Prostate Cancer

KNOWLEDGE EMPOWERS

Information booklet

Version 10

PCaSO

Prostate Cancer
Support Organisation

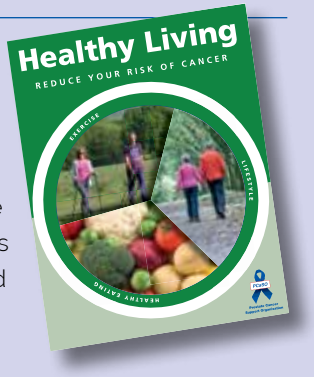
PCaSO Publications on www.pcaso.org

HEALTHY LIVING

A new 64 page publication from PCaSO, as a companion booklet to our Knowledge Empowers prostate cancer information booket, to emphasise and explain how a healthy lifestyle can be so important for our general health and may also reduce our risk of cancer.

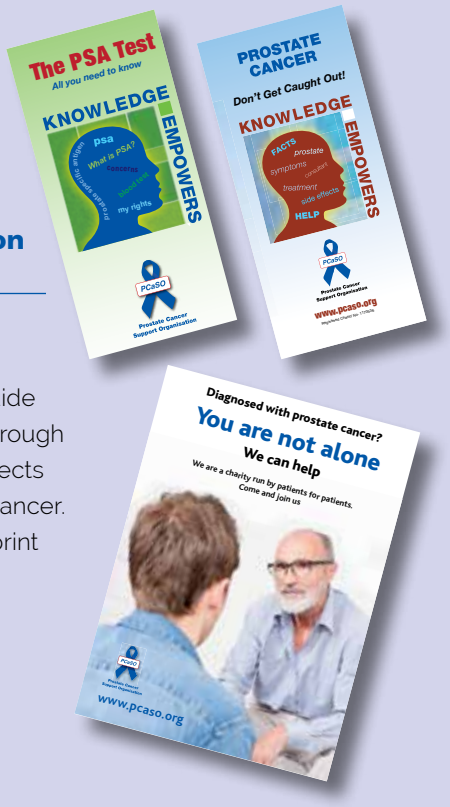
The booklet is arranged so that the first three Sections (1, 2 and 3) are mostly suitable for any adult to read, or dip into, and particularly so for men having a precautionary PSA blood test.

For men affected by prostate cancer, or those who are curious for more details, Section 4 includes information on books and online sources for any further reading.



Information Leaflets

A series of information leaflets to guide the reader through different aspects of Prostate Cancer. Available in print and online



Patient Stories

Some men diagnosed with different stages of Prostate Cancer and then having various treatments wanted to share their stories and encourage others to get tested as early as possible. Read their stories and find out why you should have a PSA test: https://pcaso.org/patient-stories/ or go to pcaso.org then to Information and select Patient Stories

PCaSO Videos

Here we bring together Videos about PCaSO, Prostate Cancer, and recordings of meetings or presentations that we believe will be of interest.

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Foreword

by Prof. Chris Parker

BA, MRCP, MD, FRCR

I am pleased to recommend this booklet as a summary of the information that all prostate cancer patients, and their families, need to know, written from a patient's perspective, and based on real patients' experiences.

Prostate Cancer is a difficult and complex disease, and the choices facing a man who is diagnosed with it – what treatment to have, indeed whether to be treated at all – are complex, perhaps more complex than in any other major cancer.

For a man to make the right decisions he and his family need access to information at the right level of detail and presented in a way that is easily understood. That is what this booklet provides.

Written by patients, for patients, this Information Booklet has

been compiled by PCaSO Prostate Cancer Support Organisation

Charity No: 1170536

Contents

one Facts, Tests and Diagnosis

two Treatment Options

three Living with and surviving Prostate Cancer

four Advanced and Recurrent Cancer

Introduction

Prostate cancer is not generally well understood, yet each year in the UK over 52,000 men are diagnosed with the disease (2018 stats-Cancer Research UK). In its early stages the cancer can develop quietly without obvious symptoms, and even changes such as difficulty or discomfort in passing water may be wrongly assumed to be simply the ageing process. Although there have been huge advances in the medical care and treatment of prostate cancer there is still no national screening programme, although cancer charities such as PCaSO (Prostate Cancer Support Organisation) and Tackle (National Federation of Prostate Cancer Support Groups) do lobby for national screening. Finding cancer early greatly increases the chance of a cure, whereas late diagnosis can limit the treatment options to containing the growth of the cancer.

The PSA (prostate specific antigen) blood test currently serves as the best indicator of prostate problems that may include cancer, and this booklet describes the PSA test. It also describes the 'patient pathways' in dealing with prostate cancer through diagnosis, treatment and dealing with any side effects of treatment. Although some treatments such as surgery and radiotherapy have been used for a long time, diagnosis and treatments for prostate cancer are still being refined and improved. Research continues with emerging new developments through trials that go through several stages and this booklet also mentions some of these.

Although all men are potentially at risk of prostate cancer, a healthy lifestyle including the Mediterranean diet, physical activity and suitable exercise can help the body's general resistance to the disease and, where cancer is diagnosed, may also aid in fighting the cancer's growth. See PCaSO booklet Healthy Living – Reduce your risk of Cancer.

Much has been written and published on the subject of prostate cancer treatment and prevention. This information booklet is intended as a comprehensive guide, from a patient's perspective, to most aspects of prostate cancer. It is hoped it will help you (and your partner, friends or family) understand about prostate cancer and its effects and it may help you when talking to health professionals, such as your GP, hospital consultants and specialist nurses.

It is for any man concerned about a rising PSA, but should be particularly useful for newly diagnosed men, whether they have been diagnosed at an early stage or only caught later when the cancer is more advanced. It can also be useful for more experienced patients, who may be facing some further treatment later in their prostate cancer 'journey'.

Each reader of this booklet will have a different level of experience and knowledge, thus needing to know different things. If you are new to prostate cancer we suggest you use the detailed Contents List to help you look for what you need to know for your particular circumstances, otherwise you may find you have too much information to absorb in one go. You can always read further sections later.

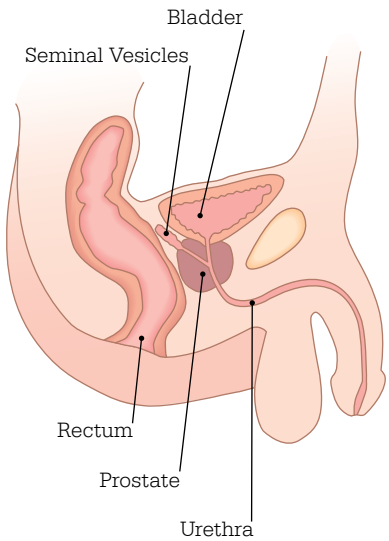
one

Facts, Tests and Diagnosis

The Prostate and Prostate Cancer

What is the Prostate?

The prostate is a sex gland found in all those who are born male, so it is an important issue for the 'Trans' community to be aware. It supplies the fluid needed for sperm, produced by the testes, to travel and survive. On each side of the prostate are bundles of nerves and blood vessels which help to control erectile function. It lies at the base of the bladder, surrounding the tube called the urethra which carries urine or semen to the end of the penis. The gland is about the size of a walnut in an adult male, but as men age, the gland. becomes enlarged and can squeeze the urethra, giving a reduced urine flow. This can lead to problems with the prostate, more common in older men.



Awareness is key

In a survey of 3,500 men by Prostate Cancer UK, 54% of men did not know where the prostate was; 92% were clueless about its role, and 17% didn't even know they had a prostate.

Risk Factors

There are four major risk factors that can influence your risk for developing prostate cancer. Prevention can hinge on awareness and appropriate screening—neither too early, nor too late, It's important to understand your personal risk profile.

Age – Once regarded as the curse of older men, younger men are being diagnosed in their 50s, and occasionally in their 40s. In the UK more men are diagnosed between the ages of 65 and 69 than any other age bracket.

Race - Black African and Black Caribbean origin are twice as likely to develop prostate cancer and twice as likely to die from it. Asian men who live in Asia have the lowest risk, but if they migrate to the 'West', their risk increases.

Diet and lifestyle – These can also be a factor, particularly a high-fat, highly processed carbohydrate diet. Research has shown that in obese men, recovery from surgery can be longer and more difficult, and the risk of dying from prostate cancer can be higher.

Family Histor y and Genetic Factors – BRCA1 and BRCA2 are two genes that everyone has. These genes are passed down from a parent (inherited). Prostate cancer risk is 5 to 7 times higher in men with BRCA1 or 2 gene mutation. The function of the BRCA genes is to keep healthy cells growing normally and prevent the growth of cancer cells. In some people, these genes change and don't work properly – called a gene mutation. Men with a gene mutation have a higher risk of prostate cancer. Your body can either create gene mutations over time or they can be inherited.

Prostate cancer cells with a BRCA1 or BRCA2 mutation need a protein called PARP. Olaparib blocks PARP, which makes it harder for cancer cells to live and grow. This means they are more likely to die (see page 56).

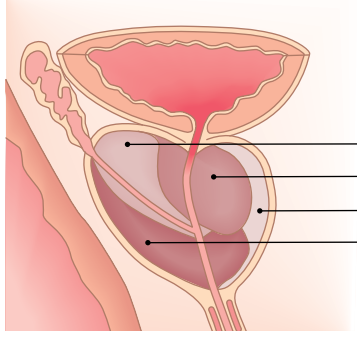
According to Cancer Research UK it is estimated that genetic abnormalities account for around

5–9% of prostate cancers. The risk is 2.1 to 2.4 times higher in men whose father has/had the disease; 2.9 to 3.3 times higher in men whose brother has/had the disease; 1.9 times higher in men with a second-degree relative (grandfather or uncle, nephew, or half-sibling) who has/had the disease. Prostate cancer risk is 19 to 24% higher in men whose mother has/had breast cancer.

'Pussycats' and 'Tigers'

Evidence of cancer in the prostate need not necessarily be a cause for immediate concern, as many cancers grow so slowly that they may never be life threatening.

It often spreads first to tissues that are near the prostate, such as the seminal vesicles and the nearby lymph nodes, which are part of the lymphatic system (see page 52). Prostate cancer has now been shown to have several variants. Research is progressing to predict more accurately the different types, and to identify which cancers are slow-growing and which are aggressive and need more urgent treatment.



Prostate 'Zones'

Most prostate cancers are found in the outer part of the prostate, called the peripheral zone, the back of the prostate and near the rectum. Most start when normal cells begin to grow out of control.

Slow-growing cancers, ('pussycats'), may stay within the gland, unnoticed and indolent, for many years. These may only require careful monitoring, without necessarily needing radical treatment, and can safely undergo Active Surveillance (see page 21).

The more aggressive 'tigers', however, have the potential to spread outside the prostate, sometimes quite rapidly, when symptoms may become noticeable. These will need active treatment, ideally before the cancer starts to invade other areas of the body.

Some Facts

- Prostate cancer is the most common cancer in men
- If you are a trans woman or bi-binary person assigned male at birth, you can get prostate cancer. If you have symptoms, then talk to your doctor.
- If the cancer is confined within the prostate, it is generally curable, so early detection may prevent death from prostate cancer
- Urinary symptoms (e.g. difficulty in passing urine or frequent night-time visits) may indicate cancer, but could also be caused by an enlarged prostate or an infection
- Prostate cancer in its early stages does not normally have any symptoms
- Early-stage disease offers a much wider choice of treatment options – more than for any other cancer
- Once the cancer begins to spread outside the prostate, there are fewer options for treatment, though there may still be possibilities for a cure
- If the cancer has spread to other organs or the bones, the disease can only be slowed and controlled
- If prostate cancer spreads elsewhere it remains as prostate cancer. It can spread to the bones, but it is not bone cancer'

The PSA Test

PSA

PSA measures the level of Prostate Specific Antigen, a protein found mostly in the semen, but with small amounts secreted naturally into the bloodstream. When prostate cancer growth is present more PSA is released into the bloodstream. A PSA blood sample is normally taken at a GP surgery, it is not primarily a direct test for prostate cancer but is simply a measure of the health of your prostate. At present it is the best simple test we have.

Not all prostate cancers are aggressive and need treatment, and PSA screening has, in the past, led to invasive investigation and 'over diagnosis' followed by 'over treatment' through radical surgery or radiotherapy and their associated side effects of impotence, incontinence and bowel disturbance. It is equally true, however, that many thousands of men have avoided a slow and painful death through early treatment of prostate cancer that was detected by PSA screening. Early detection is most important.

Free-to-Total PSA (or Free and Bound PSA Ratio, or fPSA)

A standard PSA test measures the total PSA in the blood. But PSA has different forms. It can either be Bound – attached to a protein in the blood or Free – not attached to a protein. Research indicates that if more than 18% of PSA is free, there is less chance of having a high-grade prostate cancer. So, the lower the percentage, the higher the risk. The Free to Total ratio can be used as another tool in potential diagnosis. Currently it is not widely used as Multi Parametric MRI is the first choice following an elevated PSA reading.

What is a normal reading?

The older you are, the higher your PSA level is likely to be (whether or not you have prostate cancer), as PSA naturally seeps into the bloodstream with age. It is measured in nanograms per millilitre (ng/ml), and can range from less than 1.0 ng/ml to readings in the 1000s. Readings from 0.1 to 3 (depending on age) are generally normal. A single reading is of little value unless it is high (say over 10.0 ng/ml). It does however provide a 'baseline' guide reading, which is likely to decide how regular you should be tested.

What if my PSA is higher than normal?

If the reading is marginal or borderline (say between 3.0 and 5.0 ng/ml), a repeat test should be requested, normally after a few weeks. This is because the rate at which the PSA level may be increasing (called PSA velocity) can be a more reliable indicator of the presence of prostate cancer than a one-off test result. Many leading urologists recommend that all men over 50 or at special risk know and monitor their PSA regularly, and action should be taken when any substantial increase is noted. PSA doubling time refers to the time taken, between tests, for the PSA reading to have doubled, that may indicate a possible aggressive tumour. The PSA test is not 100% perfect, as elevated levels can be caused by other benign prostate problems. But the PSA test is widely accepted as an invaluable tool for monitoring prostate cancer disease activity and remission from prostate cancer, after treatment.

> If a man has a diagnosis of prostate cancer, the PSA test is useful, because it can track prostate cancer growth well before any clinical signs or symptoms.

A particularly high reading (i.e. above 10ng/ ml) is more likely to be an indication of the presence of cancer in the prostate rather than other causes, such as prostate enlargement or prostate infection.

If the PSA reading is high, or the rate of increase is higher than expected, or there are other indications, your GP should refer you to a urologist for further tests, in order to determine if cancer is present. These tests are outlined in the next section.

The age-specific PSA thresholds shown below for men with possible symptoms of prostate cancer are in accordance with NICE Guidelines (Dec.2021). If the reading is above the threshold shown for his age, then the man should be referred using the suspected cancer pathway referral for an appointment within 2 weeks.

Age	PSA threshold (ng/ml)
Below 40	Use clinical judgement
40 to 49	More than 2.5
50 to 59	More than 3.5
60 to 69	More than 4.5
70 to 79	more than 6.5
Above 79	Use clinical judgement

What can cause an elevated PSA reading?

Sometimes a raised PSA level can be a sign of prostate cancer. It can also often point to something less serious, such as:

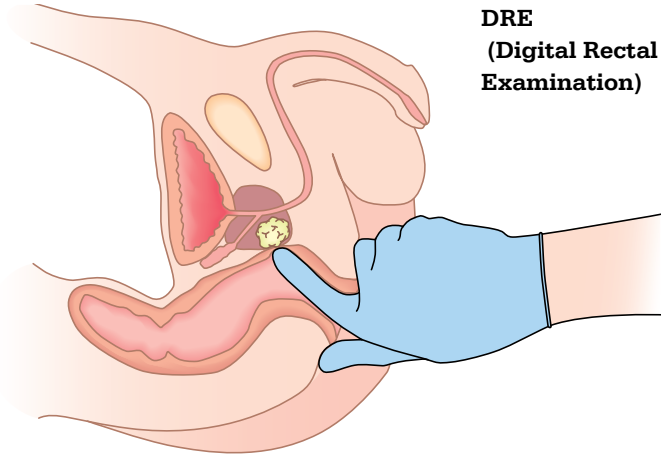
- an inflamed or infected prostate (prostatitis)
- an enlarged prostate that often comes as men age
- a medical condition called Benign Prostatic Hyperplasia, or BPH (sometimes now called BPE, standing for Benign Prostate Enlargement)
- an infection within the urinary tract
- ejaculation within the previous 48 hours before the test
- vigorous exercise within the previous 48 hours (particularly bike riding)

Some drugs may artificially lower PSA, such as finasteride (Proscar or Propecia) or dutasteride (Avodart). Roughly reduces PSA by 50%.

