. Factors linked to aging and changes in the cells of the testicles may have a role in the growth of the gland, as well as testosterone levels. Men who have had their testicles removed at a young age (for example, as a result of testicular cancer) do not develop BPH.

Common symptoms of BPH include:

- Frequent or urgent need to urinate.
- Urinating more often at night.
- Trouble starting to urinate
- Weak urine stream, or a stream that stops and starts.
- Dribbling at the end of urination.
- Not being able to fully empty the bladder.

Treatment of BPH

Pharmacological methods

Medicines — The types of medicine used to treat BPH include alpha blockers, phosphodiesterase inhibitors, and alpha-reductase inhibitors. Men who also have erectile dysfunction may consider a phosphodiesterase inhibitor over the other options.

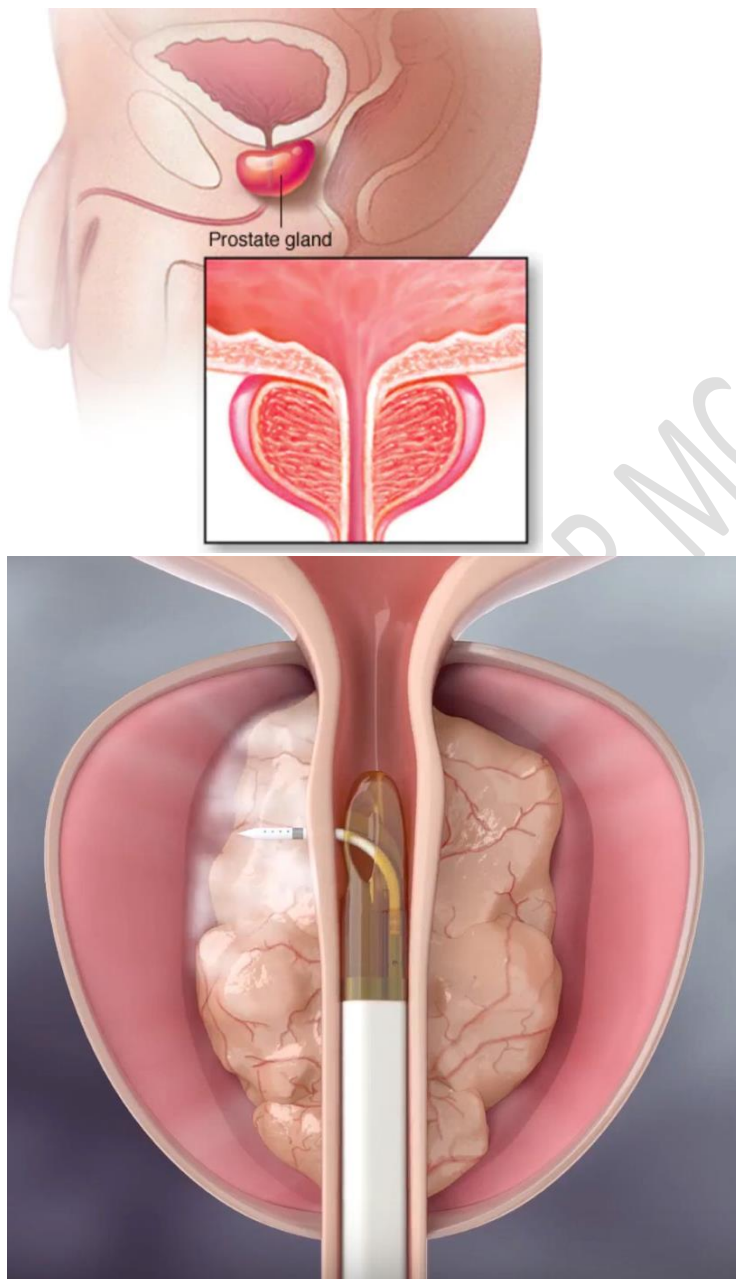
Alpha blockers relaxes the smooth muscle of the prostate to reduce the pressure gradient across the prostate during voiding which allows the person to empty the bladder better.

Surgery

The prostate can be treated with the following treatment options depending on the size of the prostate, age, availability of equipment and training of the urologist in the latest technology.

- Bipolar transurethral resection of the prostate - TURP
- Transurethral vaporization of the prostate.
- Transurethral incision of the prostate.
- Laser enucleation of the prostate.
- Resume treatment of the prostate

The Rezume device is inserted, a needle is deployed, and vapor is injected into the prostate for nine seconds. This vapor disperses between cells, then cools, releases heat, and gently disrupts the prostate's cells. Because of the initial swelling, a catheter is then inserted, which will remain for two to five days. The benefit of the Rezume treatment is that their patient goes home on the same day as the procedure. The procedure takes only 10 - 15 min and is very safe and effective.



Demonstration of the Rezume treatment of an enlarged prostate.

The treatment take only 15 minutes and patient goes home same day.

VAGINA & BLADDER PROLAPSE

Pelvic organ prolapse is when 1 or more of the organs in the pelvis slip down from their normal position and bulge into the vagina.

