



# Bladder Cancer

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This information was produced by the European Association of Urology.

This leaflet contains general information about bladder cancer. If you have any specific questions about an individual medical situation you should consult your doctor or other professional healthcare provider.

**For detailed information about bladder cancer, diagnosis and treatment, please visit [www.patients.uroweb.org](http://www.patients.uroweb.org).**

The content of this leaflet is in line with the EAU Guidelines on Bladder Cancer 2016.

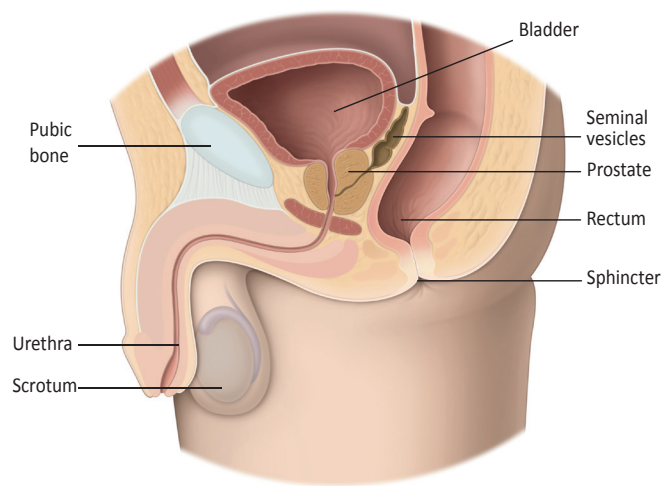
Contributors:

Dr. Mark Behrendt	Amsterdam (NL)
Dr. Juan Luís Vasquez	Herlev (DK)
Ms. Sharon Holroyd	Halifax (UK)
Dr. Andrea Necchi	Milan (IT)
Dr. Evangelos Xylinas	Paris (FR)

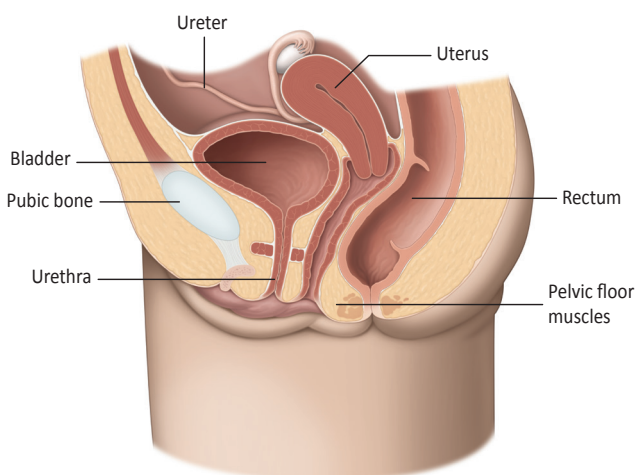
# Bladder Cancer

## What is the function of the bladder?

The urinary bladder (referred to as ‘the bladder’) is the organ that collects and stores urine produced by the kidneys (**Fig. 1**). It is a hollow stretchy bag made of muscle tissue that sits on the pelvic floor muscles. The bladder expands as urine from the kidneys collects before being passed out of the body through the urethra (**Fig. 2**).



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Fig. 1: The lower urinary tract in men (a) and in women (b).

## What is bladder cancer?

Bladder cancer is the growth of abnormal tissue (tumour) in the bladder. There are several stages of bladder cancer. Your treatment and experience will depend on the specific characteristics of the tumour (referred to as “staging” the tumour) and the expertise of your medical team.