The DRE

If your PSA reading is raised your doctor may give you a Digital Rectal Examination (or DRE). Although not a completely reliable test for prostate cancer, because not all of the prostate can be felt, it is however a useful check of your prostate.

It is done by feeling it with a gloved finger in the back passage. This only takes a few seconds and generally causes only a little discomfort. Your prostate should feel smooth and soft, not hard and lumpy. If any abnormalities are felt, it may be a sign of a problem.



DRE (Digital Rectal Examination)

GP guidelines

The UK relies upon GPs to deliver PSA testing, both for symptomatic (with symptoms) and asymptomatic (without symptoms) men, in line with the recommendations of the Prostate Cancer Risk Management Programme (PCRMP 2016).

Currently the guidelines are following an outdated evidence base. They do not give clear guidance to men at higher risk – black men 40+ and men with family history of PCa 40+ or men with confirmed BRCA1 or BRCA2 gene mutations.

The current guidelines quote 'any man over 50 is entitled to a PSA test' you don't need to have symptoms.

GPs should use their clinical judgement to manage asymptomatic men and those aged under 50 who are considered to have higher risk for prostate cancer.

PSA testing decisions should be made on an individual basis between the doctor and patient, based on a full examination of risk factors. Testing from age 40 onwards for those with higher risk is advised.

Some Facts

Your GP consultation and the PSA Test

- The PSA test may reassure you if the reading is normal
- It can be an early indication of prostate problems
- It can find cancers earlier than is possible by a DRE alone
- It may lead to treatment at an early stage and provide long-term remission

But:

- A raised PSA level may lead to further tests when you have no cancer
- A mildly elevated PSA could lead to a diagnosis of prostate cancer which may be harmless and never need treatment
- Most men (typically two out of three) who have a raised PSA level may turn out not to have prostate cancer
- A small percentage of men with a 'normal' PSA result may actually have a rare form of prostate cancer that doesn't elevate the PSA reading

Further tests for prostate cancer

CT scan

A computerized tomography (CT) scan combines a series of X-ray images taken from different angles around your body and uses computer processing to create cross-sectional images (slices) of the bones, blood vessels and soft tissues inside your body. CT scan images provide more-detailed information than plain X-rays do. CT scans are most often an outpatient procedure. The scan is painless and takes about 10 to 30 minutes.

MRI scan

A Magnetic Resonance Imaging (MRI) scan creates a cross-section of the soft tissues around the selected part of the body by using magnetic fields.

In the past the test was normally done after a biopsy, as a further check to see whether there is any spread outside the prostate. Following advances in technology (both software and hardware), clinicians are now using a multi-parametric MRI (mpMRI) scan of the prostate area **before** a biopsy is considered, for men with suspected clinically localised prostate cancer (NICE guideline 2022).

In addition, the newly published PRIME trial results show that a 'two-part' bi-parametric MRI (bpMRI) can be just as good as a 'three-part' mpMRI in diagnosing prostate cancer. By removing the third part of an mpMRI scan, requiring an injection of a contrast agent, the process becomes faster, cheaper, and more accessible without negatively impacting diagnostic accuracy.

Likert score - What this means
1 It's highly unlikely that you have prostate cancer
2 It's unlikely that you have prostate cancer
3 It's difficult to tell from the scan if a prostate cancer is present or not
4 It's likely that you have prostate cancer
5 It's very likely that you have prostate cancer

However, for centres wishing to switch to bpMRI due to the study results, it is essential that they first ensure that the MRI scanner is calibrated accurately to detect prostate cancer. This is more important with a shorter, two sequence scan.

Standardisation and consistency of interpreting MRI scans has led to a PI-RADS/Likert grading system being adopted. If no significant tumour is found on the MRI (PI-RADS/Likert grade 1 & 2) then there may be no need for an immediate biopsy.

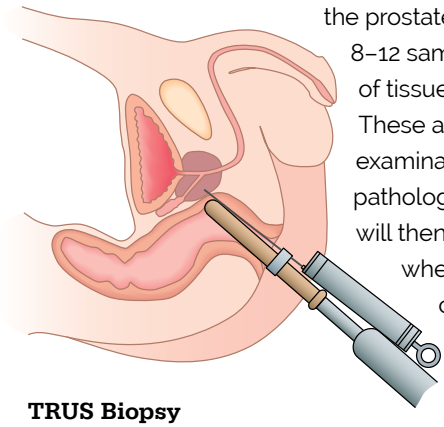
The PROMIS trial showed that if an mpMRI scan of the prostate was normal in a man with a raised PSA, a biopsy was unnecessary and surveillance was all that was required. This is now saving many unnecessary biopsies and preventing 'over-diagnosis' of non-aggressive prostate cancer; this has reduced the risk of 'over-treatment' to 4% and falling (National Prostate Cancer Audit 2018 report).

TRUS Biopsy

Biopsy is a procedure in which a number of small samples of an organ are extracted and examined under a microscope to identify the presence or not of cancer. A Trans-Rectal Ultra-Sound (TRUS) guided biopsy of the prostate is a short procedure that takes place at a hospital as an out-patient.

A local anaesthetic is given, but some men can still find the procedure uncomfortable.

A lubricated ultrasound probe is first inserted into the back passage in order to provide a 'map' of the prostate. The doctor will then pass a fine needle through the rectal wall into the prostate to extract 8–12 samples of tissue cores. These are sent for examination to a pathologist, who will then determine whether any cancerous tissue is present.



TRUS Biopsy

Antibiotics are given prior to and immediately following the procedure to reduce the risk of infection. There may be a little blood in the urine and/ or the back passage for up to three weeks after a biopsy, and blood in the semen for 4–6 weeks. This is not a cause for concern and is normal, but any other symptoms should be referred immediately to your GP or hospital.

As a biopsy takes tiny sample cores from the prostate, it is possible that the needle may miss the cancer. The greater the number of samples taken, the more likelihood of detecting cancer. Greater sampling, however, can lead to increased risk of complications with TRUS. New techniques (see Fusion Guided Biopsy) mean that better accuracy is now possible and TRUS Biopsy is gradually being replaced by Transperineal.

Recent advances in MRI scanning techniques and the introduction of advanced software has led to greater accuracy in identifying the position of any tumour and its potential aggressiveness.

Template (or Transperineal) Biopsy

Because a standard biopsy may miss finding smaller cancers, there is a growing shift towards using a template biopsy, a more precise test which can sample the whole prostate. This can be done when suspicions of cancer are high, or if a TRUS biopsy result is inconclusive. Many urologists now prefer to recommend this method to patients with high/intermediate risk. The procedure is performed under either a general or local anaesthetic and may require an overnight stay in hospital. A grid will be placed over the perineal area (between the anus and scrotum) through which many more needles can be inserted to take samples (up to 60). As well as being more accurate, a template biopsy is considered safer, as there is less risk of infection from untreatable bacteria, compared to a standard TRUS biopsy.

Fusion Guided Biopsy

New software has been devised that 'fuses' the MRI images with the real-time ultra-sound probe. The MRI images are overlaid onto the ultrasound image which enables the urologist doing the procedure

to pinpoint the suspicious areas with much greater accuracy. It can lead to fewer samples being taken and, for those who may need further biopsies, fewer occasions where a repeat biopsy may be needed. Fusion Guided Biopsy may not be available at all hospitals and is not yet NICE approved.

Isotope Bone Scan

This test is to show whether the disease has spread to the bones. A small amount of low dose radioactive tracer is injected into the arm about three hours before the scan, the tracer is taken up by active bone cells including those with cancer. The scan takes about 45 minutes, and images of any bones showing the disease will appear on the scan. A bone scan will not usually be done unless the PSA score is greater than 10 and MRI and biopsy samples indicate a high-grade cancer. It is offered when hormone treatment is part of a Watchful Waiting programme for people who are at high risk of developing bone complications. It is painless and quite harmless.

PET Scan

A PET scan (Positron Emission Tomography) is taken to produce a detailed, three-dimensional picture of the inside of the body. Choline PET-CT scans have been shown to be effective for prostate cancer, especially for determining whether there is any spread outside the prostate. Before the scan takes place, a radioactive substance (choline), known as a radiotracer, is passed into your body by injection, by an inhaler, or a small tablet that you swallow. Choline PET scans may in the future be replaced by PSMA PET scans, which are more sensitive.

PSMA PET Scan

A Prostate Specific Membrane Antigen Positron Emission Tomography (PSMA PET) scan is an imaging test used to detect prostate cancer throughout the body. PSMA-PET scans are most commonly used on men with recurrent prostate cancer and can also be used on men who have been diagnosed with high-risk or metastatic prostate cancer. A small radioactive ligand, which has a tracer attached, is injected into the patient, targets a protein called PSMA, which is specific to prostate cancer cells. PET scans are the most sensitive scans available for detecting prostate cancer and the injected molecule that attaches to the tumour, will identify areas of cancerwhen a whole body scan is done, which then allows doctors to have a clear image of exactly where the prostate cancer is in a person's body. This means they are able to see small tumours that other scans miss.

The Gleason Score & ISUP Grading

Gleason Score

This is given after a pathologist has examined under a microscope cancerous tissue obtained from the needle biopsy. The cells identified are given a grade number from 1 to 5, depending on the abnormality of the cells, 1 being the lowest, 5 the highest. The grades of the two most common patterns are added together to give a score from 2 to 10. The higher the score, the more aggressive and fast-growing the cancer. Scores totalling 5 or less are insignificant and are not reported.

The consultant will give you a total score out of 10, which should be split down as two numbers out of 5: for example, 4+3. The first number is the predominant grade, so a score of 4+3=7, for example, is likely to prove slightly more aggressive than a score of 3+4=7.

Risk Group	ISUP Grade Group	Gleason Score
Low	1	<6
Intermediate Favourable	2	7 (3+4)
Intermediate Unfavourable	3	7 (4+3)
High	4	8
High	5	9 - 10

ISUP Grading

In 2014, the International Society of Urological Pathologists released supplementary guidance and a revised prostate cancer grading system called the ISUP Grade Groups. The ISUP Grade Group system is simpler, with just five grades, 1 to 5.

Your consultant may report your score either as a Gleason Score or an ISUP Grade Group, or you may receive both scores.

TNM Staging of Prostate Cancer

(How far the cancer has progressed)

The current system of staging prostate cancer is known as the TNM system (standing for 'Tumour/ Nodes/Metastasis'). The T stage of the disease refers to the form of the primary tumour in the prostate. This is the most relevant; it is described in full below.

T Stage Disease

T1: The doctor is unable to feel the tu mour or see it with imaging.

T1a: Cancer is found incidentally during an operation for benign prostate enlargement (called a transurethral resection of the prostate, or TURP) and is present in less than 5% of the tissue removed.

T1b: Cancer is found after a TURP and is present in more than 5%.

T1c: Cancer is found by mpMRI biopsy or biopsy.

T2: Can feel that the tumour seems to be confined to the prostate.

T2a: Cancer is found in one half or less of only one side of the prostate.

T2b: Cancer is found in more than half of one side of the prostate.

T2c: Cancer is found in both sides of the prostate.

T3: Cancer has begun to spread outside the prostate.

T3a: Cancer extends outside the prostate but not to the seminal vesicles.

T3b: Cancer has spread to the seminal vesicles.

T4: Cancer has spread to other tissues next to the prostate.

T4a: Cancer invades bladder neck, sphincter, or rectum.

T4b: Tumour has invaded the levator muscles and/or fixed to the pelvic wall.

Nodes

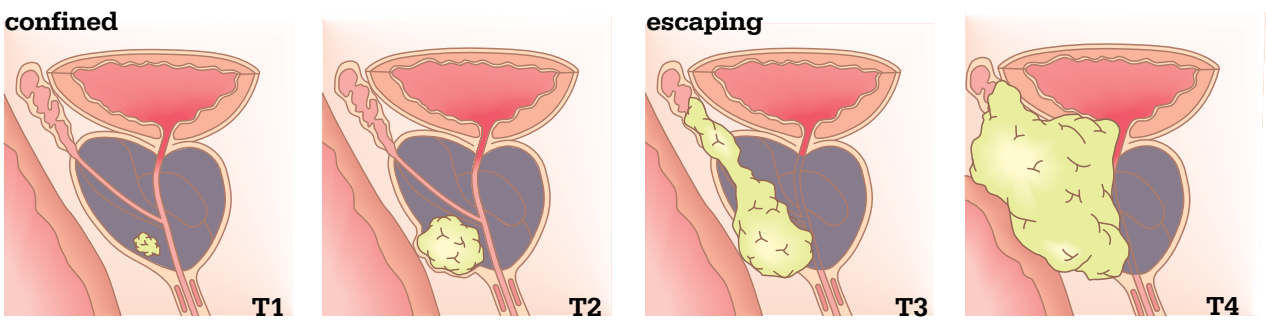
NO means there is no cancer in the lymph near the prostate

N1 means there is cancer in one or more lymph nodes close to the prostate.

Metastasis

MO means the cancer has not spread to other parts of the body.

M1 means the cancer **has** spread to another part of the body. Advanced cancer is always M1



Above shows stages T1 to T4, where the tumour (in yellow) develops from a small size to one where it has spread outside the prostate (in grey) to other structures.

Risk Category

Depending on a combination of PSA, DRE, Gleason score, (or ISUP score) and TNM stage, you will fit into a 'risk category'. The NICE Guidelines for Prostate Cancer were updated in Dec.2021 and have now adopted the Cambridge Prognostic Group (CPG) 5-tier model for risk stratification, see below. The tests you have had will also determine whether your cancer is –

Localised cancer enclosed within the gland;
Locally advanced the cancer has just begun to spread outside the gland;
Advanced the cancer will have spread from the prostate to other more distant parts of the body, see diagram in Section 4 (Pg 52).

Risk stratification for people with localised or locally advanced prostate cancer

Cambridge Prognostic Group	Criteria
CPG 1 (low risk)	**Gleason score 6** (grade group 1) **and** prostate-specific antigen (PSA) less than 10 microgram/litre **and** Stages T1–T2
CPG 2 (favourable intermediate risk)	**Gleason score 3 + 4 = 7** (grade group 2) **or** PSA 10 microgram/litre to 20 microgram/litre **and** Stages T1–T2
CPG 3 (unfavourable Intermediate risk)	**Gleason score 3 + 4 = 7** (grade group 2) **and** PSA 10 microgram/litre to 20 microgram/litre **and** Stages T1–T2 **or** Gleason 4 + 3 = 7 (grade group 3) **and** Stages T1–T2
CPG 4 (high risk)	One of: **Gleason score 8** (grade group 4), PSA more than 20 microgram/litre, Stage T3
CPG 5 (very high risk)	Two or more of: **Gleason score 8** (grade group 4), PSA more than 20 microgram/litre, Stage T3 **or** Gleason score 9 to 10 (grade group 5) **or** Stage T4

Dealing with your Diagnosis

When you are told you have cancer, very often it becomes a life-changing experience for you, your family and close friends. There is a lot to come to terms with and the news can be a great shock and throw you into confusion. It is not uncommon to have feelings of anger, sadness, guilt, feeling alone, loss of confidence and control, but this usually gets easier as the shock wears off and the situation becomes more real to you. There is no 'right' way of reacting to the diagnosis; everyone reacts in their own way. No matter the exact words that describe the results of your prostate biopsy, a diagnosis of prostate cancer forever changes everything. It can be confusing and overwhelming.

Fear of the future

Uncertainty about the future is one of the hardest feelings to deal with, and you could feel irritable, angry and frightened. It is normal to worry about dying if you've been given a cancer diagnosis. Many people find it helps to find out as much as possible about prostate cancer and in particular the 'stage' that you have been diagnosed with and what is likely to happen. As a newly diagnosed patient, you might be confused by arguments favouring one treatment over another or you may feel ill-equipped to make the decisions that are being required of you. Not everyone feels this way, but it is worth discussing

this with your doctors or nurse specialist, as they know your situation and treatment options and should be able to advise. You could write down some questions listed in the next pages before you next see your consultant.

Remember that not all prostate cancers need be treated. Many are so slow growing that they may never cause a problem in your lifetime. Only the more aggressive types need active treatment.