Types of prolapse

- the bladder bulging into the front wall of the vagina - cystocele (anterior prolapse)
- the womb bulging or hanging down into the vagina (uterine prolapse)
- the top of the vagina sagging down – this happens to some women after they have had surgery to remove their womb.
- the rectal wall bulging into the vagina - rectocele (posterior compartment)

Pelvic organ prolapse symptoms include:

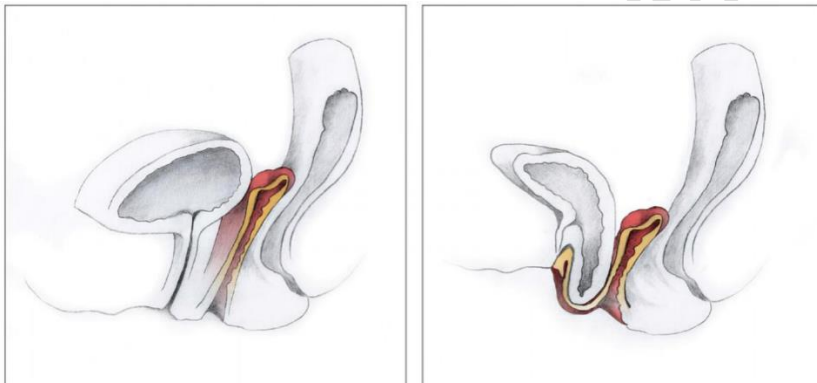
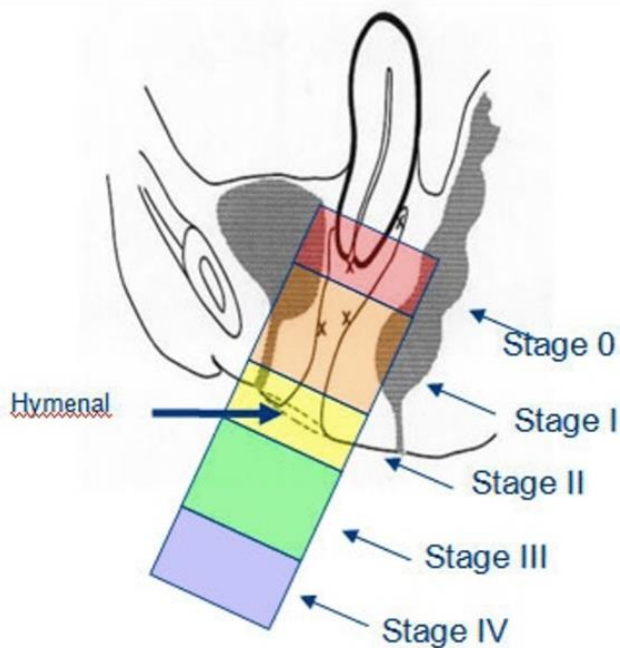
- a feeling of heaviness around your lower tummy and genitals.
- a dragging discomfort inside your vagina.
- feeling like there's something coming down into your vagina – it may feel like sitting on a small ball.
- feeling or seeing a bulge or lump in or coming out of your vagina.

What is the cause of pelvic organ prolapse

Pelvic organ prolapse happens when the muscles or connective tissues of the pelvis do not work as they should. The most common risk factors are: Vaginal childbirth, which can stretch and strain the pelvic floor. Multiple vaginal childbirths raise your risk for pelvic organ prolapse later in life and hysterectomy.

Degrees of uterine prolapse

- Stage I – the uterus/bladder is in the upper half of the vagina.
- Stage II – the uterus/bladder has descended nearly to the opening of the vagina.
- Stage III – the uterus/bladder protrudes out of the vagina.
- Stage IV – the uterus/bladder is completely out of the vagina.



Treatment of pelvic organ prolapse

At what stage does pelvic organ prolapse need surgery?

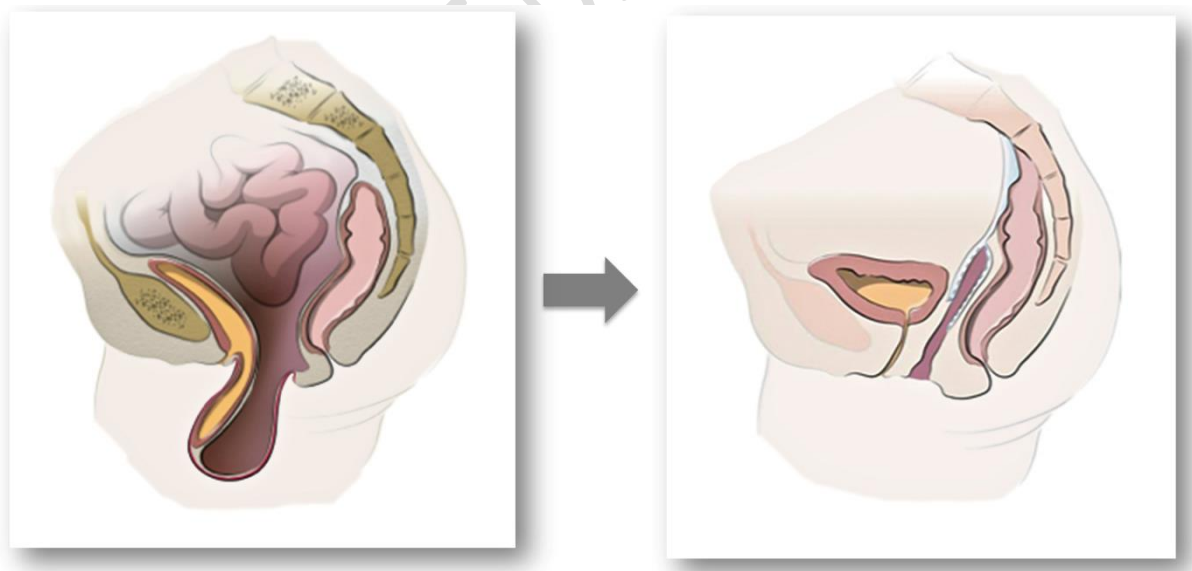
Surgery is usually done only when the prolapse is affecting your daily life and your doctor thinks surgery will help. Consider surgery if the prolapse causes pain, if you have problems with your bladder and constipation.

