NDRS
NATIONAL DISEASE REGISTRATION SERVICE

National Disease Registration Service (NDRS)

Urological tumours

Prostate

v3 December 2025

Welcome to this NDRS training module on Urological tumours - Prostate This module is designed to help Cancer Administration staff gain a better understanding of these tumours and the terminology used by the clinical teams.

Agenda

- Introduction
- Prostate tumours
- Summary
- Acknowledgements

This module may be paused at any time

We're going to give you a brief introduction to Urological tumours including some of the symptoms that patients might experience. We'll look at the anatomy & physiology of the Urological system and will then go through diagnosis & treatment options. This module can be paused at any time.

Introduction

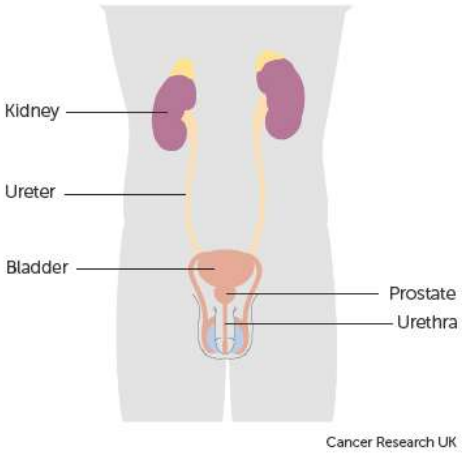
In this section we will cover:

- Types of Urological tumour

Firstly, we'll look at the various types of Urological tumour…

Urology

- There are two main types of Urological tumours:
  - Prostate tumours
  - Urinary Tract tumours. These tumours are subdivided into:
    - Kidney tumours (excludes Renal Pelvis)
    - Tumours of the Renal Pelvis, Ureter, Bladder & Urethra



Cancer Research UK

Urological tumours are divided into tumours of the Prostate and tumours of the Urinary Tract. Urinary tract tumours are further classified as either Kidney or Renal Pelvis, Ureter, Bladder & Urethra. This module covers tumours of the Prostate.

Prostate

In this section we will cover:

- Causes and Risk Factors
- Signs and Symptoms
- Anatomy & Physiology
- Regional Lymph Nodes
- Diagnosis
- Morphology & Topography
- Grade
- Stage
- Treatment

We'll start off by looking at the causes and risk factors …

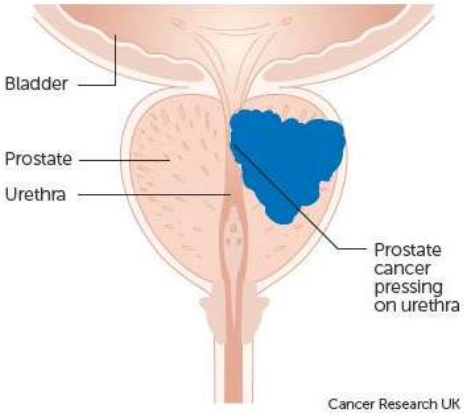
Prostate – Causes & Risk Factors

- Increasing age
- Ethnic origin
- Family History of Prostate, Breast or Ovarian Cancer
- Lynch syndrome (a hereditary condition that also increases the risk of bowel cancer)
- Obesity

The risk of prostate tumours increases with age. They are less common in men of Asian origin but more common where there is a family history of certain other conditions or where the patient is extremely overweight

Prostate – Signs & Symptoms

- Patients with an early prostate tumour may not present with symptoms. Smaller tumours are unlikely to compress and narrow the urethra
- The urinary symptoms are not specific to prostate cancer, non cancer conditions such as benign prostatic hyperplasia (BPH) and prostatitis can also present with similar symptoms



Symptoms tend to occur only once the tumour has started to narrow the urethra. However, some benign conditions may also cause the same symptoms…

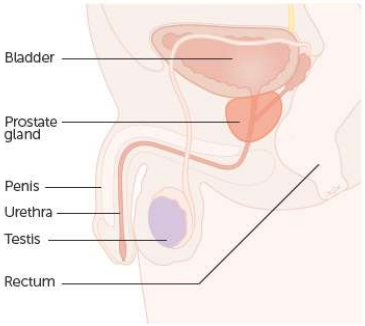
Prostate – Signs & Symptoms

- Changes in urine flow including pain
- Dribbling of urine
- Urinary urgency or frequency
- Nocturia (waking up to urinate at night)
- Urinary retention
- Urinary incontinence
- Pain from bone metastases
- Weight loss
- Loss of libido

… which might include pain on urinating, frequent urination or waking up at night to urinate.