Helping yourself

Think positively. Look at your treatment options, along with the side effects, so you know what to expect. They are all detailed in this booklet. Be as active as you can; the fitter you are the better your body will be able to cope with treatment. Think more about your diet; this is a way that you can make a difference in fighting the disease. Find someone to talk to about prostate cancer. It could be someone close to you, a counsellor, someone on your medical team or someone you may meet at a support group meeting. It is often useful to talk to a 'professional stranger'. It is always useful to offload what is going on in your head and find answers. Try to manage stress by learning techniques to relax. If you or your partner find yourself badly affected by the stresses of your cancer, take action and seek further support from your GP, your local mental health line, Macmillan Cancer Support or Penny Brohn UK (see contacts on page 59)

After treatment

Many men survive prostate cancer that has been diagnosed in the early stages, but for some the treatment can be hard on your body and it can take some time before you feel fit again. Some men have side effects that gradually improve, while for others these can be ongoing or delayed. Not everyone experiences side effects, but some may experience difficulty sleeping, feeling weaker and more tired, lose or gain weight, have stiffness in muscles or joints.

If you are worried about erectile dysfunction, bowel or urinary problems following treatment, see section 3. It may help to put your mind at ease. There are on-line communities or forums for prostate cancer, where men can share their treatment experience and ask questions of others. These can be an effective way of dealing with prostate cancer together.

Local support groups also have meetings in person or online (e.g. Zoom), where men get together to share their experiences of treatment and living with the disease. Here you can often offload worries and know that someone within the group understands what you are going through, or just listening to other men talking about their treatment journey can help. To find a support group nearest to where you live, go to: **tackleprostate.org/about-prostate-cancer/find-a-support-group/**

On-going treatment

Some men will be diagnosed with advanced prostate cancer and be put on Hormone treatment (ADT). Other men, in the early stages of localised cancer, will be put on Active Surveillance. In both cases the treatment can be long-term and on-going. If you are on Hormone treatment, in some hospitals there is a specialist nurse who can do a holistic assessment and help prescribe or refer you to other agencies that can help. If you are on Active Surveillance, some men find this to be quite stressful and are so concerned at having cancer in the body without having radical treatment to remove it, that they opt for surgery or radiotherapy with all the possible side effects those treatments carry. The best way of avoiding anxiety over whether you should have radical treatment or stay on Active Surveillance is to educate yourself fully on the facts about prostate cancer. You are then able to make a logical decision on what is right for you. Reading this booklet is one way of doing that.

Lifestyle changes

Adopting a healthy lifestyle can help your body recover from treatment, reduce the side effects of treatment, including fatigue, that affect many cancer sufferers and reduce risk of relapse. Some

find that changing lifestyle increases confidence in living with, or even controlling, their disease. For prostate cancer sufferers, lifestyle change can reduce the rate of PSA progression, an important indicator of the state of the disease. It's also important to remember that cancer survivors often have more health problems than people of similar age and background. Lifestyle changes, such as healthy eating and regular exercise (see p. 40), can and do mitigate general health problems. For more information, see PCaSO 64 page booklet "**Healthy Living**" available as a printed copy or online at: **https://pcaso.org/forms-leaflets/pc122Healthylivingbooklet.pdf**

REMEMBER: **Take control of your cancer: don't let it control you.**

Many men gain enormous benefit from talking to other men who have experienced the same problems and local prostate cancer support groups can help a great deal.

Some Facts

- Psychological distress is currently not being assessed or managed well in men living with prostate cancer, despite just under a third of men reporting moderate or extreme anxiety or depression.
- Depression, anxiety, stress, fatigue, pain and psychosocial factors can affect patients with prostate cancer. These factors can occur as a result of impotence, erectile dysfunction, sexual issues and incontinence.
- Prostate cancer patients may also suffer a loss of self-confidence, which may be a particular issue in the period shortly after completion of primary treatment and this loss of self-confidence may be a significant barrier to accessing support

Questions to Ask

Many men and their partners often find it difficult to know the kind of questions to ask their consultant or Nurse Specialist. We have listed some that we find are commonly in the minds of the newly diagnosed. We hope that the list will help you to realise the importance of asking for the information you want to know and will give you the confidence to ask any that are important to you.

Work in Partnership with your Consultant

Let your consultant know if you want to work in partnership with him or her and be involved in the decision making; otherwise he or she may be unsure of how much involvement you want. The NHS reforms clearly emphasise 'No decision about me without me' and strongly feature patient choice in where you want to be treated.

Your consultant should refer you to a Nurse Specialist (your keyworker), who should have more time to go into greater depth of detail about treatments and side effects. You should be given written material about the details of the most appropriate treatments for you before you leave. If you are not given any leaflets or booklets, you should ask for these. You cannot be expected to remember all you were told.

Try to list your questions before you go and take them with you, or you may wish to photocopy the questions below and on the next page. Write down the answers, so that you can refer to them, at a later date. Try to take your partner or a friend with you to the consultation. It often helps. You may want to record the consultation; this is often possible with the agreement of your consultant.

Hospitals now adopt a multi-disciplinary team (MDT) approach to managing your treatment. A team would typically consist of a urologist, an oncologist, a pathologist, a radiologist and a urology nurse. The team meet regularly to discuss all their patients. Each individual patient's

treatment case is considered and approved by a range of senior clinicians, not just the doctor who happens to be seeing the patient when he comes for an appointment.

Some Questions for your Consultant

1. What is my Gleason score, and how is it split? (p. 12)
2. What T stage is my cancer? (p. 13)
3. Is my PSA increasing abnormally? (p. 8)
4. Can you tell me whether the cancer is fast or slow growing? (p. 7)
5. As far as you know, is the cancer confined to my prostate?
6. What further tests do I need, and when will I have them? (pp. 10-12)
7. Is there a team and a Nurse Specialist managing my case? (p. 38)
8. What is the long-term situation for me? (You may prefer not to ask.)

Treatment Options and General Questions

1. What treatments are available for my type of cancer? (pp. 20-21)
2. What treatments would you recommend, and why?
3. What are the potential risks and benefits from these treatments?
4. Are any treatment options available elsewhere, which are not here?
5. If so, would this treatment be funded if I had to go elsewhere?
6. How quickly do I need to decide on treatment?
7. What are the possible side effects from the treatments? (pp. 25, 26, 30)
8. Can anything be done to ease the side effects?

Important Questions for Surgery

1. What type of surgery will I have – open, keyhole or robotic? (p. 23)
2. How many operations like this have you done, and what are your results?
3. Is it possible to have nerve-sparing surgery? If not, why not?
4. Will I need any other treatments?

Important Questions for Radiotherapy

1. Will I be able to have the latest IMRT or IGRT radiotherapy? (p. 26)
2. What dosage will I receive, and over how many weeks? (p. 26)
3. Do I have Hormone treatment as well? If not, why not? (p. 25)

Important Questions for Hormone Treatment

1. Do I need to have a bone scan? (p. 12)
2. Will you recommend intermittent Hormone treatment if necessary? (p. 49)
3. What drugs can I have to ease any side effects?

Clinical Trials

1. Would I be a suitable candidate for a trial? (p. 57)

Support

1. Can I see my oncologist/urologist and Nurse Specialist?
2. Can I do anything to help myself with diet and supplements? (p, 40)
3. Can you give me details of any local support groups?

two

Treatment Options

Summary of Treatment Options for Localised and Locally Advanced Prostate Cancer

As detailed in Section 1, page 15, you will have been diagnosed with one of the 5 risk categories of prostate cancer under the Cambridge Prognostic Group (CPG) risk stratification, for those with localised or locally advanced cancer. For advanced cancer, see Section 4, page 48.

Where options are available, you may not always be informed of all the possible choices, nor will you necessarily be recommended a particular treatment. It is therefore not always easy to make a decision on which treatment to choose. Some may not be available at your local hospital and you may have to travel to a centre of expertise. Some treatments that are currently approved by NICE such as HIFU, Cryotherapy and Irreversible Electroporation, have restrictions on how the procedure can be performed. You may also have treatments that are used in combination (e.g. Hormone treatment before/after surgery or before radiotherapy in order to shrink the prostate).

Comparison of the three main treatment options:

People with low-risk or intermediate risk Localised Prostate Cancer (for whom radical treatment is suitable) - evidence from large UK trial	Active Surveillance	Radical Prostatectomy	Radical Radiotherapy
Survival and disease progression at 10 years:	%	%	%
People who had **not** died of prostate cancer	98	99	99
Disease progression (e.g. evidence of metastases, or T3 or T4 diagnosis)	21	8	8
Development of distant metastases	8	3	3
Urinary problems			
Urinary problems at 6 months	39	71	38
Urinary problems at 6 years	50	69	49
Moderate to severe urinary problems at 6 months	4	19	6
Moderate to severe urinary problems at 6 years	8	13	5
Erectile Dysfunction (ED)			
Moderate to severe Erectile Dysfunction at 6 months	29	66	48
Moderate to severe Erectile Dysfunction at 6 years	40	50	36
Bowel function problems			
Problems with faecal incontinence at 6 months	2	1	5
Problems with faecal incontinence at 6 years	3	2	4
Moderate to severe impact of bowel habits on quality of life at 6 months	3	3	10
Moderate to severe impact of bowel habits on quality of life at 6 years	4	3	2

This table has been assembled from information in Table 2 of NICE guideline 'Prostate cancer: diagnosis and management' updated Dec.2021. It is intended to be used by health professionals to discuss benefits and harms with patients.

You should be aware that all treatments have consequences and side effects, which are listed under each treatment in this section, with more information, see Section 3 of this booklet. After treatment, regular PSA readings are taken in order to check its success. Any possible cure may not be confirmed for several years.

In the summary below suitable treatments are marked:
Localised prostate cancer **(L)**,
Locally advanced **(LA)**
Advanced **(A)**.

Active Surveillance (L):
pro-active monitoring of early-stage cancer, with the intention to treat with curative intent if the disease progresses.

Watchful Waiting (L, LA, A):
regular check-ups, leading to hormone treatments or palliative care where necessary. The intention is disease control when symptoms arise.

Surgery (L):
an operation to remove the whole prostate.

External Beam Radiation Therapy (L, LA):
using radiation to destroy the cancer.

Stereotactic Ablative Radiotherapy (L, LA, A)

Low-dose rate brachytherapy (L):
the implantation of radio-active seeds.

High-dose rate brachytherapy (L, LA):
the insertion of radio-active rods, removed after treatment.

HIFU (High Intensity Focused Ultrasound) (L):
the cancer cells are heated and destroyed by ultrasound.

Cryotherapy (or cryosurgery) (LA):
the freezing of cells in the prostate.

Irreversible Electroporation (L)
cancer cells are destroyed by using short electrical pulses.

Hormone Treatments (Androgen Deprivation Therapy) (L, LA, A):
drugs used either when the cancer has spread outside the prostate (LA, A), or prior to curative treatments (L).

Chemotherapy (A):
drugs used with hormone therapy or after it has failed.

Active Surveillance

Of the top 10 most common cancers, prostate cancer is the only cancer where many patients, over 30%, have a slow-growing tumour that does not warrant immediate aggressive treatment. The cancer will grow so slowly, if at all, that a man will die of something else before the cancer causes any symptoms. Active Surveillance (sometimes called Active Monitoring) is now the primary option for men in CPG1 and CPG2 risk groups following MRI result, as the cancer is unlikely to cause harm or decrease life expectancy. It is a better choice than immediate radical treatment such as surgery or radiation as it is a pro-active method which monitors men with early prostate cancer who do not need immediate curative treatment. This spares them the side-effects that may be caused by a treatment which may later prove to have been unnecessary. It is now the first-line approach for men found to have low grade cancer. Results suggest that many men on Active Surveillance will never need to be treated for their prostate cancer.

Men on active surveillance are closely monitored by their consultant. They would typically have an initial multi-parametric MRI scan, repeated every 1-2 years, and a 6 monthly or annual PSA blood test.

If a man does choose Active Surveillance the NICE guideline recommends the protocol in the table below:

Active Surveillance Protocol

Timing	Tests
Year 1 of active surveillance	Every 3 to 4 months: measure PSA
	Monitor PSA kinetics (PSA density and velocity)
	At 12 months: DRE (digital rectal examination)
	At 12 to 18 months: multiparametric MRI
Year 2 onwards	Every 6 months: measure PSA
	Monitor PSA kinetics (PSA density and velocity)
	Every 12 months: DRE (digital rectal examination)
Note: if clinical or PSA changes of concern arise during Active Surveillance mpMRI and/or biopsy may be repeated.	

Men with 'low risk' cancer are the ideal candidate for Active Surveillance

Example: Low volume cancer - Stage 1c; Gleason 6; PSA less than 10ng/ml;

This table has been assembled from information in Table 4 of NICE guideline 'Prostate cancer: diagnosis and management' updated Dec.2021.

A repeat biopsy may only be needed if the MRI scan reveals any significant change. Those cases that show signs of tumour progression will be advised to receive curative treatment, normally with surgery, radiotherapy or brachytherapy, dependent on age and other factors. You have the right, in consultation with your consultant, to opt out of Active Surveillance and be treated at any stage.

If a man does choose Active Surveillance the NICE guideline recommends the protocol in the table above.

The **ProtecT study** found that around 97% of the men diagnosed with prostate cancer survived 15years after diagnosis irrispective of which treatment they received. **Around a quarter of the men on active monitoring had still not had any invasive treatment for their cancer after 15 years.**

Advantages and Disadvantages

- Active Surveillance may avoid radical treatment, with its potential side effects
- mpMRI scans now reduce any risks associated with repeat TRUS biopsies
- It may also give the opportunity for a change of diet and lifestyle which may help in keeping the cancer under control
- Active Surveillance offers men with localised cancer the same survival benefit as surgery or radiotherapy

But:

- It can create on-going worry about 'having cancer' and 'doing nothing'
- It could happen that the 'window of opportunity' for curative treatment may be missed, should the cancer unexpectedly become more aggressive

A Change of Lifestyle?

Increasingly, research shows that lifestyle changes can reduce the side effects of treatment and slow the growth of some tumours and reduce the risk of relapse. This means you could benefit from lifestyle changes during Active Surveillance. Smokers should start by giving up and those of us that drink should ensure we consume no more than recommended levels. Regular exercise and for many of us, changes in diet can be beneficial. See the PCaSO booklet on 'Healthy Living Reduce your Risk of Cancer'.

Watchful Waiting

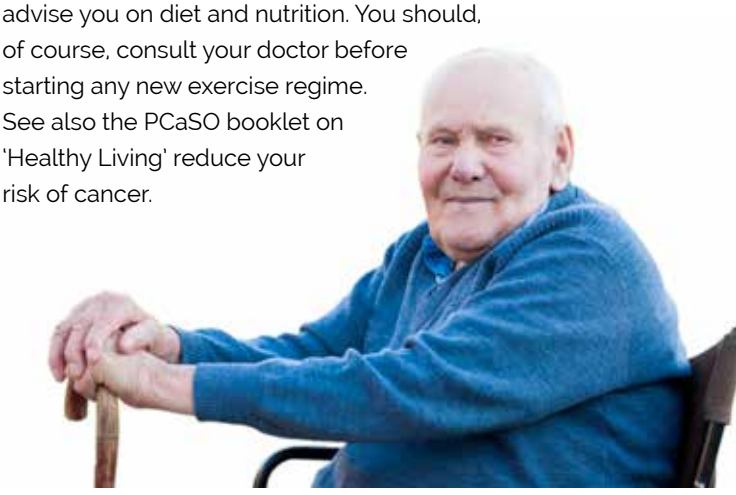
Watchful Waiting is usually offered either to older men, where the disease may grow so slowly that it may not affect the person's quality of life, or to those whose health may not allow them to undergo treatment such as radiotherapy or surgery. Unlike Active Surveillance, the aim of any treatment will be to delay progression of the disease or to be palliative, i.e. not intended to cure the disease.

Watchful Waiting will involve attending an out-patients' clinic once or twice a year for regular PSA tests and possibly a digital rectal examination (DRE), where the doctor inserts a gloved finger into the rectum to feel the prostate. Should the cancer progress, the most likely treatment option would be Hormone treatment (see Section 4), depending on any symptoms occurring along with a rise in PSA levels.

Watchful Waiting, however, does not necessarily mean doing nothing. You may like to consider:

- changing your diet
- nutritional supplements
- an exercise programme

These may help in slowing the growth of the cancer cells. Your NHS Macmillan dietitian can advise you on diet and nutrition. You should, of course, consult your doctor before starting any new exercise regime. See also the PCaSO booklet on 'Healthy Living' reduce your risk of cancer.



Surgery – Radical Prostatectomy

A surgical operation to remove the whole prostate gland together with the seminal vesicles is called a radical prostatectomy. The prostate is normally taken out through the abdomen (called the 'retro-pubic approach'). For patients with intermediate-risk prostate cancer the pelvic lymph nodes (part of the immune system) may be removed. For high-risk cancers, they should be removed. Radical prostatectomy is normally offered to those with localised cancer, a life expectancy of 10 or more years, and where the man's age and general health allow. In some cases, surgery may be considered for locally advanced cancer.

