

# Bladder Cancer

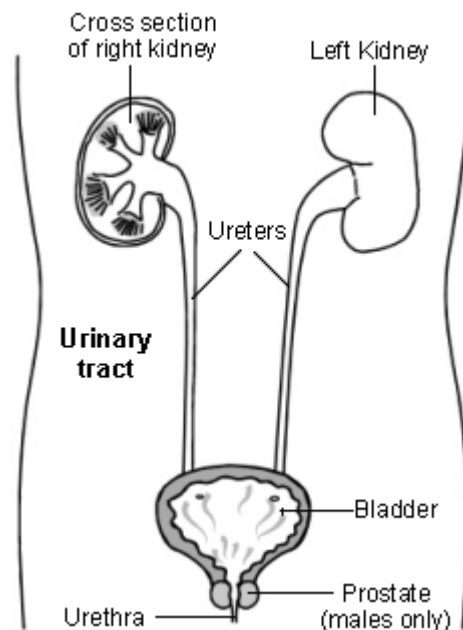
The common early symptom of bladder cancer is blood in the urine. In most cases, the cancer is confined to the inside lining of the bladder. Treatment of these 'superficial' bladder cancers is relatively easy and often curative. If the cancer has spread into or through the muscle layer of the bladder wall then treatment is less likely to be curative, but can often slow the progress of the cancer.

## What is the bladder?

The bladder is part of the urinary tract. It is at the bottom of the abdomen. It fills with urine and we pass urine out from time to time through a tube called the urethra. The urethra passes through the prostate gland and penis in men. The urethra is shorter in women and opens just above the vagina.

Urine is made in the kidneys and contains water and waste materials. A tube called a ureter comes from each kidney and drains the urine into the bladder.

The cells that line the inside of the bladder are called transitional cells or urothelial cells. There is a thin layer of cells beneath the lining called the lamina propria. The outer part of the bladder wall contains a thick layer of muscle tissue which contracts from time to time to push out the urine.



## What is cancer?

Cancer is a disease of the cells in the body. The body is made up from millions of tiny cells. There are many different types of cell in the body, and there are many different types of cancer which arise from different types of cell. What all types of cancer have in common is that the cancer cells are abnormal and multiply 'out of control'.

A malignant tumour is a 'lump' or 'growth' of tissue made up from cancer cells which continue to multiply. Malignant tumours can invade into nearby tissues and organs which can cause damage.

Malignant tumours may also spread to other parts of the body. This happens if some cells break off from the first (primary) tumour and are carried in the bloodstream or lymph channels to other parts of the body. These small groups of cells may then multiply to form 'secondary' tumours (metastases) in one or more parts of the body. These secondary tumours may then grow, invade and damage nearby tissues, and spread again.

Some cancers are more serious than others, some are more easily treated than others (particularly if diagnosed at an early stage), some have a better outlook (prognosis) than others.

So, cancer is not just one condition. In each case it is important to know exactly what type of cancer has developed, how large it has become, and whether it has spread. This will enable you to get reliable information on treatment options and outlook.

See leaflet called '*What are Cancer and Tumours*' for general details about cancer.

## What is bladder cancer and how common is it?

Bladder cancer is a common cancer. About 10,000 people develop bladder cancer in the UK each year. In most cases in the UK, the bladder cancer develops from the transitional cells which line the inside of the bladder. This type of cancer is called 'transitional cell bladder cancer'. Other types of bladder cancer are rare in the UK.

**The rest of this leaflet only deals with the common type of bladder cancer - transitional cell bladder cancer.**

Transitional cell bladder cancer is divided into two groups:

- **Superficial tumours.** These occur in about 4 in 5 cases. These tumours are confined to the inner lining, or just below the inside lining, of the bladder. Sometimes the cells which form this type of cancer multiply to form little growths which stick out like 'warts' from the inside lining of the bladder.
- **Muscle invasive tumours.** These occur in about 1 in 5 cases. These tumours have spread to the muscle layer of the bladder, or right through the wall of the bladder.