Prostate – Anatomy & Physiology

- The prostate gland is about the size of a walnut and located at the base of the bladder
- It can be divided anatomically either by lobes or zones, and is generally described as having two lobes, left and right although for COSD, laterality does not apply
- The prostate is surrounded by a capsule which consists of a band of fibromuscular connective tissue
- The prostate surrounds the urethra as it leaves the bladder



Cancer Research UK

Roughly the size of a walnut and located at the base of the bladder, the prostate is usually described as having two lobes: one on the left, one on the right. These lobes wrap around the urethra as it exits the bladder. It should be noted that although there are two lobes, there is only one prostate so laterality does not apply for the purposes of COSD.

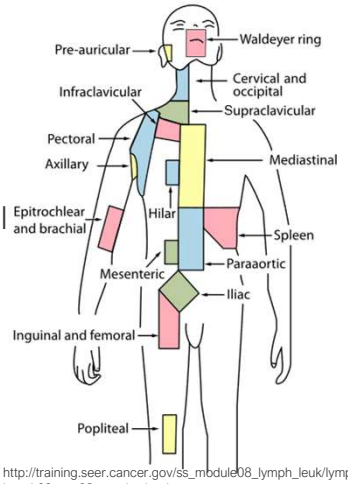
Prostate – Anatomy & Physiology

- The function of the prostate is to produce and secrete a fluid that constitutes about 25% of the volume of the semen
- The growth and function of the prostate is dependent on the male hormone testosterone which is produced mainly by the testes, although small quantities are produced by the adrenal glands

The prostate secretes fluid that makes up a quarter of the volume of semen. This function depends on testosterone levels in the body