Nerve-sparing surgery, which aims to preserve erectile function, is normally undertaken where possible. This does not necessarily ensure that erections can be subsequently achieved, as the nerve bundles lie extremely close to the prostate. Surgery is now only performed in larger specialist cancer centres, where a greater number of operations are done. The greater the experience of the surgeon, the greater the likelihood of a satisfactory result.

Methods of Surgery

Three main methods of surgery are used: open, keyhole, and robotic. Robotic surgery with the Da Vinci robot has rapidly become the choice for many surgeons.

Open surgery

Until around 2014 open radical prostatectomy was the most common method to remove the prostate gland. It is a major operation which requires 3–6 days in hospital and several weeks of recovery time.

Laparoscopic surgery

The removal of the prostate by keyhole surgery is known as a laparoscopic radical prostatectomy (LRP). It is considerably less invasive than open surgery, has less blood loss

and less post-operative pain. It has been in use in the UK since 2000. The surgeon will first inflate the abdomen with gas in order to reduce blood loss and to gain a clear view of the area of the operation with a special camera, the image being transmitted to a video screen. Four or five small incisions will be made in the lower abdomen, and the prostate and seminal vesicles will be removed through an incision below the navel. In the hands of an experienced surgeon, the operation typically takes only a little longer than for open surgery.

Robotically Assisted Laparoscopic Prostatectomy (RALP)

This surgery method uses a 'Da Vinci'® robot. It uses similar techniques to the laparoscopic method, except that the operation is performed by the surgeon from a remote console, using both rotating handles and foot pedals to remotely control the five arms of the robot. The surgeon is assisted by a team of theatre nurses at the operating table.

Da Vinci Robot

Unlike laparoscopic equipment, the machine gives 3D vision and more accurate fine movements. The majority of radical prostatectomies are now done using this method and any man choosing surgery as his option is highly likely to have robotic surgery.

Retzius Sparing Radical Prostatectomy

The first operation using this technique with a robot in the UK was in July 2016. Retzius-sparing radical prostatectomy is a technique that approaches the prostate from below, rather than above, the bladder. This space is small and the position of the prostate and the bladder are reversed, the technique of re-joining the bladder and urethra after the prostate has been removed is also different from conventional prostatectomy. However, the advantages gained by avoiding disturbing the structures in the 'cave of Retzius' are considerable in terms of preserved continence and potency. The need for greater experience and expertise in keyhole prostate surgery is the largest blocker to the wider usage of the technique, which will never be suited to low-volume surgeons. You can see a video of a surgeon talking about Retzius surgery on our website – **www.pcaso.org/video-christopher-eden-prostatectomy-presentation/**

After the Operation

The patient wakes with a urinary catheter in place, an intravenous infusion of fluid in the arm, and may have an abdominal drain. Painkillers are prescribed as needed, and the wound dressings removed. Constipation can sometimes be a problem after surgery. Only prescribed laxatives should be taken, and straining should be avoided. Blood in the catheter can be seen in some cases, often after opening the bowels, but this need not be a concern unless it becomes severe. Advice will be given on using the catheter.

After removal of the catheter (about 10 days later), some slight incontinence should be expected in most cases but, with the pelvic floor exercises that you will be given, this should return to normal over time. This could last from three to six months. You will be given incontinence pads to wear for this period. In very few cases incontinence is permanent. This can, however, be considerably improved by an operation to fit a device to help enable controlled urination (a5).

Assessing the Spread of the Cancer

Following the operation, the prostate will be sent to the pathology lab for analysis. This will reveal the extent and grade of the cancer, and whether it was enclosed within the prostate, or whether it extended up to or beyond the cut edge of the prostate. The presence of cancerous cells all the way to the edge of the tissue that was removed, is called a positive surgical margin.

If cancer is found just outside the prostate, there is a greater risk of recurrence. This may not be a cause for concern, dependent on the grade of the cancer found at the edges of the gland. You should discuss options with your consultant following surgical pathology, who may recommend radiotherapy.

Follow up Care

Following a prostatectomy a high sensitivity PSA (down to 2 decimal places) is usually required. A sustained PSA result after the operation of less than 0.05ng/ml over several years will indicate the likelihood of a cure. PSA levels should be checked no earlier than 6 weeks after treatment, at least every 6 months for the first 2 years and then at least once a year after that (NICE Guideline 2019).

Side effects of Surgery

Ejaculation - In addition to the removal of the prostate gland, the seminal vesicles are also removed. These glands help to produce a man's semen in addition to the prostate itself. Orgasm is always possible, but it will be dry. Should a younger man who wishes to father children consider surgery, opportunities for sperm banking should be discussed.

Erections - After nerve-sparing surgery partial erections normally occur, and better function can return over time. It is important that efforts are made as soon as practicable after surgery to resume erectile function. 'Use it or lose it' is the motto (See Sexual Function on page 34).

Continence - A degree of incontinence may occur for a few weeks/months, as the urinary sphincter (the muscle that controls the urine flow) is removed during surgery. Pelvic floor exercises, done before and after the operation, may aid speedier return to normality (See Urinary Function on page 35).

External Beam Radiation Therapy (EBRT)

Radiotherapy is given by using ionising radiation (for example, high energy X-rays) produced in a machine and directed at the tumour from outside the patient. It is used:

- with the aim of getting rid of the cancer (curative radiotherapy)
- after or in conjunction with another treatment
- to reduce pain and other symptoms in advanced cancers (called 'palliative radiotherapy')

Cancer cells differ from normal body cells in that they reproduce faster and are thereby more susceptible to high-energy rays. So repeated exposure to high-energy rays will kill off cancer cells but allow normal cells to recover. Not all cancer cells act in the same way, so it is necessary to adjust the exposure and duration of planned treatment techniques that optimise the dose to the tumour while minimising the risks of normal tissue damage. The treatment itself is painless. It normally involves daily attendance, 5 days a week, at a radiotherapy centre for short sessions for 4 weeks and in some cases up to 7 weeks.

The ProtecT trial has shown that radiotherapy is as effective as surgery for men with localised prostate cancer. It can be used in combination with Brachytherapy and Hormone treatment. NICE guidelines (Dec.2021) recommend men with risk category CPG 2, 3, 4 and 5 localised or locally advanced prostate cancer, have a combination of radical radiotherapy and androgen deprivation therapy (hormone treatment), for 6 months before, during or after radiotherapy. Clinical trials have shown that this combination increases long-term survival. Hormone Therapy is also recommended for up to 3 years for men with CPG 4 and 5 localised or locally advanced prostate cancer.

Conformal Radiotherapy

This has been in common use for many years and until recently was the standard method of delivery

for prostate cancer patients. The radiation beam is shaped to reduce the radiation to the surrounding areas, but it is unable to provide the detailed targeted coverage that newer technologies can offer. Recent developments in the field of radiotherapy include: Intensity Modulated Radiation Therapy (IMRT) and Image Guided Radiation Therapy (IGRT). These are described in detail below.

IMRT

This takes conformal radiotherapy a step further in the precision by which the beam is shaped and directed at the body, typically from five different angles. A high degree of planning and computer control is involved in these processes, requiring more time in the treatment sessions. This technique uses multiple beams of varying intensity to achieve complex shaping of the radiation dose around the prostate. Many small 'beamlets' from various angles contribute to the total dose administered. These methods help to reduce some of the possible side effects and damage to surrounding organs. Now widely available in the UK, this equipment is impressive,

IMRT Linear accelerator

with good short-term results. Tomography is also a form of IMRT.

IGRT

This is a form of IMRT but even more accurate, the technique uses regular imaging of the tumour or a marker inserted into the prostate before treatment, it is used to confirm that the target and surrounding organs are truly in a position appropriate for the therapy. In prostate cancer, IGRT can be achieved by implanting small inert seeds (fiducial markers) or a cone beam CT scan can be taken once the patient is in the treatment position.

Fractionation or 'Radiation Dosage'

The dose of radiation is measured in Grays (Gy). Recently announced outcomes from the CHiPP clinical trial, NICE Prostate Cancer guidelines (Dec.2021) confirm that for risk category CPG 2, 3, 4 and 5 localised or locally advanced prostate cancer, offer hypofractionated radiotherapy - 60 Gy delivered in 20 treatment sessions. Offer conventional radiotherapy - 74 Gy delivered in 37 sessions for men who cannot have fractionated treatment. For cancer recurrence after surgery, a total of 52.5 Gy delivered in 20 treatment sessions is recommended.

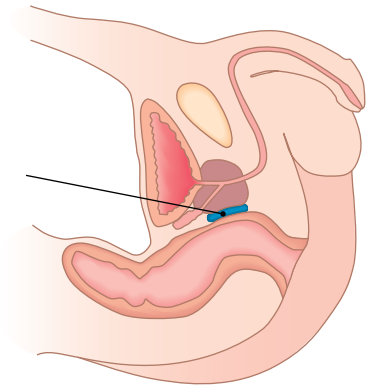
Side effects of Radiotherapy

For prostate radiotherapy, the short-term side effects can be bladder and/or rectal irritation, including blood in the urine or rectum. Long-term side effects can include alteration of bowel habit and impotence problems. As with other treatments, ejaculatory function may be either lost or degraded. Because of possible damage to adjacent tissues, there is some evidence of a small risk of developing bladder or rectal cancer 10 or more years after treatment. These side effects should be discussed in detail with your consultant oncologist prior to your agreement that the treatment should proceed.

Rectal spacer

This procedure can benefit prostate cancer patients receiving radiotherapy and has been

designed to reduce radiation exposure to organs surrounding the prostate. This therefore might reduce the potential of long-term side effects and



damage that can cause rectal bleeding, bowel dysfunction, urinary incontinence and potency.

The Hydrogel is a soft gel, injected into the area between the rectum wall and the prostate, a minimally invasive procedure performed under local or general anaesthetic. The gel pushes the rectum about 1cm further away from the prostate and hence away from any potential damage from radiation. It stabilises the rectum and prostate against movement during treatment, with the hope of minimising harmful side effects.

It remains in place for three to six months, after which it is absorbed by the patient's body and cleared in the patient's urine. It is permitted by NICE, but not yet fully approved, individual NHS Hospital Trusts decide whether to include the procedure within their treatment pathway.

Advantages and disadvantages of Radiotherapy

- There is no incision, wound, anaesthetic, or recovery time
- Normal work can often be resumed after each treatment

But:

- You must be prepared to travel each day to the centre
- Surgery is rarely undertaken, should radiotherapy fail, though salvage HIFU is possible in selected cases
- There are possible long-term side effects (pp 34-38)
- Radiotherapy may be difficult after a bilateral hip replacement
- It is now usually combined with Hormone treatment for 6 months or longer depending on the level of risk

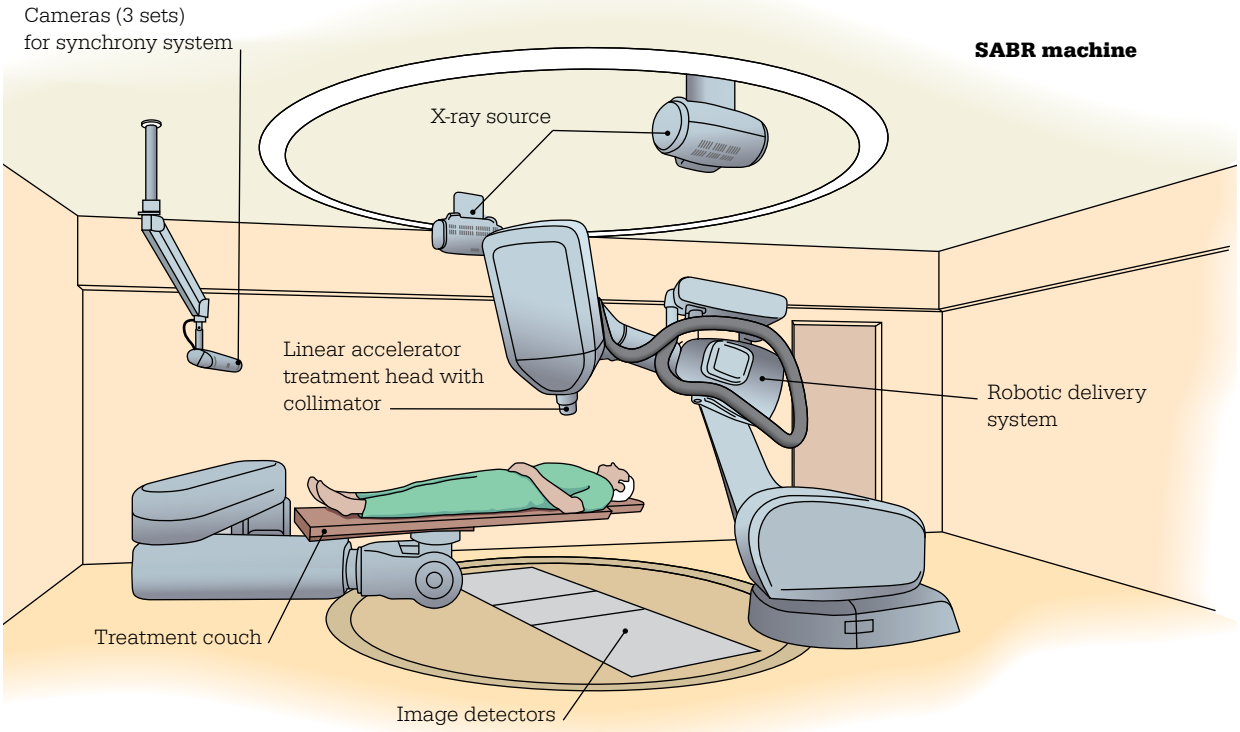
Palliative Radiotherapy and Bone Pain

Radiotherapy is sometimes used for the treatment of bone pain associated with secondary tumours (called palliative treatment). Many men notice some pain relief within a few days whilst for others the relief may take several weeks to become effective. The radiotherapy may be given as a single treatment or as several smaller treatments. If the cancer has spread to several areas, a treatment known as 'hemibody irradiation' is applied over a larger area. Although this is now seldom used, it normally gives good pain relief. The side effects, however, can be somewhat severe.

Stereotactic Ablative Radiotherapy (SABR)

Stereotactic Ablative radiotherapy can be carried out on a dedicated machine or on a modern linear accelerator. It is now becoming more widely available across the UK. This form of radiotherapy uses pencil-like beams of radiation that are directed from different angles precisely onto the tumour with sub-millimetre precision. The X-rays are contained in a robotic arm, giving the advantage of directing the beams to any part of the patient with greater accuracy, higher intensity and avoiding, to a large part, collateral damage to nearby healthy tissue.

The machine moves with exceptional agility and is able to track any slight movement of the patient or his prostate. The treatment



itself, delivers 5 high doses of radiation to a patient over one or two weeks, compared to standard radiotherapy, which typically delivers lower doses over four weeks of 20 sessions of treatment. Stereotactic treatment can treat complex tumours wrapped around sensitive structures; it is used for a number of cancers where precise targeting is essential.

A randomised trial comparing the long-term side effects of SABR versus surgery in patients with early-stage prostate cancer has just released its findings at ASCO 2023 conference. The PACE-A study enrolled 123 men from 10 UK centres, 59 were treated with SABR and 50 with surgery. After 2 years 4.5% treated with SABR were using urinary pads, compared with 47% after surgery. SABR patients also reported better sexual function than those who had surgery. While there is a risk that both SABR and surgery will cause problems, these results suggest SABR is less likely.

Brachytherapy

What is brachytherapy?

Brachytherapy literally means 'short therapy'. There are two types of prostate brachytherapy: low dose-rate (LDR) and high dose-rate (HDR). (The term 'dose-rate' refers to the speed of radiation source used and not to the actual radiation dose or level delivered.) Low dose-rate is most commonly used.

Who is suitable for Brachytherapy?

This treatment is only suitable for those whose prostates are not over-enlarged and for those who have few, or mild, urinary symptoms.

Typically, men with prostate cancer risk category CPG 2 or 3 are treated with LDR seed radioactive implant alone. Such patients would normally have a PSA below 15, a Gleason score no more than 6 or 7, and a cancer stage of T2b or less. Where there is a possibility of spread, or for higher risk disease, (locally advanced, CPG 4 and 5) a short course of radiotherapy and/or hormone treatment is combined with LDR brachytherapy.