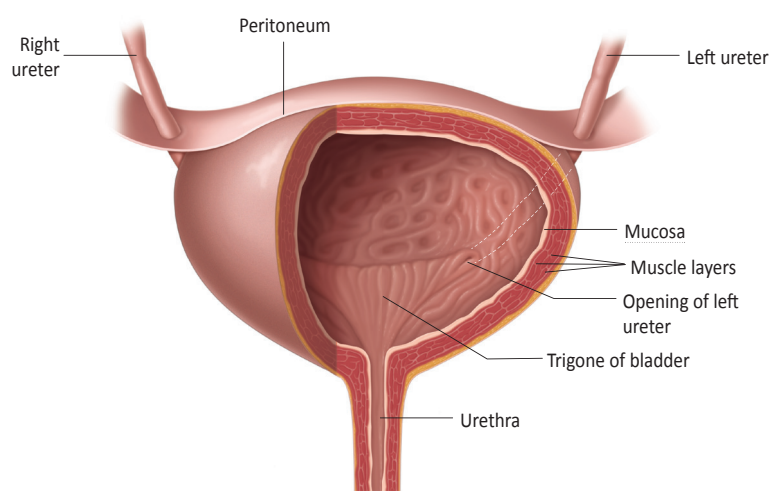
The sections in this series provide general information about bladder cancer, diagnosis, and various treatment options. Discuss with your doctor what is best in your individual situation.

## What causes bladder cancer?

Several biological factors and harmful substances can increase the risk of developing bladder cancer. A higher risk does not necessarily mean that someone gets cancer. Sometimes bladder cancer develops without any known cause.

## Stages of the disease

A tumour that grows towards the centre cavity of the bladder without growing into the muscle tissue of the bladder is called non-muscle invasive. These tumours are superficial and represent an early stage. This is the most common type of bladder cancer. In most cases, these tumours are not



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Fig. 2: A healthy bladder.

aggressive and rarely spread to other organs, so they are not usually lethal, they can however appear again (=recurrence) or develop aggressive features (=progression)

As the cancer grows into the muscle of the bladder and spreads into the surrounding muscles, it becomes muscle-invasive bladder cancer. This type of cancer has a higher chance of spreading to other parts of the body (metastatic disease) and is harder to treat. In some cases, it may be fatal.

If bladder cancer spreads to other parts of the body such as the lymph nodes or other organs, it is called locally advanced or metastatic bladder cancer. At this stage, cure is unlikely, and treatment is limited to controlling the spread of the disease and reducing the symptoms.

## Risk factors for bladder cancer

Bladder cancer develops slowly and is more common in older people (age 60 and older). According to the European Association of Urology's bladder cancer guidelines, tobacco smoking contains many harmful substances and is responsible for almost half of the bladder cancer cases.

Another well-known source of risk is occupational exposure to chemicals used in the production of paint, dye, metal and petroleum, although workplace safety guidelines have helped reduce this risk.

Infections from certain parasites and chronic urinary tract infections increase risk of developing bladder cancer.

## Bladder cancer prevention

A higher risk does not necessarily mean that someone gets cancer. Sometimes bladder cancer develops without any known cause.

It is important to maintain a healthy lifestyle. If you smoke, try to stop. Follow workplace safety rules and avoid exposure to harmful chemicals. Some evidence suggests that drinking a lot of fluids, mainly water, might lower bladder cancer risk. Eating a balanced diet with lots of fruits and vegetables has health benefits and might protect against cancer. If you have questions or need support to maintain a healthy lifestyle, ask your health care team for assistance or referrals.

## Signs and symptoms

Blood in the urine is the most common symptom when a bladder tumour is present. Tumours in the bladder lining (non-muscle-invasive) do not cause bladder pain and usually do not present with lower urinary tract symptoms (urge to urinate, irritation).

If you have urinary tract symptoms such as painful urination or need to urinate more often, a malignant tumour might be suspected, particularly if an infection is ruled out or treated and this does not reduce the symptoms. Muscle-invasive bladder cancer can cause symptoms as it grows into the muscle of the bladder and spreads into the surrounding muscles.

Symptoms like pelvic pain, pain in the flank, weight loss, or the feeling of a mass in the lower abdomen may be present in some cases when tumours are more advanced.

## Diagnosis

Your doctor will take a detailed medical history and ask questions about your symptoms. You can help your doctor by preparing for the consultation.

- Make a list of your previous surgical procedures.
- Make a list of the medications that you take.
- Mention other diseases and allergies that you have.
- Describe your lifestyle, including exercise, smoking, alcohol, and diet.
- Describe your current symptoms.
- Note how long you have had the current symptoms.
- Family history of other tumours, especially in the urinary tract.