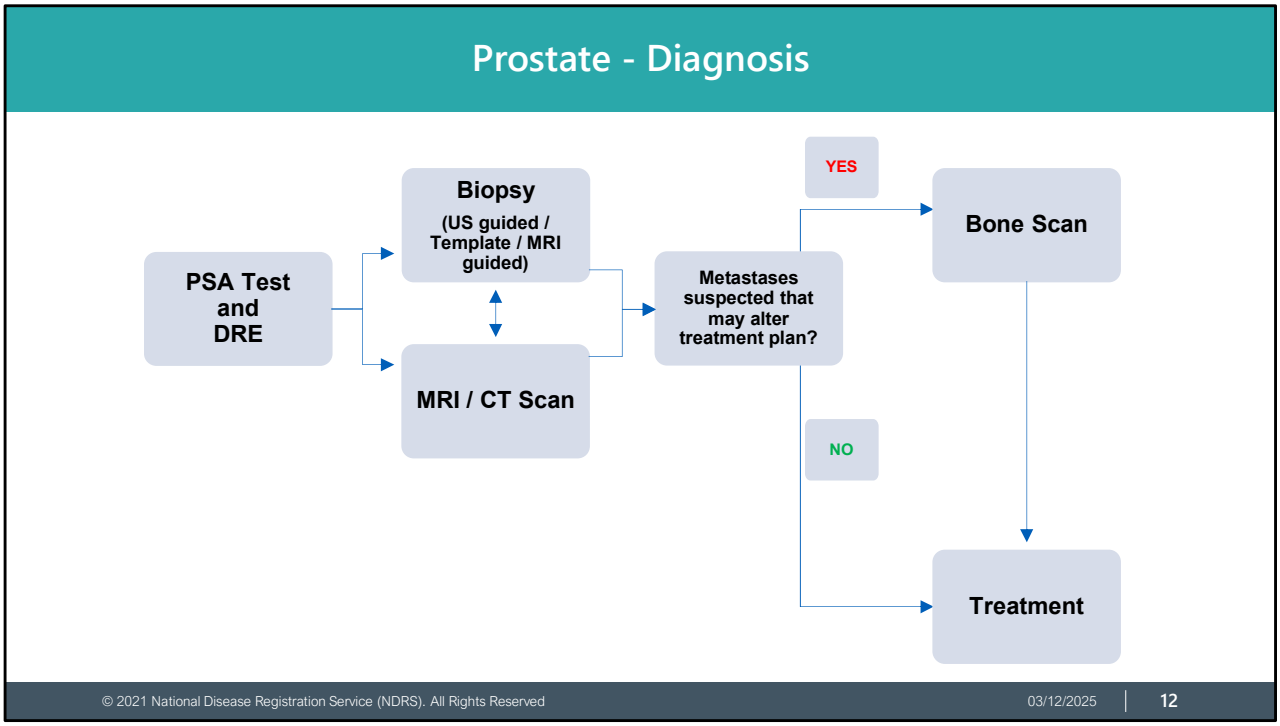
Prostate – Regional Lymph Nodes

- The regional or local lymph nodes associated with the prostate are the nodes within the pelvis below the bifurcation of the common iliac arteries
  - Pelvic lymph nodes
  - Hypogastric lymph nodes (situated near the internal iliac lymph nodes)
  - Obturator lymph nodes (situated near the external iliac lymph nodes)
  - Iliac lymph nodes
  - Sacral lymph nodes (situated near the sacrum at the base of the spine)



http://training.seer.cancer.gov/ss_module08_lymph_leuk/lymph_unit02_sec02_reg_lns.html

Regional lymph nodes for the prostate include the Pelvic, iliac and sacral lymph nodes



The diagnostic process usually starts with a Prostate Specific Antigen test (or PSA test) as well as a Digital Rectal Examination. Imaging, which may include an MRI or ultrasound, normally follows, generally with a biopsy. If mets are suspected, the patient may undergo a bone scan

Prostate – Diagnosis - Prostate Specific Antigen

- Prostate Specific Antigen (PSA) is a protein produced in the prostate and can be detected in the blood
- Elevated PSA levels in the blood can give an indication of problems in the prostate, but is not always cancer. A number of benign conditions can cause PSA level to rise, such as prostatitis and benign prostatic hyperplasia (BPH)
- If a patient is found to have a raised PSA, it is not diagnostic for prostate cancer but can give an indication that further investigations are necessary
- In patients diagnosed with prostate cancer, PSA testing can be used to monitor the patient

PSA is detected via a blood test. Higher levels of PSA indicate that further investigation is needed but are not necessarily an indication of a tumour.

Prostate – Diagnosis - Digital Rectal Examination (DRE)

- Digital rectal exams involve the examination of the prostate through the rectal wall and are used in conjunction with other tests to diagnose problems with the prostate

- Enlarged
- Hardened
- Lumpy

- The results from DRE are also an important component to staging invasive prostate tumours

DREs are used to assess the size, palpability and smoothness of the prostate and are important in the staging process.

Prostate – Diagnosis - Imaging

Ultrasound Scan

- Used to guide prostate biopsies.

MRI Scan

- Used for assessment of local spread of the tumour, and may also include information on nodal involvement. Sometimes used for targeted biopsies.

CT Scan

- Used when MRI is not possible.
- Used to assess nodal involvement and distant metastasis.

Bone Scan

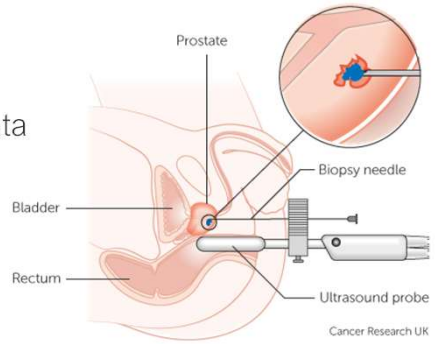
- Used to check for bone metastasis as bone is the most common site of distant spread.