HDR Brachytherapy is normally given with a short external beam radiotherapy course and is more

suited to men with a higher-risk cancer which may have spread to the seminal vesicles i.e. stage T3b, Gleason 8-10, CPG 4 or 5, but can be given as a stand alone treatment for those with lower risk, CPG 2 or 3.

Low Dose-Rate Brachytherapy (LDR)

Low Dose Rate Brachytherapy, unlike External Beam Radiation Therapy, treats the cancer by permanently inserting tiny radio-active seeds of Iodine-125 into the prostate with the aim of destroying the cancer.

What is involved?

The process is done in two or three visits:

1) An outpatient appointment will assess your suitability for the treatment, and will consist of some simple tests, which would typically include a DRE examination and a trans-rectal ultrasound examination.

2) The first stage of the treatment will be done as a day case in order to identify the exact size and shape of the prostate by computer imaging, and to plan the radiation dosage required.

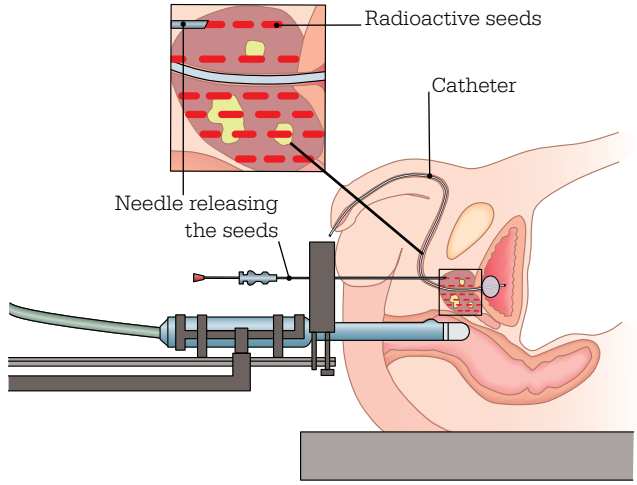
3) The second stage of the treatment consists of the actual implantation of the seeds under general anaesthetic by a series of 20–30 needles, each implanting between 2 and 6 seeds. X-rays may be taken during the procedure. You will wake with a catheter in place, which is removed before you leave hospital. A CT scan may be done following the treatment in order to check that the right dose has been delivered. Patients are sent home the next day with antibiotics and other medicines.

Most centres now would combine stages 2 and 3 in one visit. Some centres offer a 'brachy boost' whereby low dose-rate brachytherapy is combined with a course of external beam radiation.

Is the radiation dosage dangerous?

The major portion of the radiation is released from the seeds into the prostate over the first three months. Thereafter the radiation decreases so that it is negligible after nine months. While the seeds are radio active, you are not. No special precautions are generally considered necessary,

Low Dose Rate Brachytherapy (LDR)

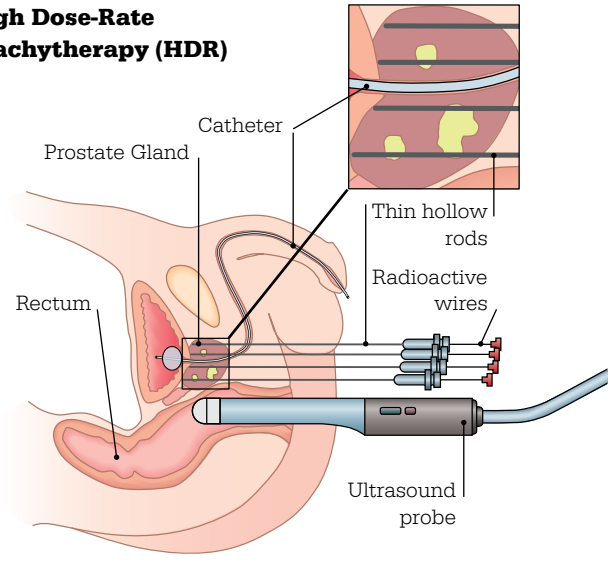


but it is suggested that you avoid near contact with pregnant women, and young children should not sit on your lap for the first two months after the treatment. When having intercourse, you may be advised to use condoms for the first two occasions, to avoid the risk of passing a radio-active seed.

High Dose-Rate Brachytherapy (HDR)

Sometimes called temporary Brachtherapy, is suited for risk category CPG 2,3,4,and 5, local and locally advanced prostate cancers, (up to stage T3b). It is used in conjunction with external beam radiotherapy and/or Hormone treatment. In some instances, HDR Brachytherapy may be

High Dose-Rate Brachytherapy (HDR)



used as a sole treatment, but not for CPG 4 or 5 risk category.

How does High Dose-Rate differ from Low Dose Rate?

HDR brachytherapy involves the insertion of a radioactive bead into tiny plastic rods which are temporarily placed into the prostate to deliver the appropriate dose (as opposed to low dose-rate, in which the seeds are permanently implanted). 15-20 of these thin hollow rods are placed into the gland through the perineal area with the aid of a template, through which an iridium bead is inserted. A computer-controlled machine pushes the beads into the rods one by one. It also controls the length of time the radiation is given through the rods.

At the end of the treatment the rods are withdrawn, with no radio active material remaining in the prostate. If combined with External Beam Radiation Therapy, it is usually performed first, and the radiation follows approximately two weeks later. Results for High dose-rate Brachytherapy are similar to those for Low dose-rate treatment.

How will I know whether the treatment has been successful?

As with any radiotherapy treatment, the potential success of Brachytherapy will not be known until about 36 months after the treatment has finished, when the PSA will have reached its lowest level (known as the 'Nadir'). If there is a steady rise of more than 2.0ng/ml above this low point in a six-month period, your consultant should be advised.

Side effects

About 5–10% of patients may experience temporary urinary retention. Some may experience frequency and urgency, which are again generally temporary. Bowel problems (constipation or frequency) can occur 3–6 months after the treatment. Erectile problems can occur in up to 20-30% of men. These risks are claimed to be lower than with surgery or external beam radiotherapy and it has been shown that they have significantly improved with greater experience. There is evidence of a small risk of pelvic cancers after brachytherapy.

4D Brachytherapy

A newer method becoming more common in many hospitals is 4D Brachytherapy. It only requires two visits – an initial outpatient assessment, followed by the seed implantation, during which the planning is performed, known as real-time planning. 4D Brachytherapy uses two different types of seeds which come ready prepared in the correct implantation order. The whole procedure can be done more efficiently and accurately in under an hour, with a quicker recovery time and with fewer side effects for the patient.

HIFU

What is HIFU?

High Intensity Focused Ultrasound is a technique that is non-invasive and aims to retain good quality of life for the patient. The treatment works by delivering high-frequency sound waves. These waves deliver a strong beam that is focused directly onto the cancer within the prostate and, by heating the cells, it kills them.

It is suitable for locally confined prostate cancer CPG 2 or CPG 3. It is not suited for men with an enlarged prostate, although hormone treatment may be first given to reduce its size. HIFU can be undertaken as a primary treatment with curative intent, as well as treating recurrence after radiotherapy.

What does the treatment involve?

The treatment is done under a spinal (epidural) or general anaesthetic and lasts about two hours. A probe, which emits an ultrasound beam, is placed in the back passage. The tightly focused beams raise the temperature of the prostate tissue to destroy the cancer cells in the targeted area without

damaging the surrounding tissue. The process is repeated until the cancerous cells have been destroyed. As the prostate swells immediately after the treatment, a catheter needs to be inserted and remains in place for up to two weeks.

Focal HIFU

Results obtained in treating the whole prostate have not been ideal. However, HIFU offers the option of treating just the part of the gland where the cancer is localised to a particular area, called Focal HIFU. Precisely locating the cancer can nevertheless be difficult despite modern mpMRI diagnostic techniques. There are many trials looking at this approach which, although not proven, may offer advantages to some patients. NICE supports the procedure for treating a recurrence of the cancer as being safe, although the effect on quality of life and long-term survival is unproven.

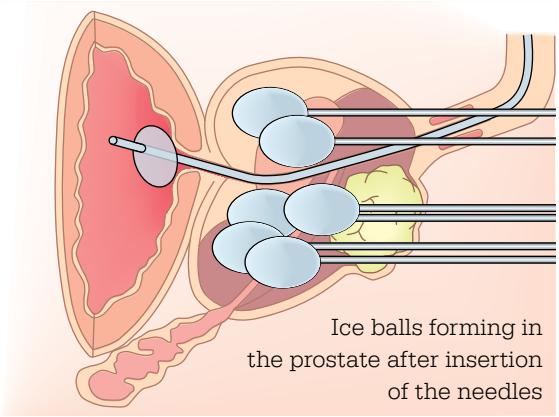
NOTE:

NICE guidelines (April 2023) state: **Evidence on the safety of focal therapy using HIFU for localised prostate cancer is adequate, but evidence on its effectiveness is limited. Therefore, this procedure should only be used with special arrangements for clinical governance, consent (patient or carer), and audit or research.** Currently, HIFU is only available at a few centres mainly in the south of the UK.

Cryotherapy

What is Cryotherapy?

Cryotherapy, Cryosurgery, or Targeted Cryoablation of the Prostate (TCAP) involves inserting, under ultrasound guidance, a number of probes into the prostate gland. Argon gas is passed down these probes under pressure and, at the tips, it is allowed to expand and flow back down other channels of the probes. Ice balls are formed which destroy the tissues and the tumour in close proximity to the tips. By suitable positioning of these probes, either the tumour itself or the whole prostate gland can be treated. The process also involves the use of a second gas (helium) to thaw the area; two (or sometimes more) freeze/thaw cycles may be used.



Ice balls forming in the prostate after insertion of the needles

Who is it for and what is involved?

Cryotherapy is normally considered by many urologists only as an option when radiotherapy has failed, but cancer is still found in the prostate. However, it can be offered as a primary treatment. As well as targeting the whole prostate, it can now treat small areas identified on a special mpMRI scan. Cryotherapy is not suitable for those with an over-enlarged prostate. The patient will normally be discharged from hospital within 24 hours after treatment but with a catheter in place. PSA levels should gradually drop to an acceptable level after treatment.

Focal Cryotherapy

The development of refined PSMA PET or MRI scans combined with biopsy techniques has made it possible to target small areas of cancer within the prostate. This minimises side effects and can be more easily repeated.

NICE guidelines (April 2012) state: Current evidence on focal therapy using cryoablation for localised prostate cancer raises no major safety concerns. However, evidence on effectiveness is limited in quantity and there is a concern that prostate cancer is commonly multifocal. Therefore, this procedure should

only be used with special arrangements for clinical governance, consent (patient or carer) and audit or research. It is only available at a few centres in the UK.

Focal Therapy

'Focal' therapies are treatments designed to target just the region or part of the prostate that is shown to have cancer, rather than treating the whole gland. It may be possible to repeat focal therapies if recurrance of cancer occurs.

Irreversible Electroporation (IRE)

Sometimes referred to as NanoKnife, the aim of IRE is to target just the part of the gland where the cancer is localised to a particular area, referred to as 'focal' therapy, destroying cancerous cells by subjecting them to a series of short electrical pulses using high-voltage direct current. This creates holes in the cancer cell membrane, causing the alteration of membrane shape and the formation of nanopores leading to irreversible damage and cell death.

The procedure is suitable for CPG 1, 2 and 3, low to intermediate risk patients where the cancer is localised to the prostate. A general anasthetic as well as a paralysing drug or a muscle relaxant drug is administered to prevent uncontrolled severe muscle contractions caused by the electric current. A number of electrode needles (typically 3 to 5) are inserted into, and adjacent to, the tumour using image guidance. PSMA PET has the potential to be used at the diagnosis stage to identify cancer lesions missed by MRI, thereby helping to plan IRE probe placement. A series of very short electrical pulses is delivered over several minutes to destroy the tumour. The electrodes may be repositioned to extend the area of treatment until the entire tumour and an appropriate margin have been treated.

For men with prostate cancer, protection of the neurovascular bundles adjacent to the gland can result in preservation of continence and erectile function, therefore increasing quality of life. Initial trials of focal IRE for localised prostate cancer patients show promising results in preserving both functions, but more information on its clinical performance is required before clinicians can integrate IRE into routine clinical practice throughout the NHS. Currently IRE is available at several private clinics, but with NICE now recognising the treatment under special arrangements, IRE could become available at NHS prostate treatment centres.

NICE Guidelines (July 2023) on this treatment states: There is enough evidence to suggest that the procedure works and does not raise any major safety concerns in the short and medium term. For treating prostate cancer, it should only be used with special arrangements for clinical governance, informed consent (patient or carer), and audit or research.

three

Living with and Surviving Prostate Cancer

Sexual Function

The prostate is a sex gland. Diseases affecting it and its treatment inevitably impact on a man's sex life. Prior to any treatment, your consultant should advise you of the impact of the disease and of each treatment type, so that you can make an informed choice. All radical treatments will affect sexual function and the ability to achieve a firm erection, which is controlled by the nerves and vessels that are intimately associated with the prostate and structures near the penis. Any treatment that damages the prostate will also result in loss or severe impairment of ejaculatory function and hence fertility.

Fertility

If fertility is important to you, you should discuss creating a sperm bank with your consultant. After any of the most common prostate cancer treatments – surgery, radiation therapy, or Hormone treatment – you will become infertile. During surgery to remove the prostate, the seminal vesicles and part of the vas deferens are also removed, which disrupts the connection to the testes. Orgasm may still occur, but ejaculation will be dry and natural conception will not be possible. Radiation therapy similarly destroys the prostate and seminal vesicles; chemotherapy and Hormone treatment are both harmful to sperm production.

Erectile Dysfunction

It is thought that around half of men over 40 may have a degree of erectile dysfunction (ED). ED can limit your intimacy, affect your self-esteem and impact your relationship with your partner. As the nerves that control erections cover the surface of the prostate, any trauma to the area can result in a change in nerve function. Most treatments will affect erectile function to a greater or lesser degree.

Surgery often has a significant initial impact but, where the surgery is nerve-sparing, this normally improves over time. Penile size however, (both flaccid and erect) is often reduced post treatment particularly after surgery. Radiotherapy treatments may initially have less of an impact on erections, compared to surgery, but this can decrease over time rather than improve. Brachytherapy is similar to or slightly better than external beam radiotherapy in this respect. Results from HIFU have been fairly encouraging, especially where the treatment has been focussed specifically on the tumour area, called Focal HIFU. Few patients achieve erections after whole gland cryotherapy.

Men that have other diseases or disorders that impair their ability to maintain an erection, such as diabetes or vascular problems, will have a more difficult time returning to pre-treatment function. It should be noted that, the nerve pathways involved in producing orgasm are different to those producing erections, it is entirely possible to acheive an orgasm without an erection. After treatment, it is important to get the system back into working order as quickly as possible. 'Use it or lose it' is the motto. Penile rehabilitation / physiotherapy using a vacuum pump is often recommended.

Treatments for Erectile Dysfunction

There are a variety of treatments for erectile dysfunction, these include:

Pills such as Viagra (Sildenafil), Cialis (Tadalafil) and Levitra (Vardenafil) - all of which are available on normal prescription through your GP and some are also available across the counter in chemists or online pharmacy. They work by enhancing the effects of chemicals that normally increase blood flow into the penis. They rely on there still being some degree of sexual arousal to produce activity in the nerves concerned with sexual function. There are different strengths and side effects can be experienced.

Alprostadil (MUSE) - available as a small pellet that is inserted into the urethra at the tip of the penis. It works because alprostadil acts directly on the penile blood vessels to increase blood

flow and then potentially produce an erection. It may be successful where nerve function is completely lost. Around 40% to 60% success rate has been reported. There are different strengths and side effects can be experienced.

Alprostadil (Caverject) - uses the same drug as MUSE but is delivered by injection into the penis. Around 60% to 85% success rate is reported. There are different strengths and side effects can be experienced.

Alprostadil cream (Vitaris) – this is fairly new to the market. Applied to the tip of the penis and also down the urethra, it works again to stimulate blood flow.

Vacuum Pump – by creating a vacuum, it forces blood into the penis, the subsequent erection is maintained by rolling a rubber ring onto the base of the penis so that the blood does not escape. Around 80% to 90% success rate reported.

Penile Implant – a surgically inserted penile implant that can be almost 100% successful. It uses a small pump inserted into the scrotum, which when pressed, releases fluid from a small balloon into a plastic tube inserted in the penis shaft, which pulls it up into an erection. The procedure is available on the NHS.

It's important to know there are treatment options beyond medication that are safe and effective. Each treatment option has varying degrees of success and reliability, with some maybe more effective or satisfying than others. Most treatments can be at some cost to spontaneity. A penile implant is a unique permanent solution, because it allows you to have intimacy wherever, whenever and for as long as you want, with no medication side effects. Consult your doctor to see which option could be right for you. Discussion with your partner is essential.