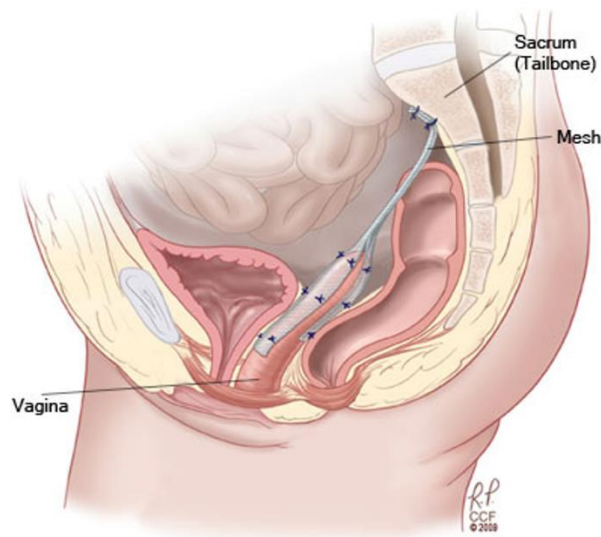
Surgical treatment of pelvic organ surgery:

For more than 50 years, the gold standard of POP surgery has always been sacrocolpopexy. Today, open surgery has been replaced by laparoscopic or keyhole surgery where the sacrocolpopexy procedure is done through only three 10mm incisions.

Sacrocolpopexy (sacral colpopexy) is a surgical technique for repairing pelvic organ prolapse. Reconstruction is achieved with a laparoscopic abdominal technique or with the use of robotic minimally invasive techniques. The specific treatment approach is chosen in accordance with the type and degree of pelvic organ prolapse, as well as the severity of symptoms.

The procedure are done through 3 laparoscopic ports into the abdomen. First, the bladder and rectum must be separated from the vagina to create a space to place the mesh. Next, the surgeon places surgical mesh at the top and bottom walls of your vagina. Finally, they attach it to a ligament covering your sacrum. Because your sacrum is higher than your vagina, the mesh acts as a lift. The mesh supports the bladder and acts like a scaffold for the bladder to rest on.





The aim of the sacrocolpopexy procedure is to lift the vagina in its normal anatomical position and then fix the anterior and posterior wall to the anterior ligament of the promontory

If a patient still has a uterus, it is recommended that a hysterectomy is done at the same time for better mesh placement.

The use of mesh in the abdomen is completely safe and should not be confused by mesh placed through the vagina. The vaginal mesh placement fell out of favour due to high complication rate.

How long does it take to recover from sacrocolpopexy?

Most women feel better within the first week following surgery; however, do not lift, push or pull any heavy objects until after 6 weeks after operation. Full recovery takes six weeks to allow for internal healing, but mild activity can be started as soon as you leave the hospital. Hospitalization is only for 48hrs.

OBSTRUCTIVE KIDNEY DISORDERS

Ureteropelvic junction obstruction is a condition where blockage occurs at the junction where the ureter attaches to the kidney. This results in decreased flow of urine down the ureter and an increase of fluid pressure inside the kidney.

If untreated, UPJ obstruction can lead to permanent loss of kidney function (kidney failure). Kidney stones or infection may occur in the affected kidney, even after treatment.

UPJ Obstruction - Causes, Symptoms & Diagnosis

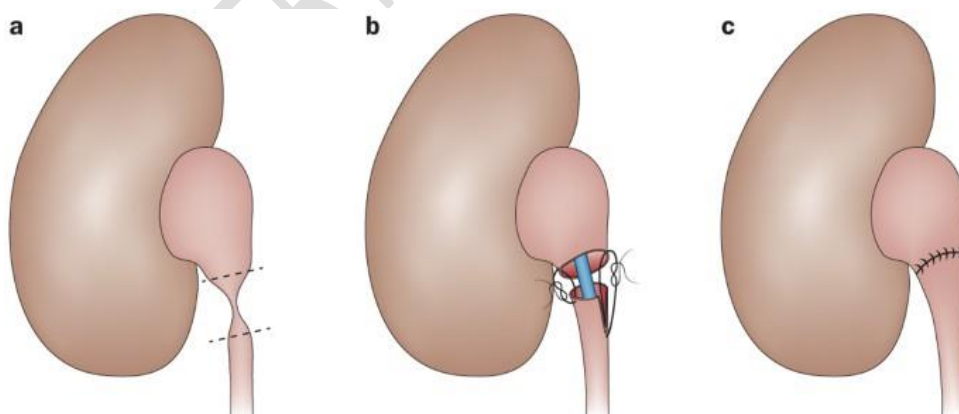
UPJ obstruction is often diagnosed during prenatal ultrasound, when the enlarged kidney is seen. For those that occur later or are not detected at birth, symptoms suggesting UPJ obstruction include hematuria (blood in the urine), urinary tract infection, kidney infection, kidney stones, and abdominal discomfort.

While the most common type results from a narrowing of the ureter as it forms in fetal development (usually because of an abnormality in the development of the muscle surrounding the UPJ), UPJ obstruction can also occur later in life and can be caused by other factors, including compression of the ureter by inflammation, kidney stones, scar tissue, abnormal blood vessels, or a tumor. Diagnostic tests help to determine the degree of UPJ obstruction and whether surgery is necessary.