Several types of imaging may be utilised and these may include a trans-rectal ultrasound to guide a biopsy. MRIs may also be used to guide biopsies as well as to assess nodal involvement. Bone scans are used where mets are suspected

Prostate – Diagnosis - Biopsy

The most definitive diagnostic test is a biopsy. There are different techniques to biopsy the prostate:

- Transrectal US guided biopsy
- Transrectal US guided biopsy using prior MRI data (also known as a fusion biopsy)
- Template biopsy



The definitive test for malignancy is a biopsy. Biopsies may be guided by Ultrasound, with or without MRI imaging, or by use of a template

Prostate – Morphology & Topography - Invasive

- Assigning a tumour site for a primary prostate cancer is very simple as all are assigned the same topography: C61X
- The morphology of the majority of invasive tumours arising in the prostate is adenocarcinoma – M81403

All invasive tumours of the prostate are ICD10 coded as C61X. Most invasive tumours are adenocarcinomas.

Prostate – Morphology & Topography - Invasive

- Another invasive morphology, transitional cell carcinoma **cannot** arise in the prostate. If this morphology is found in the prostate, this will have arisen in the prostatic urethra or the bladder and spread into the prostate. In this instance the primary cancer would be recorded as:

- C68.0 – Urethra
- C68.1 – Paraurethral gland
- C68.8 – Overlapping lesion of urinary organs
- C68.9 – Urinary organ, unspecified

If the pathology report reveals transitional cell carcinoma, the tumour cells will not have originated in the prostate. These will be a metastatic deposit from a different primary tumour and the ICD10 code in the pathway will need to reflect this.

Prostate – Morphology & Topography – In Situ

- Once diagnosed, an in situ prostate tumour is classified as D07.5
- While your clinical team may request that D07.5 in-situ stomach tumours are recorded, these do not currently require a COSD submission from your cancer data management system – NDRS obtains this data direct from pathology laboratories
- The final digit of the ICD-O-3 morphology code describes the behaviour – see the NDRS training module: What is Cancer?

If the pathology comes back as in-situ, this is coded as D07.5. It should be noted that while your clinical team may request that non-invasive tumours are also recorded, these do not currently need a COSD submission from your cancer data management system – NDRS obtains this data direct from the pathology labs

Prostate – Grade

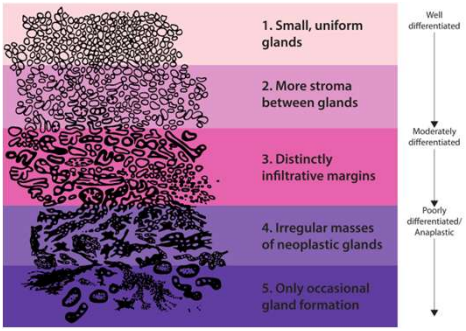
The Gleason score (grade) will ALWAYS have at least two components and may include a third:

Primary + **Secondary** + **Tertiary**

Each component is a grade between one and five, ie.:

3 + 4

The most common grade seen in the Pathology sample is listed first (in this instance 3) followed by the next most common grade (here it's 4)



Prostate tumours are graded using the Gleason system, which will always have at least two component numbers and may sometimes have three. These numbers describe the appearance of the tumour cells under the microscope: The higher the number, the more abnormal the cells appear. The position of the number in the score indicates how common that level of abnormality is within the sample – the most common grade is listed first.