Psychological and Sexual Counselling

Problems can be psychological as well as physical. Many hospitals now have staff with expertise in this area, and you should not be frightened to ask. If you wish it, you and your partner are entitled to sexual counselling. Remember that treatments for sexual problems caused by prostate cancer are available free under the NHS.

Hormonal treatments particularly can cause lack of interest in sex and this can become a barrier to discussion. In such circumstances your partner may be in for a particularly distressing time, as the cause of the problem, if not discussed, may not be apparent.

Urinary Function

Problems with passing urine can often result from prostate cancer treatments, other conditions such as diabetes, multiple sclerosis, Parkinson's disease, stroke or simply the ageing process. Urinary incontinence tends to fall into three categories:

Stress Urinary Incontinence – involuntary leakage when coughing, sneezing or physical exertion.

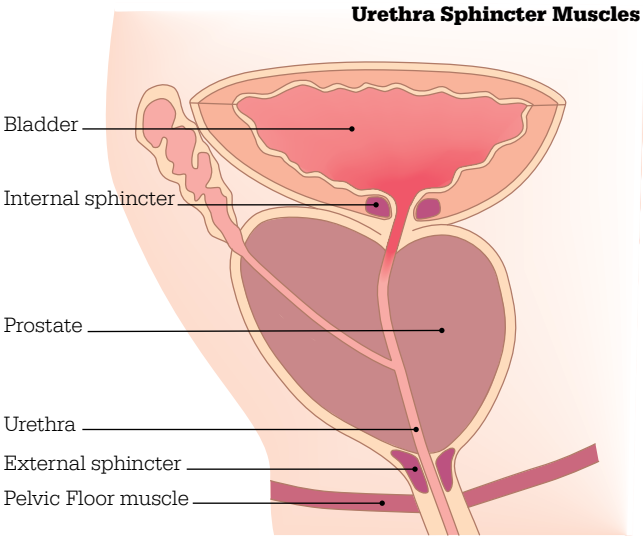
Urge Incontinence – leakage with an overwhelming need to urinate.

Mixed Incontinence – leakage with both exertion and urgency.

Climactria – is a condition in which a man leaks urine as he ejaculates. Men who have had their prostate removed may experience this side effect.

Urinary incontinence after surgery can affect most men, but over time the majority of men will gain control of leakage problems once muscles have recovered.

There are two sphincter muscles that keep men continent, the internal urethral sphincter and the external urethral sphincter. The internal sphincter is found at the bottom of the bladder, called the 'bladder neck,' on the top of the prostate. During



radical surgery this is removed, because the prostate cannot be taken out without removing this sphincter.

The external sphincter is the second muscle which is invoved in stopping urine flow, and thus ensuring continence. It is located below the prostate and can be identified separate to the prostate during surgery allowing better preservation of function. However, after radical prostatectomy, there can still be some damage or dysfunction of this sphincter, which can prevent a man recovering bladder control. This may be due to damage to the nerves, blood supply or the muscle itself. Nearly all men will have some form of leakage immediately after the surgery, but this usually can improve over time with strengthening exercises.

Radiation therapy targets the prostate and the urethra runs through the middle of the gland, so both will receive radiation. Long-term leakage is rare, but frequency and urgency can be experienced. **Radiation Cystitis** occurs when the lining of the bladder and urethra has been irritated by the radiation. Symptoms include frequency or difficulty in urinating, also a burning sensation while urinating, and passing blood. Cystitis can appear within the first few days of treatment, but some men don't get symptoms until months or even years after treatment.

Brachytherapy can cause some long-term side effects such as passing urine more often, It can also cause the urethra to become narrow, causing flow problems - this is called a urethral stricture. You can have an operation to widen it, this short operation is called urethral dilatation. You have a higher risk of side effects if you have brachytherapy as well as external radiotherapy.

Some lifestyle modifications can help:

- Try to avoid drinks containing caffeine
- Fizzy drinks may exacerbate symptoms
- Alcohol can increase urgency
- Try to increase time between visits to the toilet, as this will help the sphincter muscle to strengthen
- Do not try to hold out at night – it will only keep you awake
- If you are overweight, try to lose a few pounds
- Carry out regular pelvic floor exercises.

Pelvic floor muscle training

The muscles of the pelvic floor are kept firm and slightly tense to stop leakage of urine from the bladder or faeces from the bowel. Pelvic floor muscles can become weak and sag because of surgery, radiotherapy, being overweight, lack of exercise, poor posture, or just getting older. Weak muscles give you less control, and you may leak urine, especially with exercise or when you cough, sneeze or laugh.

Pelvic floor exercises help strengthen these muscles and involve tucking your bottom in and pulling your pubic bone up in front and holding it there for a few seconds. This should be performed 100+ times each day, so self-discipline is needed to keep at these exercises. Fast walking can also help. Both the exercises and fast walking have also been shown to improve erectile function. Although there is no firm evidence that pelvic floor exercises prior to treatment are beneficial, they can do no harm, and they may well help you

get into the habit of routinely exercising the right muscles. See PCaSO Healthy Living booklet

Long-term Severe Incontinence

It must be emphasised that severe long-term incontinence is rare, and nearly all men recover continence after treatment within a few months. So do not despair.

Note: The section that follows only applies to men who experience serious long-term incontinence problems that severely affect quality of life.

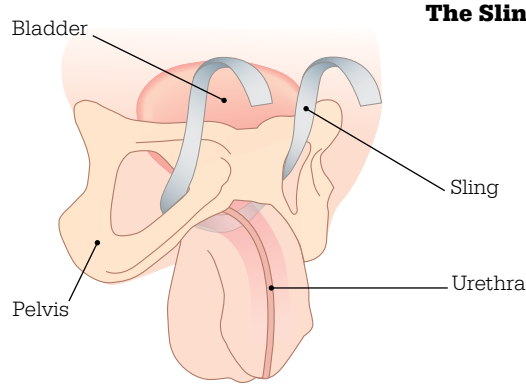
The external sphincter is a natural on/off valve associated with the urethra, which can become weakened or even damaged, usually during prostate surgery. In nearly all cases nowadays this strengthens over time, often with the help of pelvic floor exercises, and men usually gain full continence after 3–6 months or less. In up to 5% of cases, however, this can remain a problem after a year, requiring the daily use of incontinence pads. If this is the case, there are two methods which are now used – a male sling (an implant for mild to moderate incontinence) or an operation to fit an artificial urinary sphincter (AUS) for more severe cases.

The Sling

The sling is made from synthetic mesh and is implanted entirely inside the body during an operation under general anaesthetic. Through a small cut in the skin, the two ends of the sling are passed underneath the urethra and out through the pelvic area into the upper thigh on each side. It is then tightened enough to lift and partially compress the waterpipe. It is a minimally invasive procedure, the device operates automatically and most patients are continent immediately following the operation.

There can be some inflammation, pain and bruising at the wound site, but this will diminish with time. Very occasionally, urinary retention occurs, usually caused by incorrect sling tension, and then a catheter may be needed for a short period and further surgical intervention may be required if normal urination is not restored after the catheter is removed.

The Sling



Success rates of 54.6% to 94.6% have been reported from six clinical studies involving more than 500 patients. In a study of 42 patients, 94.4% would recommend the procedure to a friend.

Recommended to use in mild /moderate incontinence.

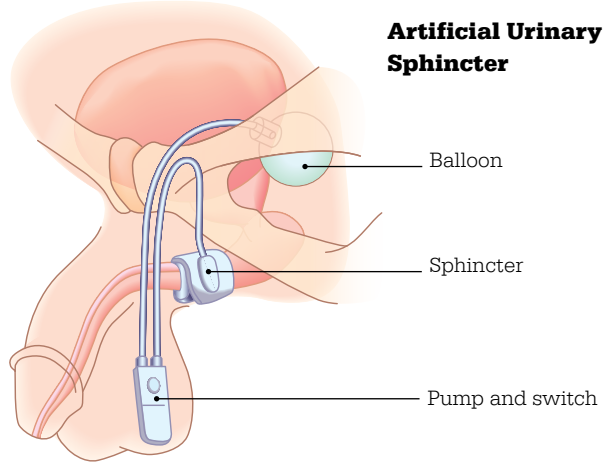
The Artificial Urinary Sphincter (AUS)

The simplest way to describe this device is that it is like a miniature blood pressure cuff that is inserted around the urethra at the base of the bladder. The fitting of an AUS requires an operation done under full anaesthetic.

There are three parts to fitting this urinary control system:

- an inflatable cuff fits around the urethra
- a pump with a switch, is implanted in the scrotum
- a small balloon reservoir is implanted in the abdomen

Artificial Urinary Sphincter



The device works by pressing the switch in the scrotum several times, this deflates the cuff around the urethra by pushing fluid from it into the balloon. The pressure on the urethra is thereby released allowing urine to flow, after a few minutes the cuff self-closes once the balloon reservoir refills the cuff with fluid, closing off the urethra again.

Many urologists consider this to be the 'gold standard' for treating urinary incontinence. Following the operation there can be some discomfort and bruising and the device is not used initially for several weeks to allow tissues to recover.

In a study of 50 patients, 90% reported satisfaction, 96% would recommend the implant to a friend.

Note: Following the MASTER trial (AUS v. SLING) that took place in 2017/18 the two procedures were compared with no evidence of difference between male sling and AUS. Symptoms and quality of life improved significantly in both groups, and men were generally satisfied with both procedures. Overall, secondary and post hoc analyses were however in favour of AUS.

Bowel Function

Damage to the rectum during prostate cancer treatment can result in bowel problems, including rectal bleeding, diarrhoea, or urgency. With a radical prostatectomy it is very rare (less than 1%) for men to have altered bowel function after this surgery. However, with radiation therapy, damage to the rectum is more likely to occur. The older forms of radiation therapy (called 3D conformal) can increase rectal side effects significantly. Using more modern radiation therapy (IMRT or IGRT), it is now very rare to have moderate or severe bowel problems, but the possibility still exists.

During radiation therapy you may experience softer stools and diarrhoea (effects less than 10%) if so you might need to take anti diarrhoea medicines, such as loperamide (Imodium). A bulking agents, such as Fybogel, might also help. Your doctor or nurse can prescribe these for you.

Inflammation of the back passage (rectum) is a long-term side effect. Radiation Proctitis can cause a feeling of wanting to strain whether or not you actually need to pass a bowel movement. You might also have bleeding from your back passage or a slimy mucous discharge. Bleeding is usually slight but can be more severe for some people. Talk to your radiographer or nurse if you think you have proctitis. They might suggest a treatment such as steroid suppositories for a short time as this might reduce the inflammation.

A new NICE approved technique called a rectal spacer uses a gel that is injected between the prostate and the rectum to increase the distance between them, It has been shown to reduce the possibility of rectal damage from radiation in men where increased risks of rectal damage has been identified (see page 27).

The Clinical Nurse Specialist

Urological Clinical Nurse Specialists play an important role as keyworkers in caring for a prostate cancer patient. They have specialist knowledge which can be invaluable to a patient and his family, enabling them to ask detailed questions which they may feel uncomfortable asking a consultant, with whom they will generally spend less time. Nurse specialists should be on hand and available to contact by phone. Most Urology departments have specialist nurses dealing with incontinence and erectile dysfunction problems. Prostate cancer is by far the most common form of tumour for which a urological nurse specialist will be responsible.

Unfortunately, there is a shortage of these nurses across the country.

The Improving Outcomes Guidance for Urological Cancers is explicit on the importance of a Nurse Specialist:

"From the time of diagnosis, each patient should have access to a specialist cancer nurse who can offer psychosocial support and continuity of care. Patients should, whenever possible, be offered contact details for others who have experienced similar cancers or treatments".

The 2021 NICE Prostate Cancer guidelines under 'Shared Decision Making' states that Healthcare Professionals must be trained in:

- communicating with people in a way they can understand, using clear language, avoiding jargon and explaining technical terms.
- sharing and discussing the information people need to make informed decisions, and making sure they understand the choices available to them (including the choice of doing nothing or not changing the current plan).
- communicating with and involving family members, friends, carers, advocates or other people who the person chooses to include

You are only able to make an informed decision if you have been given and understand the full facts about your cancer by a consultant or a nurse specialist.

The guidelines also state:

'Offer people with prostate cancer advice on how to access information and support from websites, local and national services, and from cancer support groups'

A Clinical Nurse Specialist can play a vital role in your cancer journey – make sure one is looking after you!

Health of Survivors of Prostate Cancer

Patients/survivors of prostate cancer diagnosis and treatment tend to suffer more health problems than other men of a similar age. After treatment, prostate cancer patients may lose previous fitness levels and put on weight. This is particularly so if on Androgen Deprivation Therapy (ADT), known as 'hormone therapy', also see p. 48.

However, PCaSO has members whose healthy diet and exercise choices have helped overcome the side effects of ADT.

ADT and testosterone

Around 50 per cent of prostate cancer patients receive ADT, which lowers the levels of testosterone in the body (since prostate cancer thrives on testosterone). Unfortunately having low levels of testosterone encourages the body to store fat around the abdomen (tummy), a bit like a 'spare tyre'. This may contribute to an increased risk of heart disease, stroke and type 2 diabetes.

Low testosterone levels caused by prostate cancer treatment may also cause muscle wastage which, combined with an increase in weight, makes exercise more difficult. So, a cycle often develops where a man becomes heavier and more unfit as time goes on, leaving him vulnerable to other health problems, even if his prostate cancer has been successfully treated.

ADT can change the way your body handles fat in as little as three weeks, so these health changes can happen quickly.

CRPC (castration-resistant prostate cancer) - research published in the journal 'Science', reported in late 2021, indicates that 'bad' gut bacteria may help

tumours create their own androgens (testosterone), offsetting the ADT. The research however found that patients with a high level of a 'good' gut bacteria, Prevotella Stercorea, had better outcomes. It is early days in this research, but in the future faecal microbiota transplants (FMT) of Prevotella, or even a yoghurt drink with this 'good' gut bacteria, may be helpful to CRPC patients.

Abdominal fat

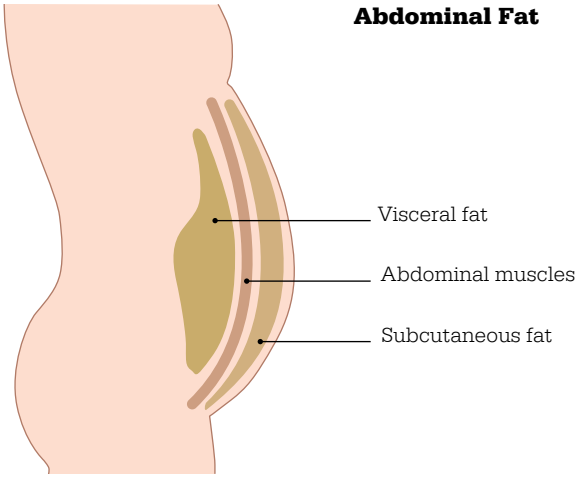
Why is abdominal fat such a problem? We need fat under the skin to keep us warm, but fat stored around the abdomen is different, it is toxic! It produces substances which cause inflammation and also prevents sugar getting into the parts of the body it needs to reach, e.g., muscles. To compensate insulin production goes into overdrive. This is bad news because insulin comes hand-in-hand with growth factors which stimulate the growth of the prostate cancer, stacking the odds against you.

Insulin and diabetes

ADT reduces testosterone levels and this impacts on how we use insulin. The longer one is on ADT the higher the risk of developing diabetes. ADT can also change high-density lipoprotein (HDL) and low-density lipoprotein (LDL) components of cholesterol.

Bone health

Patients on ADT are more likely to suffer from osteoporosis in the bones, so they should have a regular bone scan (also known as a DEXA scan). See more details online, at Cancer Research UK 'bone loss and cancer treatment'. See also p. 53 of this booklet.



Cardiovascular Disease (CVD)

Some patients on androgen deprivation therapy (ADT hormone therapy) for prostate cancer, who have existing CVD risk factors such as diabetes, prior heart or vascular problems, may have heightened risk of cardiovascular disease. Ask your GP or consultant if you need monitoring and tests to address such increased risk factors. To know more see the 2023 EAU paper 'Nutrition Guidance for Patients on Androgen Deprivation Therapy'. See link **https://www.eu-focus.europeanurology.com/action/showPdf?pii=S2405-4569%2823%2900060-3**

There is also a 2019 technical article from the American College of Cardiology, see link: **https://www.acc.org/ latest-in-cardiology/articles/2019/07/25/08/34/ androgen-deprivation-therapy-and-cvd** Understanding of these increased risk factors is still evolving. Following a healthy living lifestyle might help also to reduce your risks of CVD.