The treatment and outlook for each of these two groups are very different. Superficial tumours rarely spread and can usually be cured. However, if left untreated, in some cases they can develop into muscle invasive tumours. Muscle invasive tumours have a high chance of spreading to other parts of the body (metastasise), and treatment has less chance of being curative.

## What causes bladder cancer?

A cancerous tumour starts from one abnormal cell. The exact reason why a cell becomes cancerous is unclear. It is thought that something damages or alters certain genes in the cell. This makes the cell abnormal and multiply 'out of control'. (See separate leaflet called '*What Causes Cancer*' for more details.)

In many cases, the reason why a bladder cancer develops is not known. However, there are factors which are known to alter the risk of bladder cancer developing. These include:

- Increasing age. Most bladder cancers occur in people over the age of 50. It is rare in people younger than 40.
- Smoking. Bladder cancer is four times more common in smokers than non-smokers. Some of the chemicals from tobacco get into the body and are passed out in urine. These chemicals in the urine are carcinogenic (damaging) to the bladder cells. It is estimated that about one third of bladder cancers are related to smoking.
- Other chemicals. Certain work-place and environmental chemicals have been linked to bladder cancer. Many of these chemicals are now banned in the UK. However, bladder cancer may develop as late as 10-25 years after exposure to certain chemicals. So, some cases are still being diagnosed in people who worked with these chemicals years ago.
- Gender. Bladder cancer is about three times as common in men than women.
- Ethnic background. Bladder cancer is more common in white people than in black people.
- Food and drink. People who eat plenty of fruit and vegetables have a lower risk of developing bladder cancer than those who do not. Also, people who drink a lot of coffee (10 cups a day or more) have a slightly increased risk.
- Previous radiotherapy or chemotherapy increases the risk.
- Schistosomiasis. This bladder infection, which is caused by a parasite in certain hot countries, increases the risk.
- Repeated bouts of other types of bladder infection may also slightly increase the risk.

## What are the symptoms of bladder cancer?

### Blood in urine

In most cases, the first symptom is to pass blood in the urine ('haematuria'). Haematuria caused by an early bladder tumour is usually painless. You should always see your doctor if you pass blood in your urine. The blood in the urine may 'come and go' as the tumour bleeds from time to time.

### Other symptoms

Some tumours may cause irritation of the bladder and cause symptoms similar to a urine infection. For example, passing urine frequently or pain on passing urine. If the cancer is a muscle invasive type, and grows through the wall of the bladder, then other symptoms may develop over time. For example, pain in the lower abdomen.

If the cancer spreads to other parts of the body, various other symptoms can develop.

## How is bladder cancer diagnosed and assessed?

### To confirm the diagnosis

*Urine microscopy* - A sample of urine can be sent to the 'lab' to look for cancerous cells under the microscope. This test may detect cancer cells. However, if no cancer cells are seen it does not rule out bladder cancer. Further tests are often needed to confirm or rule out the diagnosis if symptoms suggest bladder cancer.

*Cystoscopy* - This test is commonly done to confirm a bladder tumour. A cystoscopy is where a bladder specialist (urologist) looks into the bladder with a special thin telescope called a cystoscope. The cystoscope is passed into the bladder via the urethra. A cystoscopy which is done to just look into the bladder is normally done under local anaesthetic. If a procedure is done via a cystoscope such as removing a tumour then a general anaesthetic is usually used.

During cystoscopy a urologist can:

- See any areas on the lining of the bladder which look abnormal.
- Take biopsies of suspicious areas. A biopsy is when a small sample of tissue is removed from a part of the body. The sample is then examined under the microscope to look for abnormal cells.
- Remove a superficial tumour with instruments which can be passed down a side channel of the cystoscope.

See separate leaflet called '*Cystoscopy*' for details of this procedure.

*Special urine tests* - More recently, urine tests have been developed which can detect bladder cancer. For example, urine tests called the BTA test, the NMP22 test, and the MCM5 test. These tests detect chemicals and proteins in urine that are made by bladder cancer cells. Trials are underway to see if these tests are accurate and reliable enough to diagnose and monitor bladder cancer. If the trials are successful then one or more of these tests may become more commonly used. They may in the future replace cystoscopy as the main way to diagnose bladder cancer.