Treatment for Ureteropelvic Junction Obstruction

When the obstruction is mild, it is usually left to correct itself. Antibiotics may be used to prevent infection, and the patient is monitored every 3–6 months with a renal ultrasound.

Because of the potential for kidney damage, more severe cases tend to require pyeloplasty, a surgical procedure that removes the blockage and reconnects the ureter and the renal pelvis. The success rate is higher than 95 percent, and the procedure can often be done laparoscopically. The patient continues to be followed even after successful repair to ensure proper kidney function.



KIDNEY CANCER

Overview

Kidney cancer is a disease that starts in the kidneys. It happens when healthy cells in one or both kidneys grow out of control and form a lump (called a tumor).

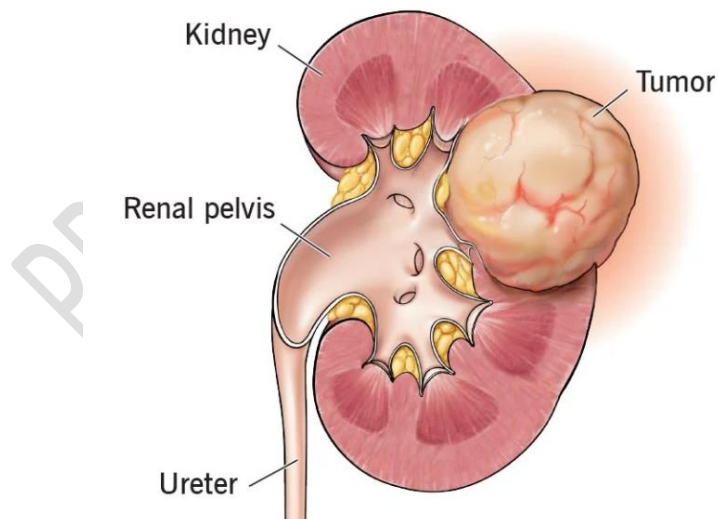
Kidney masses are common and are incidentally identified with radiological imaging (CT scan) to evaluate other disease processes. These masses can be cancerous, cystic mass (harmless fluid filled cyst), or non-cancerous solid lesions in the kidney.

Signs and symptoms

In the early stages, most people don't have signs or symptoms. Kidney cancer is usually found by chance during an abdominal imaging test for other complaints. As the tumor grows, you may have:

- Blood in the urine
- Pain in the lower back
- A lump in the lower back or side of the waist
- Unexplained weight loss, night sweats, fever, or fatigue

Kidney Cancer

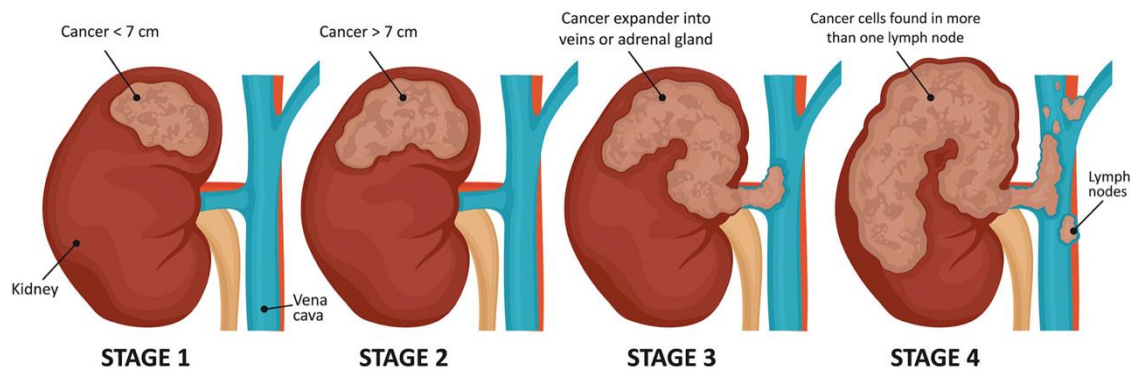


Causes

- The reason why kidney cells change and become cancerous is not yet known
- We know that people are more likely to develop kidney cancer as they age. However, there are certain genetic risk factors linked to the kidney cancer.

Stages

Once kidney cancer is found, your doctor will run tests to find out if the cancer has spread within the kidney or to other parts of the body. This process is called staging. It is important to know the stage before making a treatment plan. The higher the stage, the more serious the cancer.



Surgery

Surgery is most common treatment for kidney cancer or kidney cysts — most people with early stage cancer (stages 1, 2, and 3) can be cured with surgery. Most commonly, renal cyst will be harmless, but can cause significant pain if it is larger than 5cm. In such cases, laparoscopic or key-hole surgery excision of the renal cyst is the preferred treatment option.