Healthy Living

Lifestyle

Healthy lifestyle habits may slow the progression of pre-cancerous cells by inhibiting mutations, preventing them reaching the mature stage. They may also slow the progression of cancer cells/tumours and may reduce the likelihood of recurrence after treatment.

Quit smoking – if you do smoke, seek help to stop, as it is not easy because nicotine is so addictive. Quitting smoking may reduce the risk of prostate cancer progression and is also associated with improved penile blood flow and erections.

Minimise alcohol – alcohol consumption, even at moderate levels, may cause cancer and weight gain. If you choose to drink, just have 1 or 2 small (125 ml) glasses of red wine, with a meal, also drink some water.

Mental wellbeing – ensure you are mentally in a good place before embarking on extensive lifestyle changes. Make time to relax, e.g., socialise with friends, or go outdoors with some activity ('the green gym'). Indoor plants and pets can also help relaxation.

Achieve and maintain a normal weight – keep your BMI below 25 and above 18.5 (aim for a BMI of 21 to 23). A nutritious diet and regular exercise can help in maintaining a healthy weight.

Keep a trim waistline – keep your waist (men) less than 94cm (37"). A waist to hip ratio of 0.9 or less is desirable.

Try intermittent fasting – either overnight fasting of 14 hours ('late breakfast, early dinner'), or another, e.g., the 5:2 diet. Our ancestors never had a constant supply of food, and often suffered hunger. Our bodies can benefit from fasting.

Do sufficient physical activity and exercise – regular exercise is an essential part of a healthy lifestyle. 150 minutes of moderate activity or 75 minutes of vigorous activity per week, plus two sessions per week of strength exercises, also flexibility exercises and balance training. Beware, however the danger of undertaking vigorous exercise you are not used to, so build-up gradually.

It is advisible that this should be considered in consultation with your healthcare professional. It is not for everyone

Eat healthily - For example, follow a Mediterranean-style diet with lots of plant-based foods and omega-3 healthy fats.

Counter Chronic inflammation - by not smoking, by exercising and by eating fibre-rich foods such as vegetables, fruits, wholegrains and beans. Healthy fats (including those containing omega-3 fatty acids) may reduce chronic inflammation, as can fermented foods such as bio-yoghurt.

Build a support network – once cancer has been diagnosed the patient needs ongoing moral and practical support from family, friends and possibly neighbours, or members of the local community.

Maintain a positive attitude – while we can all have 'bad days', try to maintain a positive attitude, whether to adversity, age and/or health problems. A 'young at heart' ttitude can help immunity, as was reported in New Scientist, 20 March 2021 - 'Don't act your age! People who feel younger than their years tend to live longer'.

Take a broad approach – take more than one step towards a healthy lifestyle. Many different things you do may work together to improve your chances of better health and anti-cancer effects, e.g. exercise, stress reduction and healthy eating. The greater the amount of lifestyle change towards healthy living the better the benefits could be.

Achieving everything healthy all the time is unrealistic, we all have an occasional lapse, or need a break or a treat. If we get 80% - 90% right we are doing well. It all takes time to make lifestyle changes, depending on where you start from. Once made ensure they become embedded, so you do not go backwards and give cancer and poor health a chance again.

Exercise

Physical activity is something we evolved to do from our ancestors: being sedentary is not our natural state. If you are elderly, but do not do some physical activity, you might experience a 'spiral of decline' leading to frailty. If you cannot stand up for long there are exercises you can do whilst seated. Finding ways to incorporate more movement into your daily life will help keep your muscles engaged. Work on developing an active lifestyle outside of your exercise programme itself. Physical activity improves the flow

of blood supply, even gardening or cleaning the house can be beneficial. Try to spend less time sitting down and limit it to 20-30 minutes before getting up for a break. You could move about while you watch TV, or choose active video games. And don't forget to stand up regularly if you sit down to work.

If you are feeling weary, move and get active, it can make you feel better. Get fitter by moving more!

Many trials evaluating exercise programmes have concluded that moderate activity can reduce fatigue, improve mood, psychological well-being and benefit body composition. Other trials have linked exercise, especially if combined with other lifestyle changes, with a reduced rate of PSA progression in men on Active Surveillance, and a reduced risk of relapse after radical treatments.

Regular exercise over the long term changes your energy metabolism, lowers inflammation and oxidative stress (excess of free radicals in the bloodstream), and improves immune response. The associated 'movement' of one's body also helps 'pump' the lymph fluid through the lymphatic system around all internal cells and organs - thus reducing the risk of 'stagnation' (akin to areas of still/sluggish water) and so keeping everything healthily flowing. Studies have shown that faster-paced walking or vigorous exercise significantly reduced the risk of prostate cancer recurrence or prostate cancer death, compared with less intense or slower-paced exercise.

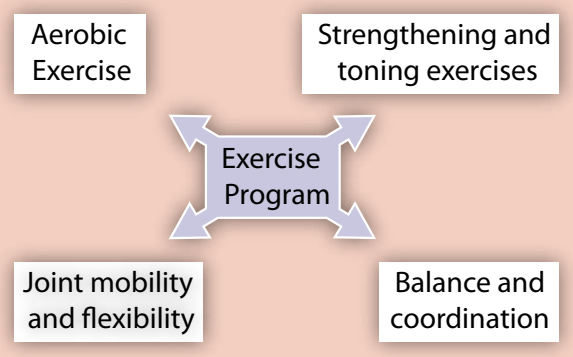
Being fitter is beneficial for men before treatment, as well as for 'survivors' of prostate cancer. The fitter you are before treatment the better the recovery time/outcome, especially for chemotherapy or surgery, but also other treatments such as brachytherapy, radiotherapy or hormone therapy. A fit healthy body and immune system can help overcome any trauma to the body caused by cancer treatment.

If you really wish to help your body combat prostate cancer, exercise is probably the number one thing you should do to help extend your life and lifestyle.

The World Health Organisation (WHO) recommends at least 150 minutes of moderate intensity physical activity throughout the week (or 75 minutes of vigorous intensity) see **https://www.who.int/news-room/fact-sheets/detail/physical-activity**. The NHS recommend a similar amount, see **https://www.nhs.uk/live-well/exercise/**. If you do, say, 30 minutes exercise per day 5 days per week, this aerobic exercise works your lungs and heart, but be aware that muscle strength is also very important to our health. As we age our muscles get weaker, especially if we are ageing with high cancer risk, or are on hormone therapy. Muscle strength increases rapidly into early adulthood then declines naturally from our 30's at about 5% every ten years and declines even more from our 60's and 70's. We need therefore to also include resistance exercises at least two days a week, for upper-body, lower-body and core muscle strength. Strength, endurance and balance training, even into our 70's, 80's and 90's, can counteract some of the loss of muscle mass as we age, helping to keep older persons on the move and

Physical activity and impact on Prostate Cancer

- For adults, at least 150 minutes (2.5 hours) of moderate intensity activity (in bouts of 10 minutes or more) a week…or 75 minutes of vigorous intensity activity spread across the week
- or combinations of moderate and vigorous intensity activity
- Adults should also undertake physical activity to improve muscle strength on at least 2 days a week.



providing some protection against falls and frailty, especially with activities such as running and sports.

Some studies have also shown that strength training may provide some protection against cardio-vascular disease, type 2 diabetes and even cancer.

If you can do it safely, a total of three to five hours each week of exercise, moderate and vigorous aerobic, with resistance training for strength on two days per week, plus flexibility and balance training, can be most beneficial for your health. (The WHO advises that doing 300 minutes a week, rather than the recommended minimum of 150 minutes, can bring additional health benefits).

Exercise is also a great way to relieve stress and hence improve mental wellbeing. Exercise may also help keep our brains from ageing.

Healthy Eating

Avoid highly processed foods, processed meats and limit red meat to small lean cuts. Avoid charred meat. Limit sugar and salt and be aware that processed foods often contain additives, sugar and salt for flavour.

Eat healthy whole foods and follow a Mediterranean-style diet with lots of plant-based foods and omega-3 healthy fats such as oily fish, avocado, extra virgin olive oil, nuts and seeds. Nourish your gut health (gut microbiome) with fibre, with natural bio-yoghurt, other fermented foods and a wide variety ('rainbow') of colourful vegetables.

In exhaustive trials, a supplement containing extracts of pomeganate, brocolli, green tea and turmeric, was found to have benefits against prostate cancer.

Other foods believed to be beneficial against prostate cancer are: garlic, cooked tomatoes (for the lycopene working to Inhibit angiogenesis), coffee and leafy green vegetables, cabbage, brussels sprouts and brocolli. Daily berries are also recommended. However If you drink milk, avoid full-fat milk, choosing semi or skimmed. Or choose non-dairy alternatives such as oat, soya or almond drinks.

Much more Information can be found In the PCaSO 'Healthy Living- reduce your risk of cancer' booklet.

Mental Wellbeing

It may not be obvious, but an understanding of how our mental wellbeing is achieved, and how to offset the impact of anxiety and stress, is as fundamental as ensuring we eat healthily and exercise regularly.

Self-empowerment and purpose

Self-care – if you do not do so already, consider taking active responsibility for your overall health. There is much you can do to look after your body, your mind and your spirit. There is connectivity between them.

By regular check-ups and 'knowing your numbers' such as weight, BMI, PSA values, blood pressure, cholesterol and by monitoring the changes over time. By working in partnership with your medical professionals you may get a better outcome than as a 'passive' patient. With medical staff frequently working under pressure we may not always receive the time and personal continuity we wish for, so being pro-active and knowledgeable can be to our own benefit.

Social contact and support

Engage with other people – understand that loneliness may lead to poor health, poor choices and even premature death. If you have a cancer diagnosis accept you cannot, and should not, deal with cancer on your own.

Socialise, in person, with friends or family – take time to meet friends in person for coffee or lunch. Join or start a regular activity group with friends who share the same interests. An active group such as walking or swimming may follow exercise with some socialising, so double benefit! Avoid 'toxic' friends – it may seem harsh but it is best to be around positive and cheerful people, especially when dealing with a cancer diagnosis, rather than mix with those of a negative outlook on life, who may depress you.

Build and nurture a support network – once cancer has been diagnosed, as a patient you

need ongoing morale and practical support from family, friends and possibly neighbours or members of the local community. A charitable cancer support group, such as: PCaSO, Macmillan Cancer Support, Penny Brohn UK, or Maggies Centres, can be helpful and supportive.

A supportive and accessible medical team is also important, e.g. GP, urologist, oncologist, nutritionist and specialist nursing staff. Make and maintain the social and technical contacts so you are not alone and are well informed on your cancer journey.

Sleep and our body clocks

Sleep well – we need between 6-9 hours sleep each night, (ideally about 7-8 hours). With the added complication of cancer, it's easy to find yourself still awake in the night, but your body needs time to rest and recover. Lack of sleep can increase your cortisol levels and may negatively impact your immune system. The stress hormone cortisol is also an important circadian rhythm hormone (the natural cycle of physical, mental and behaviour changes that the body goes through in a 24-hour cycle). This means that if you are under stress you may experience sleep disruption. Some tips to help you to sleep well are:

- Try and avoid caffeine after about 3 pm each day and if you have an afternoon nap, do not sleep too long
- Have a walk before dinner and allow time (e.g. 3 hours) for dinner to digest before bedtime
- Relax and de-stress before bedtime, e.g. read, listen to music, or do gentle stretching
- Avoid digital screeens about an hour before bedtime. Avoid screens in the bedroom, and visible clock faces
- Have a quiet, cool (16-18C) and dark bedroom, with a comfortable bed, mattress and pillow
- Adopt a regular pattern of going to bed and getting up each day. Retiring 10 - 11pm may suit most people, as it aligns with our circadian rhythm and day/night cycle. After 11pm may be worse for blood sugar levels
- If awake in the night for 20-30 minutes, get up, walk around and write down any thoughts/worries

Stress and Stress relaxing techniques

Unfortunately, many of us having news of a diagnosis or receiving treatment for prostate cancer will have experienced occasions where we are suffering with various degrees of anxiety and depression. Negative emotions and psychological stress can influence the body in many ways, including weakening the immune system, upsetting the gut microbiome and stopping cancer cells from dying. Stress is a very disempowering emotion, which can leave us feeling out of control.

Some techniques are mentioned below, but only briefly. It can be well worthwhile exploring them in more detail and possibly joining an instruction class or a group.

Meditation is a powerful calming technique, best practised daily, based on control of breathing and seeking to use the intuitive part of the brain rather than our, often overused, logical thinking part. Mindfulness is a well-established practice, drawn from Buddhist teachings, which focuses attention on the 'present experience'.

Yoga, Tai Chi and Qi-Jong – these practices have many benefits, for movement, flexibility, etc but they are also very helpful for calming the mind and body and reducing stress.

Listen to Music – suitable music for relaxation purposes can provide stress-reduction benefits.

Spend time relaxing in 'green spaces' – relaxing away from traffic and modern life pressures for 30 minutes or more per week in green spaces, woodlands, or by water, can be beneficial for mental wellbeing. Try it with Mindful Walking, where you are 'in the present moment', enjoying your experience, rather than thinking about things in the past or the future.

Release your emotions – while many stress-reducing techniques focus on rerouting your

negative emotions, sometimes it's good to experience sadness and anxiety. A few tears or crying improves mood for both men and women, which helps your body calm down from a stressful situation.

A great source of help can be Penny Brohn UK – a holistic cancer charity based in Bristol. They recognise that all parts of ourselves – mind, body, spirit and emotions – are all closely connected and work together to support our immune system and its ability to keep us well. Some PCaSO members have attended Penny Brohn courses and highly recommend them.

Penny Brohn's approach is based upon research into the connections between our mind, nervous system and immune system since changes in our thoughts, emotions and beliefs may bring about changes in our physical health and wellbeing. It is about building resilience into every aspect of life and supporting the body's natural ability to heal and repair itself. See Penny Brohn diagram 'What is the Bristol Whole Life Approach?' on page 46

A healthy lifestyle - key points

- If you smoke, seek help to stop. Smoking encourages many cancers, not just lung cancer
- If you drink alcohol, limit to 1 or 2 small glasses of red wine, with a meal and a glass of water
- Avoid stress and loneliness, socialise. Relax outdoors. Follow the Bristol Whole Life Approach
- Sleep well by adopting good practices. We need 6-9 hours sleep to rest and recover
- Sit less and keep active, e.g, housework, gardening, dancing, golf, y oga/tai-chi, swimming
- Exercise aerobically, e.g. walking, running, cycling, at least 30 mins a day, 5 days a week
- Do strength training two days a week, for upper/lower body/core muscles, e.g., use resistance bands
- Achieve and keep a trim waistline, below 94 cm (37") for men. Also aim for a BMI of 21 to 23
- Avoid highly processed (ultra-processed) foods, processed meats and charred meat
- Avoid sugary drinks, added sugar, sugary foods, e.g., shop-bought cakes, biscuits, sweets
- Follow a Mediterranean dietary pattern, also eat 30 different plant foods each week
- Nourish your gut microbiome, e.g., with fibre, also kefir or natural bio-yoghurt

Note: If you have pre-existing conditions or have had recent surgery, check with your doctor before commencing vigorous exercise. Always build up exercise gradually, unaccustomed exercise can be dangerous for you.

What is the Bristol Whole Life Approach?

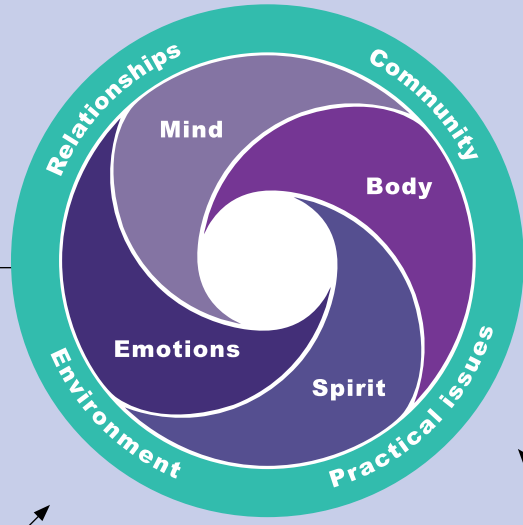
Penny Brohn UK
Living Well with Cancer

- Whe Bristol Whole Life Approach recognises that to be healthy we need to pay attention to all parts of ourselves. Specifically, our mind, body, spirit and emotions, which are all closely connected and work together to support our immune system and its ability to keep us well.
- We strengthen our immune system by eating well, physical activity, doing the things we love and managing stress.
- By learning how to self-care and increase our resilience, we are better able to face whatever life throws at us.
- This powerful knowledge offers hope and a sense of control for those with a cancer diagnosis.
- It doesn't mean we are offering the promise or expectation of cure.
- It does mean we can confidently say we each have natural internal resources that, when supported in the right way, can have a powerful effect on our health and well being.