Prostate – Stage

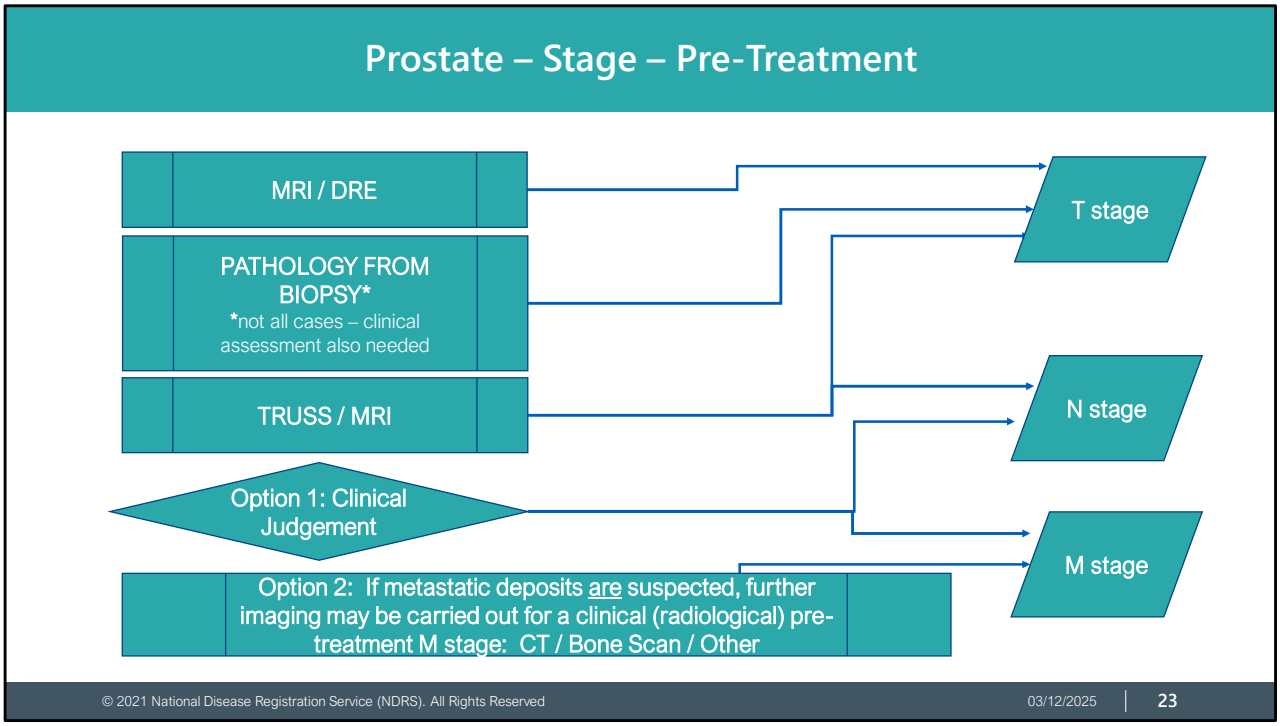
- Invasive prostate tumours are staged as follows:
  - For diagnosis dates up to 31st December 2025 use UICC TNM v8
  - For diagnosis dates from 1st January 2026 use UICC TNM v9
- Please note that the TNM version must be accurately recorded – if you are unable to amend the version on your cancer data management system, please refer to your line manager
- If, after 1st January 2026, your cancer data management system has not been amended to include TNM v9 please record the TNM v9 stage and add the following statement to the Primary Diagnosis Subsidiary Comment field:
  - Patient staged using TNM9 not TNM8 as per CR2070