*X-ray test* - Another test called intravenous urography (IVU) is an x-ray test that obtains pictures of your urinary tract. This is sometimes done to look for a bladder tumour.

### Assessing the extent and spread

If initial tests confirm that the cancer is a superficial tumour then no further tests may be necessary. Superficial bladder tumours have a low risk of spread to other parts of the body.

However, if you have a muscle invasive tumour, then further tests may be advised to assess if the cancer has spread. For example, a CT scan, an MRI scan, or other tests. (There are separate leaflets which describe each of these tests in more detail.) This assessment is called 'staging' of the cancer. The aim of staging is to find out:

- How much the tumour in the bladder has grown, and whether it has grown to the edge, or through the outer part of the bladder wall.
- Whether the cancer has spread to local lymph nodes.
- Whether the cancer has spread to other areas of the body (metastasised).

By finding out the stage of the cancer it helps doctors to advise on the best treatment options. It also gives a reasonable indication of outlook (prognosis). See separate leaflet called '*Cancer Staging*' for details.

## What is the treatment for superficial bladder tumours?

### Removal of the tumour

Most superficial bladder tumours are removed by a specialist with the aid of a cystoscope (described earlier). This is called 'transurethral resection - TUR' as the tumour is removed (resected) via a cystoscope which is passed up the urethra. It does not involve an operation to cut into the bladder. Thin instruments can be passed down a side-channel of the cystoscope to remove the tumour.

### Immediate chemotherapy

Following a TUR, it is usual to have one dose of 'intravesical chemotherapy' (chemotherapy in the bladder). This is usually done within 24 hours of having a TUR. It involves inserting a liquid into the bladder via a catheter which then remains for a few hours. The liquid contains a chemotherapy drug. Chemotherapy drugs kill cancer cells, or stop them from multiplying. The aim is to kill any cancer cells that have been left behind following the TUR. Studies have shown that one dose of 'intravesical chemotherapy' reduces the chance of the tumour recurring in the future.

See separate leaflet called 'Chemotherapy' for general details about chemotherapy.

### Further chemotherapy / immunotherapy

The tumour that is removed during a TUR is examined under the microscope. This enables the exact stage and type of the tumour to be determined. Depending on the stage and type of the cancer, further 'intravesical chemotherapy' may be advised. This is done by using a catheter (as described above) and may be done every 1-4 weeks for several months. The aim is to be as certain as possible that all cancer cells are killed, which reduces the chance of recurrence of the tumour.

The most commonly used drug for further chemotherapy is called BCG. This is actually a vaccine which is used to prevent TB. It is not clear how it works for bladder cancer. It may stimulate the immune system in some way to clear any abnormal cells in the bladder lining. So, strictly speaking, treatment with BCG is 'immunotherapy'. Other chemotherapy drugs are sometimes used instead of BCG.

### Repeat checks

After a superficial tumour is removed, you will need a cystoscopy every so often. A recurrence of a tumour occurs in some cases, and routine 'check cystoscopies' will detect these at an early stage. If one recurs, it can be treated again. The time interval between check cystoscopies is every 3-4 months at first but may become longer if the bladder remains free of tumour at each check. You may need a check cystoscopy every now and then for several years to make sure the tumour has not returned.

As mentioned above, urine tests have been developed to diagnose bladder cancer. If trials are successful, a urine test may become the way to check if a tumour has recurred rather than a cystoscopy.

## What are the treatment options for muscle invasive tumours?

Treatment options which may be considered include surgery, chemotherapy and radiotherapy. The treatment advised for each case depends on various factors such as the stage of the cancer (how large the cancer is and whether it has spread), and your general health.

You should have a full discussion with a specialist who knows your case. He or she will be able to give the pros and cons, likely success rate, possible side-effects, and other details about the various possible treatment options for your type of cancer.