## Urine test

Because blood in the urine is the most common symptom when a bladder tumour is present, your doctor will test your urine to look for cancer cells and to exclude other possibilities like urinary tract infections. Your doctor may refer to this test as 'urinary cytology'.

Physical examination does not reveal non-muscle-invasive bladder cancer, and seldom reveals a mass if cancer has advanced to the muscle-invasive stage. If muscle-invasive bladder cancer is suspected, your doctor should perform rectal and, for women, vaginal examinations by hand (bimanual palpation).

\* The underlined terms are listed in the glossary.

In addition, your doctor will do a series of tests to make the diagnosis. Advanced diagnostic tools are described in the next section.

### Urine biomarker tests for bladder cancer

Early detection can improve the chance of successful treatment. Therefore, doctors try to find urine biomarker tests, which will help to identify bladder cancer or recurrence of bladder cancer as early as possible.

## Cystoscopy

Cystoscopy is the main test used to diagnose bladder cancer. It allows your doctor to look at the inside of your bladder and urethra using a thin, lighted tube called a cystoscope.

## CT urography

Computed tomography (CT scan) urography gives your doctor information about possible tumours in the kidneys or ureters and information about the lymph nodes and abdominal organs.

CT urography (underline CT-urography) cannot detect small or superficial tumours (CIS). If small or superficial tumours are suspected further tests are needed.

## MRI

Like CT scans, MRI scans show detailed images of soft tissues in the body. But MRI scans use radio waves and strong magnets instead of x-rays.

## Intravenous urography

Intravenous urography (IVU) is another imaging technique for examining the urinary tract. IVU may be used for the assessment of the upper urinary tract when CT-urography is not available. It cannot detect small or superficial tumours (CIS), and it's not recommended for detecting lymph nodes or invasion of neighbouring organs.

## Transabdominal ultrasound

Ultrasound is a non-invasive diagnostic tool that can visualise masses larger than 5-10mm in a full bladder. It cannot detect very small or superficial tumours (CIS). This study does not require intravenous contrast; however, ultrasound cannot replace CT urography or cystoscopy.

## Transurethral resection of bladder tumour

TURBT is the surgical removal (resection) of bladder tumours. This procedure is both diagnostic and therapeutic. It is diagnostic because the surgeon removes the tumour and all additional tissue necessary for examination under a microscope (histological assessment). TURBT is also therapeutic because complete removal of all visible tumours is the treatment for this cancer. Complete and correct TURBT is essential for good prognosis. In some cases, a second TURBT is required after several weeks.

## Narrow-band imaging

Narrow-band imaging (NBI) is the application of light to specific blue and green wavelengths on the inner lining of the bladder during normal cystoscopy. This enhances the visual contrast between healthy tissue and cancer tissue and improves the detection of tumours in the bladder. This method does not require any bladder instillation.

## Classification

Bladder tumours are classified by tumour stage and subtype and by grade of aggressiveness of the tumour cells. Staging is a standard way to describe the extent of cancer spread. The kind of treatment you receive will depend on these elements.

## Non-muscle-invasive bladder cancer

### What is non-muscle-invasive bladder cancer?

Non-muscle-invasive bladder cancer, also called superficial bladder cancer, is a superficial cancer that has not grown into deeper layers of the bladder wall.

There are three subtypes based on how they grow:

- Stage Ta tumours are confined to the bladder lining.
- Stage T1 tumours have invaded the connective tissue under the bladder lining but have not grown into the muscle of the bladder wall.
- Stage Tis tumours are flat velvet-like tumours, also known as carcinoma in situ (CIS), that are confined to the bladder wall but have potentially a high risk of spreading into the deeper layers of the bladder.

\* The underlined terms are listed in the glossary.

Stage Ta and T1 tumours usually appear as small grapelike growths (also called papillary) that grow toward the centre of the bladder without growing into the deeper bladder layers. Your surgeon may remove these growths using a method called transurethral resection of bladder tumour (TURBT).