Invasive prostate tumours are staged using the appropriate UICC TNM version

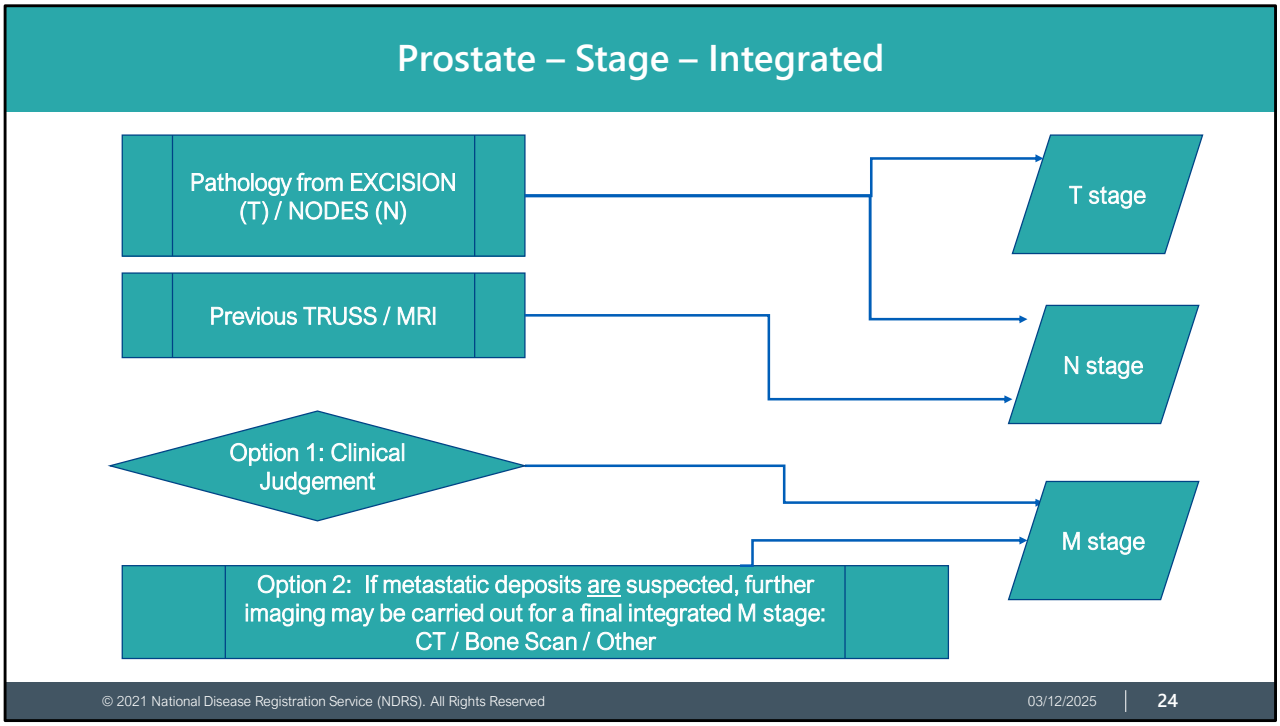
Prostate – Stage

- For details on recording stage, please see the NDRS training module KPI-TNM Staging 101, available on this link: https://digital.nhs.uk/ndrs/data/cancer-data-training-materials
- TNM stage should be recorded for all invasive tumours

For details on recording stage please refer to the NDRS training module KPI-TNM Staging 101



Most patients will undergo a non-surgical 1st treatment meaning the pathway must have a **pre-treatment** stage recorded. It's derived by the clinical team, based on physical examination, imaging – in some cases, a biopsy - and any other relevant examinations. Where there is no suspicion of metastatic deposits, it's expected that the clinical team would direct administrators to record M0

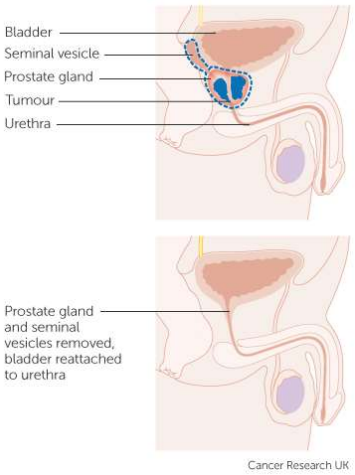


While surgery for prostate tumours is rarer, the Integrated stage is determined following surgery as the 1st treatment. This is determined from the integration of the pathological T & N stage and any other information collected such as metastasis which is usually arrived at by clinical means. Again, where there's no suspicion of mets, it's expected that the clinical team would direct administrators to record M0

Prostate – Treatment - Surgery

Prostatectomy

- The excision of the entire prostate gland, local nodes and nearby organs with a curative intent
- Patients with a fast growing locally advanced tumour that needs radical treatment can be offered a prostatectomy, provided that they are fit enough for major surgery
- There are significant side effects to prostatectomy which has to be considered before a decision for surgery to be made

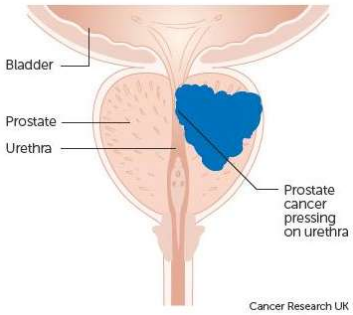


If Surgery is required, it may be in the form of a radical prostatectomy, where both the prostate and seminal vesicles are removed…

Prostate – Treatment - Surgery

Transurethral Resection of Prostate (TURP)

- TURP removes part of the prostate tissue that is pressing against the upper part of the urethra and restricting the flow of urine
- Usually TURP will not cure the patient, but can relieve symptoms of a prostate tumour
- TURP may be the only treatment required for non-invasive or early stage invasive tumours



… or in some instances a TURP will be offered. This surgery doesn't usually cure the patient but will relieve pressure on the urethra, allowing urine to pass more easily.