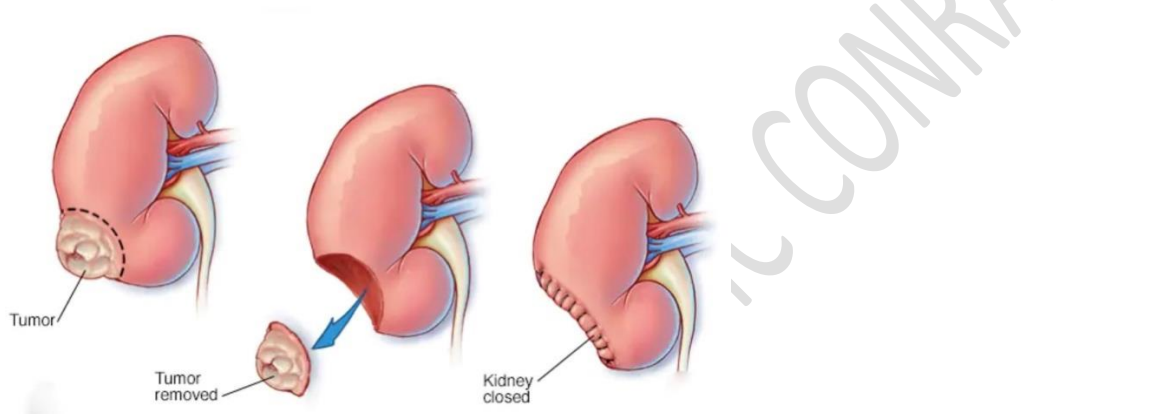
Over 90% of solid renal masses, are cancerous in nature. The benefit of diagnosing the mass while it is still small, is that only the renal mass can be excised, not the whole kidney. This strategy is to preserve kidney function. This operation is best performed laparoscopically or robotically at specialised hospitals that has significant experience in this treatment. The benefit of removing only the mass, as suppose to the whole kidney, is

that the patient will not require dialysis. Minimally invasive surgery for the kidney is usually very successful in clearing all the cancer with the benefit that the patient won't require radio- or chemotherapy.

Surgical options in kidney cancer operations

Partial nephrectomy

In a partial nephrectomy, the tumor or the part of the kidney with the tumor is removed to leave behind as much of the kidney as possible



Radical nephrectomy

In a radical nephrectomy, the entire kidney is removed. If needed, the surrounding tissues and lymph nodes may also be removed.

Surgical approaches

Ask your doctor about the surgical approach that is best for you:

- **Open** (traditional surgery with a long incision)
- **Laparoscopic** (surgery done with a video camera and thin instruments for smaller incisions)
- **Robotic** (laparoscopic surgery done with the help of a robot)

BLADDER CANCER

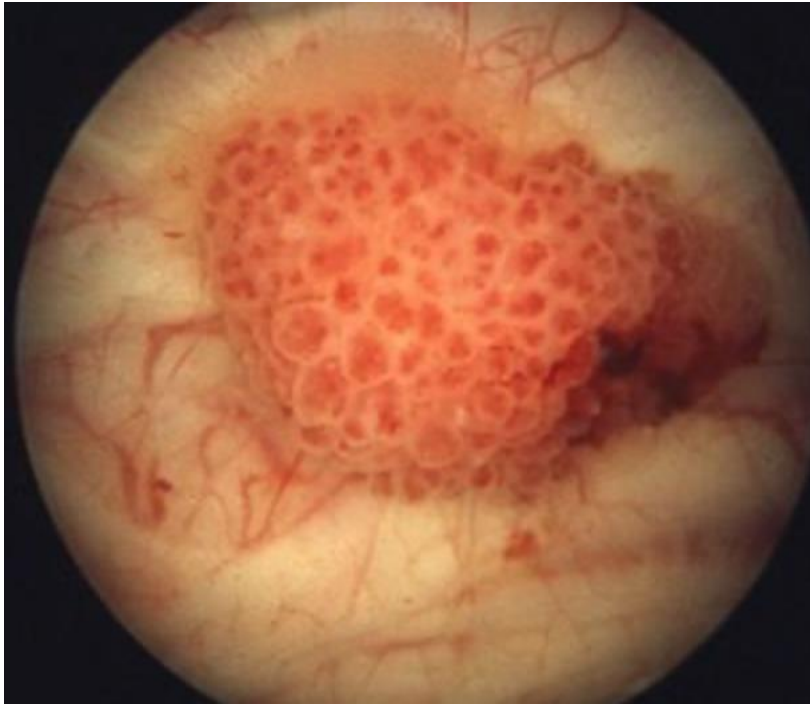
Introduction

Bladder cancer is a relatively rare form of cancer that starts in the lining of your bladder. Your bladder is a small hollow organ that holds your urine. Healthcare providers have many ways to treat bladder cancer, including surgery to remove bladder cancer. Bladder cancer may come back after treatment, so people with bladder cancer should be vigilant about following up with their healthcare providers.

Urologists can treat early-stage bladder cancer (superficial bladder cancer) — cancer that's found and treated before it can spread — but about 75% of early-stage bladder cancers come recur.

Your bladder is a triangle-shaped organ that's located in the pelvis leading to the urethra. Urine from your kidneys drains into your bladder, which is lined with tissue called urothelium. Urothelium is made of cells that stretch when your bladder fills with urine and collapses when it's empty. Your bladder can hold about 250-300 ml of urine.

Bladder cancer happens when certain cells in the tissue lining your bladder mutate or change, becoming abnormal cells that multiply and cause tumors in your bladder. Left untreated, bladder cancer may grow through your bladder walls to nearby lymph nodes and then other areas of your body, including your bones, lungs or liver.