## Treatment options

### Transurethral resection of bladder tumour

TURBT is the surgical removal (resection) of bladder tumours. This procedure is both diagnostic and therapeutic. It is diagnostic because the surgeon removes the tumour and all additional tissue necessary for examination under a microscope (histological assessment). TURBT is also therapeutic because complete removal of all visible tumours is the treatment for this cancer. Complete and correct TURBT is essential for good prognosis. In some cases, a second surgery is required after several weeks.

### Instillation treatment

As noted earlier, TURBT can eradicate stage Ta or T1 tumours, but some tumours commonly recur and can progress to invasive cancer. Intravesical (within the bladder) instillation treatment after TURBT should be considered for all patients.

## Muscle-invasive bladder cancer

### What is muscle-invasive bladder cancer?

About a quarter of patients diagnosed with bladder cancer have a muscle-invasive form that has grown into the muscular part of the bladder wall (stages T2–T4). This type of cancer has a higher chance of spreading to other parts of the body (metastatic) and needs a different and more radical form of treatment. Muscle-invasive bladder cancer will be fatal if untreated.

### Additional diagnostics

Computed tomography (CT scan) is particularly important for further work-up in muscle-invasive bladder cancer. With a whole-body CT scan, done in less than 10 minutes, the physician can tell if the cancer has already grown out of the bladder and into the surrounding tissue or adjacent organs and if there are signs of spreading to other organs (metastatic disease). By adding intravenous contrast agent, which is excreted into the urine by the kidneys, the urinary tract above the bladder can be visualised and tumour growth identified.

Prior to treatment, it is essential to evaluate whether the cancer is metastatic. If the CT scan indicates that the cancer has spread to your soft (visceral) organs, your bones or lymph nodes. This will possibly change the treatment decisions.

Additional magnetic resonance imaging (MRI scans) or bone scans may be performed, although this is not routinely done. Bone and brain metastases are rare at the time that muscle-invasive bladder cancer is diagnosed. Therefore, your doctor would only consider a bone scan or additional brain imaging if you have specific symptoms that suggest bone or brain metastases. Unclear findings might also be probed with a needle biopsy to confirm metastatic disease.

A combination of positron emission tomography (PET scan; uses a radioactive tracer) and CT scan (PET/CT) is increasingly being used in European centres, although it is not generally available in all countries. PET/CT may improve the ability to detect distant metastases. It is not recommended for staging bladder tumours because urinary excretion of the radioactive tracer makes tumour staging very difficult.

## Prognosis and risk stratification

The long-term prognosis for patients with muscle-invasive bladder cancer is determined by the extent of tumour growth (stage). As opposed to non-muscle-invasive bladder cancer aggressiveness (grade) which is determined by the pathologist is less important, since virtually all invasive tumours are high grade.

## Treatment options

### Removal of the urinary bladder (cystectomy)

The mainstay of treatment for muscle-invasive bladder cancer is surgical removal of the urinary bladder.

Your doctor has several reasons for recommending removal of the whole bladder:

- Presence of a muscle-invasive tumour
- Presence of a tumour that grows aggressively (high grade), that has multiple cancerous areas (multifocal), or that is superficial, but has recurred after chemotherapy or immunotherapy
- Failure of or recurrence after a bladder-sparing approach (chemoradiation) or the occurrence of major side-effects
- Symptoms like bleeding or pain in patients with incurable disease

To evaluate and weight your individual risk of undergoing removal of the bladder, work with your physician to consult

\* The underlined terms are listed in the glossary.

a multidisciplinary team (for example, urologist, surgeon, anaesthesiologist, nurse practitioner, general practitioner, cardiologist).

Factors like your biological age (your body's performance as it ages, measured as performance status or life expectancy) and other diseases that you have (diabetes, heart disease, high blood pressure) are also important. Patients older than 80 years of age have more problems recovering from such an operation. Physicians use special indexed scores to assess the risk of patients undergoing this stressful operation.

Prior abdominal surgery or radiotherapy makes surgery more difficult but is rarely a reason not to have surgery. Being overweight does not influence survival after surgery but does influence the risk of complications from wound healing.