Prostate – Treatment – Hormone Therapy

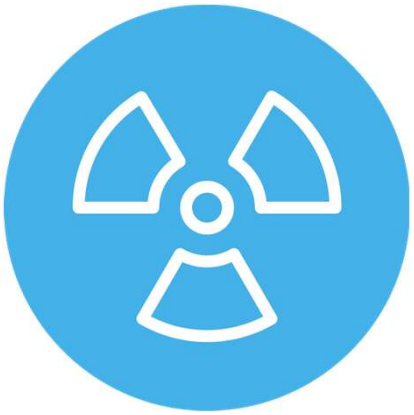
- The prostate is affected by the testosterone levels in the blood, this can be manipulated to treat/manage prostate tumours
- Hormones to reduce the level of testosterone in the blood which can slow the development of a prostate tumour
- There are different types of drugs that reduce testosterone levels and they are
  - Luteinising hormone blockers
  - Anti-androgens

Many patients are given hormone therapy to reduce the amount of testosterone in the body. This can slow the growth of a tumour but won't cure it

Prostate – Treatment - Radiotherapy

External Beam Radiotherapy

- High energy X rays are able to damage tumour cells, preventing them from growing
- Can be used to treat the whole prostate, regional lymph nodes with a curative intent
- Patients with bone metastasis can receive radiotherapy to relieve pain

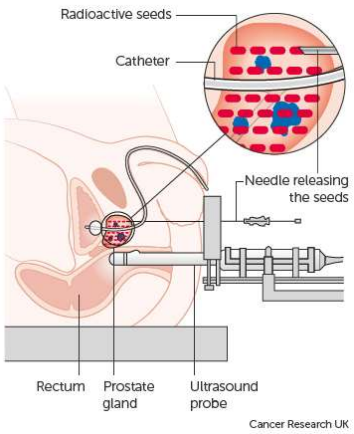


External beam radiotherapy may be offered with curative intent. For advanced cases where a curative treatment is not possible, the patient may undergo radiotherapy to bone mets to relieve symptoms

Prostate – Treatment - Radiotherapy

Brachytherapy

- Rather than external sources of radiation, a radioactive source is inserted into the body
- Low Dose (pictured) - Small radioactive metal seeds are inserted into the tumour to release over a period of time
- High Dose – Small tubes of radioactive material is inserted into the testicles or rectum, they are removed once the correct dose has been achieved



Brachytherapy is where a radioactive source is inserted into the body. The radiation destroys nearby cancer cells whilst minimising damage to surrounding tissue. In low dose brachytherapy, small pieces of radioactive metal are permanently inserted into the tumour, whereas for high dose brachytherapy the radioactive source is only temporarily inserted.

Prostate – Treatment – Active Surveillance

Active Surveillance

- May be offered where the patient has a very early stage tumour that is slow-growing or where the patient has declined or wishes to delay other active treatments
- Regular PSA checks
- Periodic DRE
- Multiparametric MRI
- The treatment plan may change if the tumour progresses

- For the purposes of COSD, Active Surveillance is recorded as Active Monitoring

Patients may be offered Active Surveillance if their tumour is either at an early stage or if they wish to decline or delay other active treatments. This would involve regular PSA checks & DREs, and potentially a specialised type of MRI. If the tumour progresses, the treatment plan may change.