Types of bladder cancer:

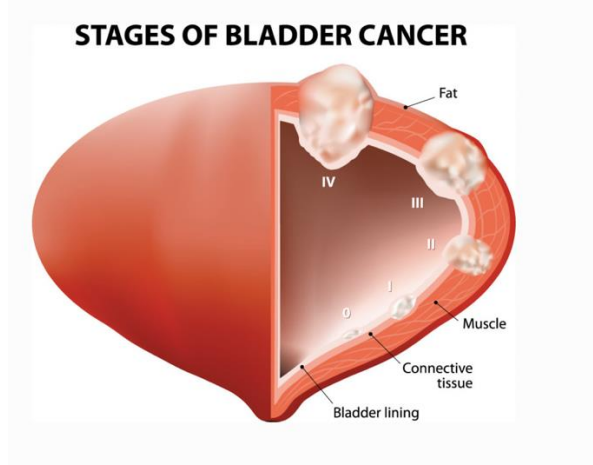
There are three types of bladder cancer. Each type is named for the cells that line the wall of your bladder where the cancer started. Bladder cancer types include:

- **Transitional cell carcinoma:** This cancer starts in transitional cells in the inner lining of your bladder wall. About 90% of all bladder cancers are transitional. In this cancer type, abnormal cells spread from the inner lining to other layers deep in your bladder or through your bladder wall into fatty tissues that surround your bladder. This bladder cancer type is also known as urothelial bladder cancer.
- **Squamous cell carcinoma:** Squamous cells are thin, flat cells that line the inside of your bladder. This bladder cancer accounts for about 5% of bladder cancers and typically develops in people who've had long bouts of irritation/infection.
- **Adenocarcinoma:** Adenocarcinoma cancers are cancers in the glands that line your organs, including your bladder. This is a very rare type of bladder cancer, accounting for 1% to 2% of all bladder cancers.

Urologists may also categorize bladder cancer as being superficial non-muscle-invasive cancer or muscle-invasive cancer.

- **Non-muscle-invasive:** This refers to bladder cancer that's moved deeper into your bladder but hasn't spread to muscle.

- **Muscle-invasive:** This bladder cancer has grown into bladder wall muscle and may have spread into the fatty layers or tissues on organs outside of your bladder. This is a more serious form of disease.



What's usually the first symptom of bladder cancer?

Blood in your urine is the most common bladder cancer symptom. That said, simply having blood in your urine isn't a sure sign of bladder cancer. Other conditions cause this issue, too. But you should contact a healthcare provider whenever you spot blood in your urine. Other bladder cancer symptoms include:

- Visible blood in your urine (hematuria): Healthcare providers can also spot microscopic amounts of blood in urine when they do a urinalysis.
- **Pain when you urinate (dysuria):** This is a burning or stinging sensation that you may feel when you start to urinate.
- **Needing to urinate a lot:** Frequent urination means you're urinating many times during a 24-hour period.
- **Having trouble passing urine:** The flow of your pee may start and stop or the flow may not be as strong as usual.
- **Persistent bladder infections:** Bladder infections and bladder cancer symptoms have common symptoms. Contact your healthcare provider if you have a bladder infection that doesn't go away after treatment with antibiotics.

What causes bladder cancer?

Healthcare providers and researchers don't know exactly why certain bladder cells mutate and become cancerous cells. They've identified many different risk factors that may increase your chance of developing bladder cancer, including:

- **Cigarette smoke:** Smoking cigarettes more than doubles your risk of developing bladder cancer. Smoking pipes and cigars and being exposed to second-hand smoke may also increase your risk.
- **Radiation exposure:** Radiation therapy to treat cancer may increase your risk of developing bladder cancer.
- **Chemotherapy:** Certain chemotherapy drugs may increase your risk.
- **Exposure to certain chemicals:** Studies show that people who work with certain chemicals used in dyes, rubber, leather, paint, some textiles and hairdressing supplies may have an increased risk.
- **Frequent bladder infections:** People who have frequent bladder infections, bladder stones or other urinary tract infections may be at an increased risk of squamous cell carcinoma.
- **Chronic catheter use:** People who have a chronic need for a catheter in their bladder may be at risk for squamous cell carcinoma.

How do healthcare providers diagnose bladder cancer?

- **Urinalysis:** Providers use a variety of tests to analyse your urine. In this case, they may do urinalysis to rule out infection.
- **Cytology:** Providers examine cells under a microscope for signs of cancer.
- **Cystoscopy:** This is the primary test to identify and diagnose bladder cancer. For this test, providers use a pencil-sized lighted tube called a cystoscope to view the inside of your bladder and urethra. They may use a fluorescent dye and a special blue light that makes it easier to see cancer in your bladder. Providers may also take tissue samples while doing cystoscopies.

If urinalysis, cytology and cystoscopy results show you have bladder cancer, healthcare providers then do tests to learn more about the cancer, including:

- **Transurethral resection of bladder tumor (TURBT):** Providers do this procedure to remove bladder tumors for additional tests. TURBT procedures may also be a treatment, removing bladder tumors before the tumors can invade your bladder's muscle wall. This test is an outpatient procedure done under spinal or general anesthesia.

Surgery

Surgery is a common bladder cancer treatment. Providers chose surgical options based on the cancer stage. For example, many times, TURBT, the procedure used to diagnose bladder cancer, can treat bladder cancer that hasn't spread. Healthcare providers either remove the tumor or use high-energy electricity to burn it away with a process known as fulguration.

Radical cystectomy is another treatment option. This surgery removes your bladder and surrounding organs. It's done when people have cancer that's spread outside of their bladder or there are several early-stage tumors throughout their bladder.

In men, this surgery removes the bladder, prostates and seminal vesicles. In women, providers may remove ovaries, the uterus and part of the vagina. Providers also do surgery known as urinary diversion so people can still pass urine.

Providers may follow surgery with chemotherapy or radiation therapy to kill any cancer cells surgery may have missed. This is adjuvant therapy.