Removal of the urinary bladder includes removal of the bladder, the endings of the ureters and the pelvic lymph nodes. Depending on factors like tumour location and type of urinary diversion part of the adjacent gender-specific organs (the prostate and seminal vesicles in men; the entire urethra, adjacent vagina, and uterus in women) are removed. Men should be aware that prostate cancer is sometimes found in removed prostates but generally does not affect long-term survival or treatment.

If your bladder is removed, another way to store and empty urine must be created. This is known as a urinary diversion.

## Bladder-sparing treatments

A bladder-sparing approach is currently used in a minority of cases worldwide but deserves consideration. Bladder preservation can be achieved at the cost of multiple therapies, including their side-effects. Transurethral resection of the bladder tumour (TURBT) and radiation is used to cure or control the tumour locally. Chemotherapy is used to treat the cancer cells that might already have spread within in the body (systemic disease). The goal is to preserve the bladder and its function as well as quality of life without compromising cancer treatment.

Studies in selected patient groups have shown good results for bladder-sparing approaches, about a third of patients still undergo bladder removal after failure of a bladder-sparing treatment.

### Transurethral resection of bladder tumour

If you cannot undergo extended surgery, TURBT is possible if the tumour invades only the inner muscle layer of the bladder.

With high recurrence and progression rates, this treatment alone cannot be considered a good option for controlling the disease long term.

### Chemoradiation

Radiation therapy combined with sensitizing chemotherapy is a reasonable alternative for patients who refuse or are not candidates for bladder removal. Evaluation for this approach will consider general fitness (life expectancy), kidney function, prior radiation, prior abdominal operations, and history of other cancers. A consultation with a radiation oncologist is advisable prior to deciding on this treatment.

### Radiotherapy

Radiation therapy is an option for preserving the bladder in patients who are not candidates for surgery or who do not want surgery. Results from radiotherapy alone are worse than those from complete removal of the bladder, but if combined with chemotherapy (chemoradiation), acceptable results can be achieved. Side-effects include mild to strong irritation of the bladder and digestive tract as well as incontinence, increased risk of infections, and fistulas (abnormal passages that develop between organs).

### Chemotherapy

Chemotherapy alone has only limited results and is not recommended as a sole treatment.

## Metastatic disease

### Prognostic factors and treatment decisions

If your bladder cancer has spread to another body organ (**Fig. 3**), treatment is unlikely to cure you. Treatment options are limited to controlling the spread of disease (metastasis) and reducing symptoms.

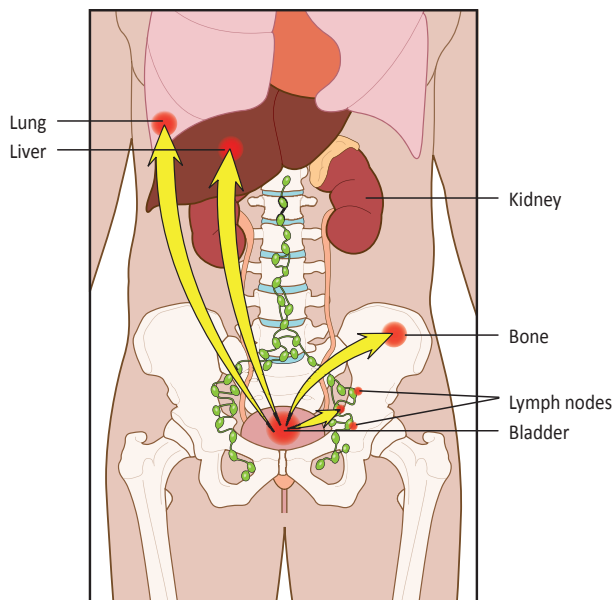
### Treatment options

#### Chemotherapy

In 90-95% of bladder cancer cases the histological type is urothelial carcinoma. Chemotherapy that contains platinum is the most effective treatment against this type of cancer.

Chemotherapy combinations like MVAC (which uses the drugs methotrexate, vinblastine, Adriamycin [doxorubicin], and cisplatin) or gemcitabine and cisplatin are prescribed most often. These treatments have side-effects that must be considered carefully if you cannot recover from your illness

\* The underlined terms are listed in the glossary.



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Fig. 3: Metastatic disease.

and the goal is to optimise your quality of life. Limited ability to perform daily activities (low performance status), other illnesses, or decreased kidney function could make you ineligible for these chemotherapies.