Prostate – Treatment – Watchful Waiting

Watchful waiting

- May be offered where the patient has an advanced but asymptomatic tumour or a localised tumour where co-morbidities preclude other active treatments
- Regular PSA checks
- The treatment plan may change if the tumour progresses

- For the purposes of COSD, Watchful Waiting is also recorded as Active Monitoring

Patients with advanced prostate cancer but no symptoms may be offered Watchful Waiting as a treatment option, which involves only PSA checks at a longer interval. This may also be offered to patients with a localised tumour as well as other health conditions that would prevent more radical treatment options. For the purposes of COSD, both Active Surveillance & Watchful Waiting would be recorded as Active Monitoring

Summary

To summarise…

Summary

- Risk factors for prostate tumours include increased age, ethnicity and a family history of certain other cancers

Risk factors for prostate tumours include increased age, ethnicity and a family history of specified cancers

Summary

- Risk factors for prostate tumours include increased age, ethnicity and family history of certain other cancers
- The symptoms of prostate tumours can be the same as those of other benign conditions. Symptoms include difficulty urinating, waking up at night to urinate and frequent urination

Patients may present with difficulty urinating, waking up at night needing to urinate or needing to urinate more often but these can also be symptoms of benign conditions

Summary

- Risk factors for prostate tumours include increased age, ethnicity and family history of certain other cancers
- The symptoms of prostate tumours can be the same as those of other benign conditions. Symptoms include difficulty urinating, waking up at night to urinate and frequent urination
- Investigations usually start with a PSA test and a DRE and may include imaging with/without a biopsy

A PSA test and DRE are common diagnostic tests which are usually followed with imaging and probably a biopsy

Summary

- Risk factors for prostate tumours include increased age, ethnicity and family history of certain other cancers
- The symptoms of prostate tumours can be the same as those of other benign conditions. Symptoms include difficulty urinating, waking up at night to urinate and frequent urination
- Investigations usually start with a PSA test and a DRE and may include imaging with/without a biopsy
- If a tumour is diagnosed it may be invasive, in situ or of unknown or uncertain behaviour. While all invasive tumours must be recorded, non-invasive tumours do **not** need to be recorded on a cancer data management system for the purposes of COSD - NDRS obtains these records directly from pathology laboratories

If a tumour is diagnosed, it may or may not be invasive. All invasive tumours must be recorded in your cancer data management system and while the clinical team might request that non-invasive tumours are recorded, these do not need to be recorded for the purposes of COSD – NDRS obtains these records directly from the pathology labs

Summary

- Additional guidance on recording COSD data including morphology, topography, staging and recording a diagnosis can be found at: https://digital.nhs.uk/ndrs/data/cancer-data-training-materials
- Staging data sheets can also be downloaded from the NDRS website for clinical use: https://digital.nhs.uk/ndrs/data/cancer-data-training-materials/staging-sheets

Additional training modules as well as Staging sheets for clinical use may be downloaded from the NDRS website.

Summary

- If in any doubt as to whether you should be recording a diagnosis, please refer to the latest COSD User Guide, Appendices A, B & C
- For guidance on the required staging system, please refer to the latest COSD User Guide, Appendix E

- https://digital.nhs.uk/ndrs/data/data-sets/cosd#downloads

Do please remember, guidance **is** available on our website. You can download the COSD User Guide by clicking on this link and selecting the COSD version appropriate to your trust.

Acknowledgements

Many thanks to Cancer Research UK for the use of their images within this training module.

We'd like to thank Cancer Research UK for the use of their images within this training module.

Questions?

East Midlands: **Simon Cairnes** – simon.cairnes@nhs.net

Eastern: **Marianne Mollett** – marianne.mollett@nhs.net

London & South East: **Katrina Sung** – katrina.sung@nhs.net

London & South East: **Karen Graham**– karen.graham36@nhs.net

North West: **Paul Stacey** – p.stacey@nhs.net

Northern & Yorkshire: **Rachael Mann** – rachaelmann@nhs.net

Oxford: **Gemma Feeney** – gemma.feeney@nhs.net

South West: **James Withers** – james.withers@nhs.net

West Midlands: **Gemma Feeney** – gemma.feeney@nhs.net

If you have any questions on the information contained within this module or about COSD in general, do please feel free to email your regional Data Liaison Manager