Chemotherapy

These are cancer-killing drugs. Providers may use intravesical therapy to deliver chemotherapy drugs directly to your bladder via a tube inserted into your urethra. Intravesical therapy targets cancer without damaging healthy tissue.

Immunotherapy

Immunotherapy is a treatment that uses your immune system to attack cancer cells. There are different types of immunotherapy:

- **Bacillus Calmette-Guérin (BCG):** This is a vaccine that helps boost your immune system.
- **PD-1 and PD-L1 inhibitor therapy:** PD-1 and PD-L1 are proteins found on certain cells. PD-1 is on the surface of T-cells that help regulate your body's immune responses. PD-L1 is a protein found on the surface of some cancer cells. When these two proteins connect, the connection keeps T-cells from killing cancer cells. In inhibitor therapy, the two proteins can't connect, leaving the way clear for T-cells to kill cancer cells.

Radiation therapy

Radiation therapy may be an alternative to surgery. Healthcare providers may combine radiation therapy with TURBT and chemotherapy. This treatment is an alternative to bladder removal surgery. Healthcare providers consider factors such as tumour growth and tumour characteristics before recommending this treatment

PROSTATE CANCER

Introduction

Prostate cancer develops in the prostate, a small walnut size gland located below the bladder and in front of the rectum in men. This tiny gland secretes fluid that mixes with semen, keeping sperm healthy for conception and pregnancy.

Prostate cancer is a serious disease. Fortunately, most people with prostate cancer get diagnosed before it spreads beyond their prostate gland. Treatment at this stage often eliminates the cancer.

What are the types of prostate cancer?

If you're diagnosed with prostate cancer, it's most likely an adenocarcinoma. Adenocarcinomas start in the cells of glands — like your prostate — that secrete fluid. Rarely, prostate cancer forms from other types of cells.

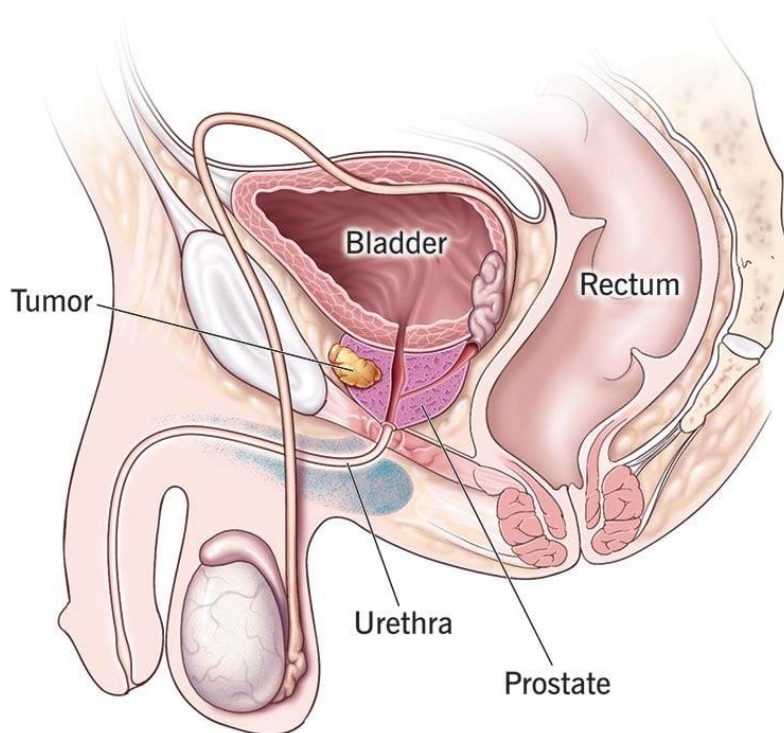
Less common types of prostate cancers include:

- Small cell carcinomas.
- Transitional cell carcinomas.
- Sarcomas.

Incidence of prostate cancer

Prostate cancer is common, second only to skin cancer as the most common cancer affecting men. For every 100 people with prostates, 13 will develop prostate cancer at some point in their lives. Most will live normal lives and eventually die from causes unrelated to prostate cancer. Some won't need treatment.

Symptoms and causes



Most prostate cancers grow slowly inside the prostate gland.

Early-stage prostate cancer rarely causes symptoms. These issues may occur as the disease progresses:

- Frequent, sometimes urgent, need to pass urine, especially at night.
- Weak urine flow.
- Pain or burning when you pass urine.
- Loss of bladder control or incontinence.
- Painful ejaculation and erection problems.
- Blood in semen or urine.

However, not all growths in your prostate are cancer. Other conditions that cause symptoms similar to prostate cancer include:

- **Benign prostatic hyperplasia (BPH):** At some point, almost everyone with a prostate will develop benign prostatic hyperplasia (BPH). This condition enlarges your prostate gland but doesn't increase your cancer risk.

- **Prostatitis:** If you're younger than 50, an enlarged prostate gland is most likely prostatitis. Prostatitis is a benign condition that is due to an infection in your prostate gland. Bacterial infections are often the cause.

Risk factors for developing prostate cancer

The most common risk factors include:

- **Age.** Your risk increases as you get older. You're more likely to get diagnosed if you're over 50. About 60% of prostate cancers occur in people older than 65.
- **Race and ethnicity.** You're at greater risk if you're Black or of African ancestry. You're more likely to develop prostate cancers that are more likely to spread. You're also at greater risk of prostate cancer forming before age 50.
- **Family history of prostate cancer.** You're two to three times more likely to get prostate cancer if a close family member has it.