If you have reduced kidney function and cannot take the drug cisplatin, combinations like gemcitabine and carboplatin or M-CAVI (which uses the drugs methotrexate, carboplatin, and vinblastine) are slightly less effective options for treating bladder cancer.

Should your disease recur or progress while taking these therapies, treatment can be changed to another type of chemotherapy, but since there is no standard in this case, the choice will depend on your treating physician. Additional surgery to remove a metastatic or recurrent tumour mass is used only to relieve pain or obstruction and will not cure the disease. Radiotherapy can also be used to treat symptoms like pain or recurrent bleeding (haematuria).

Some types of chemotherapy are quite intensive and can have a lot of side-effects. If you are not fit or if you feel unwell from the cancer, these side-effects can be quite severe. Older patients in particular may benefit from less intensive types of chemotherapy.

### Treatment of bone metastases

When bladder cancer has spread to the bone, skeletal complications can occur, such as weakening of the bones or pathological fractures from minor incidents or everyday

activity. This causes pain and can have a detrimental effect on your quality of life. Your doctor may suggest radiotherapy, or drug treatment to help strengthen your bones and control the pain.

### Access to clinical trials

All patients with a diagnosis of recurrent or metastatic bladder cancer, and particularly those whose prior chemotherapy has been unsuccessful, should be considered for centres where clinical trials are available.

A limited but increasing number of studies are available in various settings for patients who have never had chemotherapy as well as pre-treated patients. In addition, the recent experimental use of drugs called ‘immune checkpoint inhibitors’ in advanced bladder cancer appears effective in a subset of patients with this disease.

Access to clinical trials should be the first option to discuss with your physician. The therapeutic decision is made after reviewing thorough information on the pros and cons of each option and depending on the individual patient and disease characteristics.

### Deciding on treatment

If treatment is intended to slow down the cancer and control the symptoms, deciding what treatment is best for you—or whether to have treatment at all—can be very difficult.

You will need a clear understanding of what drug treatment can do for you at this stage and how it will affect your quality of life.

Talk to family or friends and people who are close to you. It can help to discuss things with someone outside your inner circle. Your doctor may be able to refer you to a counsellor or specialist nurse.

Efforts are being made to promote patient advocacy for bladder cancer. Ask your oncologist if a bladder cancer patient representative is available near you.

\* The underlined terms are listed in the glossary.



## Treatment of recurrence (when the tumour comes back)

### Local recurrence

Local recurrence takes place in the soft tissue where the bladder has been before removal or at the site of the lymph nodes that were removed. This is due to the fact that even after removal of the local pelvic lymph nodes, some nodes are left in place. Most local recurrences appear within the first 2 years. Local recurrence after complete removal of the urinary bladder is associated with poor overall prognosis but can occasionally be treated (surgery, chemotherapy, targeted radiation therapy).

### Distant recurrence

If the cancer recurs outside the pelvis, it is a distant recurrence. This type of recurrence is fairly common after bladder removal in patients with high risk of recurrence (larger tumours, positive resection margins, involvement of the removed lymph nodes). Distant recurrence happens mostly within the first 2 years after bladder removal. Sites of distant recurrences are lymph nodes, lungs, liver, and bones. Distant recurrence can be treated only by chemotherapy. Single or very few metastases may be surgically removed in addition to systemic treatment (= chemotherapy).

Medical trials might be available for your situation. Ask your doctor about these options.

### ! FAQ

#### What is a positive resection margin?

Rim of tissue - called the surgical margin or margin of resection

The surgeon's goal during surgery is to remove the cancer along with a rim of normal tissue around it. This is to ensure that all of the cancer has been removed.

During or after surgery, a pathologist examines this rim of tissue - called the surgical margin or margin of resection — to be sure it's clear of any cancer cells. If cancer cells are present, this will influence decisions about treatments such as additional surgery and radiation.

## Recurrence in the urothelial tract (urethra and ureters)

After complete removal of the bladder, the cancer can recur in the urethra, ureters and pyelum (urothelial tract). Most recurrences of the urothelial tract happen within the first 3 years after the operation. This type of recurrence is relatively rare.