You should also discuss with your specialist the aims of treatment. For example:

- Treatment may aim to cure the cancer. Some bladder muscle invasive cancers can be cured, particularly if they are treated in the early stages of the disease. (Doctors tend to use the word 'remission' rather than the word 'cured'. Remission means there is no sign of the cancer following treatment. If you are 'in remission', you may be cured. However, in some cases a cancer returns months or years later. This is why doctors are sometimes reluctant to use the word cured.)
- Treatment may aim to control the cancer. If a cure is not realistic, with treatment it is often possible to limit the growth or spread of the cancer so that it progresses less rapidly. This may keep you free of symptoms for some time.
- Treatment may aim to ease symptoms. If a cure is not possible, treatments may be used to reduce the size of a cancer which may ease symptoms such as pain. If a cancer is advanced then you may require treatments such as painkillers or other treatments to help keep you free of pain or other symptoms.

### Surgery

An operation to remove the bladder is the most common treatment. This is a major operation. Before surgery you need a full discussion with a surgeon to understand the implications of the operation planned. For example, you will need an alternative way of passing urine if you have your bladder removed. One way for this is by a 'urostomy'. This is where a surgeon uses a technique to arrange a system for urine to drain into a bag which you wear on the outside of your abdomen. An alternative operation may be possible where the surgeon creates an artificial type of bladder from a part of the gut.

Even if the cancer is advanced and a cure is not possible, some surgical techniques may still have a place to ease symptoms. For example, if the passage of urine is blocked by a tumour then placing a catheter or other techniques may be appropriate.

### Radiotherapy

Radiotherapy is sometimes used instead of surgery. Radiotherapy is a treatment which uses high energy beams of radiation which are focussed on cancerous tissue. This kills cancer cells, or stops cancer cells from multiplying. (There is a separate leaflet which gives more details about radiotherapy.)

### Chemotherapy

Prior to surgery or radiotherapy, a course of chemotherapy may be advised. This is called 'neoadjuvant chemotherapy'. Chemotherapy is a treatment of cancer by using anti-cancer drugs which kill cancer cells, or stop them from multiplying. Chemotherapy used before surgery may improve the outlook (prognosis). In some cases a course of chemotherapy is given following surgery. (There is a separate leaflet that gives more details about chemotherapy.)

## What is the prognosis (outlook)?

- **Superficial bladder tumours.** There is a good chance of a cure with treatment. Also, routine checks every few months following treatment will often detect recurrences early and treatment can be repeated as necessary.
- **Muscle invasive bladder tumours.** A cure is less likely than with a superficial tumour. As a rule, the earlier the stage of the tumour, the better the chance of a cure with the treatments listed above. However, even if it is not cured, treatment can often slow down the progression of the cancer.

The treatment of cancer is a developing area of medicine. New treatments continue to be developed and the information above about outlook is very general. The specialist who knows your case can give more accurate information about your particular outlook, and how well your type and stage of cancer is likely to respond to treatment.

## Further help and information

### Cancerbackup

3 Bath Place, Rivington Street, London, EC2A 3JR

Tel: 0808 800 1234

Web: [www.cancerbackup.org.uk](http://www.cancerbackup.org.uk)

Provides information and support to anyone affected by cancer.

### Cancer Research UK

Web [www.cancerhelp.org.uk](http://www.cancerhelp.org.uk) - detailed information about cancer and treatment choices.

### Other support groups

See [www.patient.co.uk/selfhelp.asp](http://www.patient.co.uk/selfhelp.asp) for a list of self help and support groups for cancer.

## References

- [Guidelines on TaT 1 \(Non-muscle Invasive\) Bladder Cancer](#), European Association of Urology (2006)
- [Guidelines for Bladder Cancer - Muscle-invasive and Metastatic Bladder Cancer](#), European Association of Urology (2006)
- [Management of transitional cell carcinoma of the bladder](#), SIGN (2005)
- [Cancer Management](#) 9th Edition 2005. Edited by Richard Pazdur et al.

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Comprehensive patient resources are available at [www.patient.co.uk](http://www.patient.co.uk)

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