Some studies have identified other prostate cancer risk factors, but the evidence is mixed. Other potential risk factors include:

- Smoking.
- Prostatitis.
- Having a BMI > 30 (having obesity).
- Sexually transmitted infections (STIs).

How to diagnose prostate cancer

Screenings can help catch prostate cancer early. If you're average risk, you'll probably have your first screening test at age 50. You may need earlier screenings if you're in a high-risk group – start screening at 45.

Screening tests can show whether you have signs of prostate cancer that require more testing.

- **Digital rectal exam:** Your doctor can examine you for any bumps or hard areas that may mean cancer of the prostate.
- **Prostate-specific antigen (PSA) blood test:** That is a cancer marker for prostate cancer. High PSA levels may indicate cancer – above 4. Levels also rise if you have benign conditions, such as BPH or prostatitis.

Diagnostic procedures for prostate cancer

When a high PSA is detected, the next two steps will be MRI of the prostate with possible biopsy when the MRI demonstrates a possible lesion.

- **Imaging:** An MRI can show very accurate images of your prostate gland, including suspicious areas that may be cancer. Imaging results can help your doctor decide whether to perform a biopsy.
- **Biopsy:** During a needle biopsy, a urologist removes a tissue sample with a special biopsy needle inserted in the lesion in the prostate for testing in a lab for cancer. A biopsy is the only sure way to diagnose prostate cancer.

Grade and staging of prostate cancer.

Urologists use the Gleason score and cancer staging to determine how serious the cancer is and the types of treatments you need.

Gleason score

The Gleason score allows your provider to rate how abnormal your cancer are. The more abnormal cells you have, the higher your Gleason score. The Gleason score allows your provider to determine the grade of your cancer, or its potential to be aggressive. Gleason 6 and less respond excellent to treatment, Gleason 7 intermediate and Gleason 8 and higher have the more aggressive growth pattern.

Staging prostate cancer

Cancer staging allows your provider to determine how advanced your cancer is, or how much it's spread. Cancer may be in your prostate gland only (local), invading nearby structures (regional) or spread to other organs (metastasized). Prostate cancer most commonly spreads to your bones and lymph nodes.

Treatment of prostate cancer

Your treatment depends on multiple factors, including your overall condition, if the cancer's spread and how fast it's spreading. Depending on your treatments, you may work with various healthcare providers, including urologists, radiation oncologists and medical oncologists. Most prostate cancer diagnosed in the early stages can be cured with treatment.

Surveillance

Your healthcare provider may monitor your condition instead of providing treatment if your cancer grows slowly and doesn't spread.

- **Active surveillance:** You get screenings, scans and biopsies every one to three years to monitor cancer growth. Active surveillance works best if the cancer grows slowly, is only in your prostate and isn't causing symptoms. If your condition worsens, your provider can start treatment.
- **Watchful waiting:** Watchful waiting is similar to active surveillance, but it's more commonly used for people who are frailer with cancer that likely won't go away with treatment. Also, testing is much less frequent. Instead of eliminating the tumour, treatments usually focus on managing symptoms.

Surgery

A radical prostatectomy removes a diseased prostate gland. It can often successfully eliminate prostate cancers that haven't spread. Your provider can recommend the best removal method if they believe you'd benefit from this surgery.

- **Robotic radical prostatectomy:** Robotic radical prostatectomy allows your provider to perform surgery through several tiny incisions. Instead of operating directly, they operate a robot system via a console for more precision and improved outcomes.

Radiation therapy

You may receive radiation therapy as a standalone treatment for prostate cancer or in combination with other treatments. Radiation can also provide symptom relief.

- **Brachytherapy:** It involves placing radioactive seeds inside your prostate. This approach kills cancer cells while preserving surrounding healthy tissue.
- **External beam radiation therapy (EBRT):** With external beam radiation therapy (EBRT), a machine delivers strong X-ray beams directly to the tumour. Specialized forms of EBRT, like IMRT, can direct high doses of radiation toward the tumour while sparing healthy tissue.

Systemic therapies

Your provider may recommend systemic therapies if cancer has spread outside your prostate gland. Systemic therapies send substances throughout your body to destroy cancer cells or prevent their growth.

- **Hormone therapy:** The hormone testosterone boosts cancer cell growth. Hormone therapy uses medications to combat testosterone's role in cancer cell growth. The medication works by preventing testosterone from reaching cancer cells or by reducing your testosterone levels. Alternatively, your provider may recommend surgery to remove your testicles (orchiectomy) so they can no longer make testosterone. This surgery is an option for people who cannot afford expensive medication.
- **Chemotherapy:** Chemotherapy uses medicines to destroy cancer cells. You may receive chemotherapy alone or with hormone therapy if your cancer has spread beyond your prostate.

Side effects of prostate cancer treatment

- **Incontinence:** You may leak urine when you cough or laugh or feel an urgent need to pass urine. This problem usually improves over the first few months provided you exercise the muscle controlling your bladder.
- **Erectile dysfunction:** Surgery, radiation and other treatments can damage the erectile nerves in your penis and affect your ability to get or maintain an erection. It's common to regain erectile function within a year or two (sometimes sooner). In the meantime, medications like Viagra or Cialis can help by increasing blood flow to your penis.

The prognosis for people with prostate cancer

Your survival is excellent if prostate cancer is detected early. Almost everyone diagnosed with cancer that hasn't spread outside of their prostate has a normal life expectancy.

Prostate cancer survival rates aren't as good when the cancer's metastasized, or spread outside of your prostate. Thirty-two percent of people with metastatic prostate cancer are alive five years later.