If possible, a local treatment should be chosen to eliminate the cancer, unless systemic disease is suspected. In that case, chemotherapy or palliation should be used.

In case of bladder preserving therapy and a superficial (non-muscle-invasive) recurrence, washing the bladder with drugs to prevent the growth or spread of cancer cells (instillation therapy) is advised.

Risk factors for recurrence in the urethra after removal of the bladder:

- Prior superficial (non-muscle-invasive) bladder cancer
- Multiple bladder tumours
- Tumour involvement of the bladder neck (and/or the prostate in men)
- An unused/residual urethra after incontinent urinary diversion
- Local recurrence in the lower pelvis

Although routine removal of the urethra (urethrectomy) is considered overtreatment, monitoring of the urethra is indicated in men.

Risk factors for recurrence in the ureters after removal of the bladder:

- Prior superficial (non-muscle-invasive) bladder cancer
- Multiple bladder tumours
- Tumour involvement at the opening (orifice) of the ureter
- Local recurrence in the pelvis

For patients with risk factors for urothelial recurrences, stringent or adapted monitoring is indicated.

### Follow-up

After any kind of cancer treatment follow-up is essential to minimise complications and to detect and treat recurrences early. After complete removal of the bladder or other treatments, you will be asked to see your general practitioner, urologist, oncologist, radiologist, or a nurse practitioner at specific, fixed time intervals for monitoring and evaluation.

A specialist should have the lead in coordinating and interpreting all of the results from the follow-up visits. That specialist—in most countries, the urologist— should also be the main contact for questions about your disease or related issues.

## Symptoms of complications

After monitoring of cancer, the functional results must be observed and controlled. Functional complications after bladder removal include vitamin B12 deficiency, high acid levels in the blood (metabolic acidosis), worsening kidney function, urinary infections, urinary stone formation, tightening of stoma openings (stricture), other stoma complications in patients with ileal conduit diversions (leakage, inversion, skin irritation), neobladder continence problems, and emptying dysfunction. Ask your doctor for information about the major symptoms of these complications and their prevention.

# Glossary of terms

## Biopsy

A medical procedure in which a small piece of tissue is removed from the body to examine it. This is done to get information for diagnosing, monitoring, and treatment.

## Bladder

Organ which collects urine from the kidneys.

## Bladder neck

The group of muscles that connect the bladder to the urethra. These muscles contract to keep the urine in the bladder and relax to let the urine pass through the urethra.

## Bladder wall

The different layers of tissue that shape the bladder.

## Bone scan

A scan of the entire body that can be used to find bone metastases.

## Carcinoma in situ (CIS)

CIS is a type of early-stage cancer with a high risk of spreading locally and metastasising to other organs or the lymph nodes.

## Cardiologist

A doctor who specialises in cardiovascular diseases.

## Chemotherapy

Treatment of cancer with drugs that are toxic to cells. Some are specifically toxic to cells that grow faster than normal, like cancer cells.

## Clinical trial

These are experimental research studies designed to answer specific questions about treatments or drugs. They generally test how well a treatment works among patients with specific characteristics.

## Contrast agent

A substance that increases the contrast of structures or fluids in the body. It is used in medical imaging (see also, Imaging).s Bladder Cancer.

## CT scan

CT stands for computed tomography. It is an imaging technique that makes a series of x-ray images of the body.

## CT urography

CT standard for computed tomography. CT urography is an imaging technique that uses contrast agent to improve the visibility of the lymph nodes and abdominal organs during the CT scan.

## Cystectomy

Complete surgical removal of the bladder, the endings of the ureters, the pelvic lymph nodes, and adjacent gender-specific organs (the prostate and seminal vesicles in men; the entire urethra, adjacent vagina, and uterus in women) to treat muscle-invasive bladder cancer. Radical cystectomy is performed with urinary diversion.

## Cystoscope

A type of endoscope which is used in the urethra (see also, Endoscope, Urethra).

## Cystoscopy

It is a procedure in which the doctor looks inside your body with a cystoscope inserted through the urethra.

## Diagnosis

The doctor and nurses do a series of tests to understand what causes your symptoms.

## Distant metastases

Tumours that have spread from the original site to other organs or bone.

## Imaging

Taking images of the body with ultrasound, x-ray or other scanning techniques.

## Immunotherapy

A type of cancer treatment which boosts the immune system to fight tumour cells.

## Instillation

Administration of a liquid (medicine) by pouring or injection, drop by drop.

## Intravenous

Injection into a vein, usually in the arm.

## Intravenous urography (IVU)

An imaging technique where x-ray contrast agent is injected into the vein, usually in the arm.

# Glossary of terms

## **Intravesical**

Inside the bladder.

## **Lymph nodes**

Small oval-shaped organs that play a role in regulating how the immune system responds.

## **Malignant tumour**

A cancerous growth which either grows continuously or in spurts. Malignant tumours can metastasise, which means they spread throughout the body.

## **Metastatic disease**

When a tumour has spread to other organs or lymph nodes.

## **MRI scan**

Magnetic resonance imaging (MRI) is an imaging technique in which strong magnetic fields and radio waves are used to make images of the body.

## **Mucosa**

A mucous tissue lining.

## **Muscle-invasive bladder cancer**

A tumour that has grown into the muscle of the bladder wall.

## **Non-muscle invasive bladder cancer**

A superficial, early-stage tumour in the bladder lining that has not invaded the bladder wall.

## **Oncologist**

A medical professional who is dedicated to the diagnosis, therapy, follow-up, and general care of a person with any type of cancer.

## **Pathologist**

A medical professional who studies tissue, blood, or urine to understand the specific characteristics of diseases. In cancer treatment, the pathologist helps with the diagnosis and classification of tumours.

## **PET scan**

A positron emission tomography (PET) scan is an imaging test that uses a radioactive substance called a tracer to look for disease in the body. A PET scan shows how organs and tissues are working.

## **Prognosis**

The medical term for predicting the likely outcome of health after treatment.

## **Prostate**

The gland which produces the fluid which carries semen. It is located in the male lower urinary tract, under the bladder and around the urethra.

## **Recurrence**

The return of cancer after treatment and after a period of time in which the cancer could not be detected. This can happen either in the place where the cancer first was detected, or somewhere else in the body. There is no standard period of time, but most doctors would consider it a recurrence if the cancer had not been detected again for at least one year.

## **Resection**

Removal of tumours from an organ.

## **Risk stratification**

A tool to determine a treatment pathway. It is based on disease characteristics combined with personal characteristics like medical and family history or general state of health.

## **Systemic disease**

Disease that affects the entire body

## **Tumour stage**

This refers to how extended a cancer is in the body. It is usually based on the size of the tumour and whether the tumour has spread to the lymph nodes or other organs.

## **TURBT**

TURBT stands for transurethral resection of bladder tumour. Superficial tumours are removed from the bladder lining without making an incision in your lower abdomen. This type of surgery is known as minimally invasive treatment.

## **Ureter**

One of the two tubes through which urine flows from the kidneys to the bladder.

# Glossary of terms

## **Urethra**

The tube which carries urine from the bladder and out of the body.

## **Urinary diversion**

A surgical procedure to construct an alternative means of storing and voiding urine.

## **Urinary tract**

The organ system which produces and transports urine through and out of the body. It includes two kidneys, two ureters, the bladder and the urethra. The urinary tract is similar in men and women, only men have a longer urethra.

## **Urologist**

A doctor specialised in health and diseases of the urinary tract and the genitals.

## **Urothelial carcinoma**

Cancer that typically occurs in the urinary system (kidney, urinary bladder, urinary tract) and indicates the type of cancer, which affects urothelial cells as opposed to other types of cells in the urothelial tract. Most bladder cancer is urothelial carcinoma (also called transitional cell carcinoma).

## **Vagina**

The muscular tube leading from the external genitals to the cervix of the uterus in women.

**European Association of Urology**

PO Box 30016

NL-6803 AA ARNHEM

The Netherlands

e-Mail: [info@uroweb.org](mailto:info@uroweb.org)

Website: [patients.uroweb.org](http://patients.uroweb.org)