- Kindness
- Being yourself
- Giving and receiving love
- Forgiveness

- Control
- Trust
- Mindfulness
- Choice
- Knowledge
- Managing stress

- Connecting with others
- Sources of support
- Friendship



- Expressing feelings
- Finding hopefulness
- Accepting a range of emotion
- Self-compassion

- Managing symptoms
- Rest
- Breathing
- Physical activity
- Healthy eating
- Sleep
- Relaxation

- Sunshine
- Clean and safe places.
- Access to nature.
- Freedom from carcinogens

- Creativity
- Connection
- Peace, Hope
- Faith, Joy
- Purpose

- Finances
- Home situation
- Reducing stresses
- Work/life balance

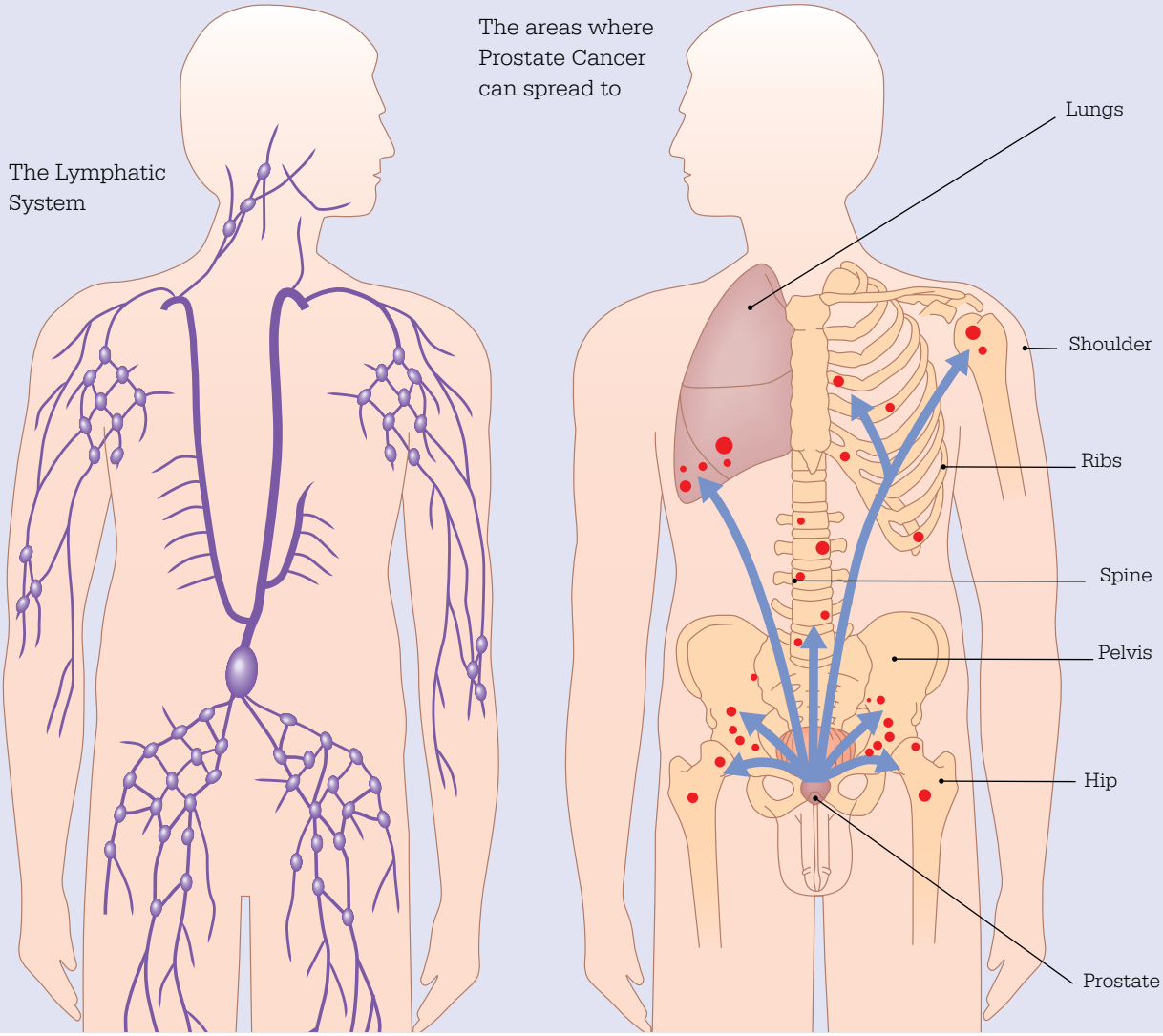
four

Advanced and Recurrent Cancer

Spread of Prostate Cancer

In time, prostate cancer cells may invade local tissues, or may break away and spread to other areas of the body via the bloodstream or lymphatic system..

When these cells reach a new site they form a new cancer, called a secondary tumour or metastasis. The areas most commonly affected are the lymph nodes, bones and lungs.



In order to grow, most prostate cancers need the male hormones (androgens), the most common of which is testosterone. Most testosterone is produced in the testicles. By reducing the amount of testosterone in the man's body the cancer will be starved and shrink.

Hormonal treatment, as it is commonly called, androgen deprivation therapy (ADT) is mainly used in the following situations:

1) When the cancer is at the advanced stage and has spread outside the prostate to other areas of the body
2) When the cancer has recurred after other treatments, or
3) It can also be used for men with curable cancers prior to radiotherapy or other treatments, which may make the treatment more effective.

Hormone Treatment

Androgen Deprivation Therapy (ADT)

Metastatic Cancer

Men whose tumours have already spread by the time they are first diagnosed with prostate cancer will often not undergo such treatment as surgery or radiation. Instead, their treatment journey will start with primary hormone treatment (ADT), which initially should lower the PSA level considerably and stop the cancer progressing. Regular PSA readings are again adopted in order to monitor the cancer and make sure the treatment is effective.

If the 'first-line' hormone drugs lose their effectiveness, there are other, newer drugs which have been shown to work on many patients. These 'second-line' drugs are often used in combination with the first line hormone drugs. These drugs have different mechanisms of action and side effects.

Hormone treatment alone does not cure the cancer but may control it for anything from 2 to 10+ years. A marked lowering of the PSA is usually a good indication of the effectiveness of the treatment.

Oligometastatic

With the advance in imaging techniques, such as PSMA PET which can detect small metastases that cannot be detected with other scans, it is now possible to accurately define patients with a small number of metastases (less than 5) as oligometastatic. For this group of patients there are possibly two different types of treatments, surgery or stereotactic ablative radiotherapy (SABR). Which option is chosen will depend upon:

- Site of the metastases (may be more suitable for SABR or surgery)
- Patient individual preference
- Multi-disciplinary team case review

For some patients, newly diagnosed or a patient suffering a relapse after primary treatment, this active treatment may have a curative intent. For others, it may be an effective alternative to commencing hormone therapy and this may be preferred to the side-effects that can be caused by hormone therapy.

There are two main types of hormone treatment: LHRH analogues and anti-androgens.

LHRH agonists

This is short for Luteinising Hormone-Releasing Hormone. These drugs can decrease the amount of testosterone produced by the testicles as effectively as surgical removal. Two common examples of these drugs are **zoladex** (goserelin) and **prostap** (leuprorelin) both administered by injection, either monthly or three monthly. .

Less common is decapeptyl and gonapeptyl (triptorelin). These are other drugs that can be used, especially in cases of aggressive advanced prostate cancer. They are adminstered in 1, 3 or 6 monthy injections.

When first administered, all of these drugs cause an initial surge of testosterone, overloading the pituitary gland causing it to shut down production of testosterone, often tumour flares occur, this is counteracted by a short course of anti-androgen tablets normally Bicalutamide is used.

LHRH antagonists

Degarelix (Firmagon) an LHRH antagonist works in a slightly different way to LHRH agonists, they immediately block pituitary LHRH receptors. The advantage of this drug is that there is no tumour flare and thus no need for an anti-androgen before LHRH treatment. It is approved by NICE for cases of advanced prostate cancer where it has spread to the spinal column. It is administered by injection under the skin.

Relugolix (Orgavyx) is similar in its action to degarelix but has the advantage of being taken as an oral tablet once per day rather than requiring regular injections. It also shares the benefits of degarelix:

- It does not produce the initial flare of increased testosterone at the beginning of therapy
- It is equally effective in reducing testosterone levels as LHRH agonists
- It has a much faster onset of action than LHRH agonists
- A faster return of testosterone levels when therapy is discontinued
- A lower incidence of major adverse cardiovascular events (MACE)
- Relugolix is now approved by NICE (Aug 2024) and SMC (Scottish Medicines Consortium)

Anti-androgens

These drugs do not stop the production of testosterone completely but block the effects of testosterone produced by the testicles and adrenal glands. Examples of these drugs are -

- bicalutamide (Casodex) – you take it once a day
- enzalutamide (Xtandi) – you take it once a day
- apalutamide (Erleada) – you take it once a day
- darolutamide (Nubeqa) – you take it twice a day

Bicalutamide is usually the first line treatment choice, with Enzalutamide, Apalutamide and Darolutamide a second option, where cancer has stopped responding to other hormone treatments. Enzalutamide is approved by NICE and can be used before or after chemotherapy or in combination with other drugs.

They are usually taken in tablet form, which makes them attractive to those who do not like the thought of regular injections. Anti-androgens can be used as a stand-alone therapy (referred to as 'anti-androgen monotherapy'), or now more commonly they are used in combination with LHRH analogues, referred to as 'combined androgen blockade'.

LHRH side effects

The main side effect is that the patient will become impotent and lose his sex drive. The process gradually reverses if the patient stops taking the drug. Some men may suffer from decreased size of testicles and some slight penile shrinkage.

A common side effect, particularly of LHRH agonists and antagonists, is hot flushes for short periods, which can occur at night, affecting sleep, for which a short course of low-dose anti-androgens may be prescribed. Eliminating alcohol, tea and coffee (or using decaffeinated drinks) and going on a soya diet (to replace milk) may also help. Weight gain, bone or muscle pain, joint pain, numbness and tingling in hands and feet, and possible hair loss on face, arms, legs or underarm are other listed side effects. Some may find these hard to live with, but with time many will reduce in severity as the body adjusts. Medication can, of course, be changed should these become a problem.

Anti-androgen side effects

A common side effect of these drugs is tender or enlarged breast tissue (gynaecomastia), which may subside if treatment is ceased. Low doses of tamoxifen (an anti-oestrogen) can reduce this side effect. Other possible concerns may be nausea, diarrhoea, itching, feeling weak, and problems with the liver. As the drugs affect your hormone levels, this may cause some anxiety or depression. Although there is still a risk of impotence and other adverse sexual side effects with anti-androgens, these are less severe than with LHRH analogues (or with orchidectomy, where it is permanent).

Intermittent Hormone treatment

Intermittent Hormone treatment is a process in which the hormone treatment is started and stopped for periods while monitoring the PSA. When the PSA rises, treatment is restarted. The aim is to reduce the side effects of the treatment. Some trials have shown that intermittent treatment can be as effective as continuous treatment, and with fewer side effects.

Combined treatments

The STAMPEDE trial has shown that some men with high-risk cancer can benefit from a combination of chemotherapy and Hormone treatment. After completion of chemotherapy,

Nutrition Guidance for Patients on Androgen Deprivation Therapy (ADT)

The table below provides examples of common questions received and answers provided by the UCSF Helen Diller Comprehensive Cancer Centre's dietitian Greta Macaire. Addition of a dietary assessment at ADT initiation to mitigate symptoms and treatment side effects is warranted. Data suggest that only a small proportion of patients on ADT receive advice on nutrition and physical activity, while >80% of patients would make use of such advice if it were provided.

Reference: European Urology Focus (2023) Nutrition Guidance for Patients on ADT

Common patient questions and answers for men on ADT

How can I lower my risk for osteoporosis through diet?

- Eat plenty of vegetables, fruits, beans, nuts, seeds, and lean proteins to provide essential nutrients for bone health.
- Consume 1000–1200 mg of calcium daily through food sources (dark leafy greens, canned fish with soft bones, non- or low-fat dairy products, chia seeds, almonds, and fortified foods and beverages); include a supplement if unable to meet needs through diet alone.
- To optimize calcium absorption, take a daily vitamin D3 supplement of 800–1000 IU or more if blood levels are low.

How do I minimize weight gain while on ADT?

- Eat fibre-rich foods; dietary fibre helps you feel full with fewer calories, aiding in weight management.
- Check that at least half of your plate is filled with vegetables and fruit, a quarter with lean protein (poultry without skin, fish, beans, soy foods), and up to a quarter with starchy vegetables (sweet potatoes, winter squash, corn) or whole grains.
- Limit or eliminate sources of empty calories, including alcohol, sugar-sweetened beverages, "fast foods", and other processed foods that are high in added fats, starches, salt, or added sugars.

Do you recommend supplements while on ADT?

- Owing to a lack of evidence of benefit, and in some cases links to an increase in cancer progression, dietary supplements are not broadly recommended.
- Supplements may be recommended under certain circumstances, such as vitamin D and calcium for bone health and vitamin B12 if on a vegan diet.
- It is best to meet nutrient needs through diet alone when possible.

What about alcohol?

- Studies on the link between moderate intake of alcohol and the risk of heart disease are conflicting, with some studies finding protective effects and others suggesting that any amount of alcohol raises risk.
- If you do not drink alcohol, do not start; if you choose to drink alcohol, limit your intake to one to two drinks per day.
- One drink is equivalent to 12 ounces of beer, 5 ounces of wine, or 1.5 ounces of distilled spirits.

Do you recommend a plant-based diet and what does that mean?

- Eating a plant-based diet is recommended because of its association with better heart health, healthier body weight, lower risk of diabetes, and lower risk of death from any cause.
- A plant-based diet means most of what you eat comes from plant foods: vegetables, fruits, beans, nuts, seeds, and whole grains. You can still consume meat, dairy, eggs, fish, and other seafood, but this makes up a small proportion of your total food intake.
- If adopting this type of diet, good sources of protein such as beans, soy foods, nuts, and seeds should be eaten with each meal; a vitamin B12 supplement or fortified food source is necessary for vegan diets.

hormone treatment with drugs such as **Zoladex** or **Prostap** will continue, either continuously or intermittently, However, the cancer will eventually no longer respond to these hormone drugs. A rise in PSA level is the first sign of the treatment becoming ineffective. When this happens, there are several second-line treatments. **Apalutamide** or **Darolutamide** can be used where the cancer has not spread, but stopped responding to other hormonal treatments.

An anti-androgen such as **Enzalutamide** may be used, it is approved by NICE and can be used before or after chemotherapy or like the other drugs, in combination.

Abiraterone Acetate (Zytiga)

This has helped many patients with advanced cancers that have become resistant to hormone treatments. Abiraterone is currently authorised for use in the NHS as a treatment before or after chemotherapy. Abiraterone is a hormone therapy drug sometimes taken in combination with Prednisone when cancer has already spread (metastasided) to other parts of the body. It is highly effective in improving survival of some types of prostate cancer, but not all, so it doesn't work for every patient. Some men have to be taken off the drug if an adverse reaction in the liver occurs.

Radium-223 (Xofigo)

Radium-223 is a radioactive substance used to treat men with prostate cancer that has spread to the bones. It is available and approved by NICE for treatment on the NHS both before or after chemotherapy treatment.

It is given as an intravenous (directly into a vein) injection and transported via the bloodstream to the bones. It then binds to the bones and delivers radiation releasing very high-energy alpha particles that cause lethal damage to adjacent cancer cells with minimal damage to healthy cells nearby. The full course of treatment is six injections of radium-223 – one injection every four weeks.

Radium 223 has undergone a trial with nearly 1,000 patients with hormone relapsed prostate cancer. The results show that Radium-223 improves survival by a similar length of time as abiraterone or enzalutamide and is now a standard choice of treatment for men with hormone resistant prostate cancer and bone metastases.

Lutetium-177 PSMA therapy

Lutetium-177 PSMA therapy is an innovative molecular therapy used to treat advanced prostate cancer, that has spread from the prostate to other parts of the body. The treatment involves a special radioactive medication, lutetium, being injected into your bloodstream. Inside your body, the medication seeks out prostate cancer cells and tightly attaches to them, it then precisely delivers a high dose of radiation to destroy the cancer cells, minimising the damage to surrounding healthy cells. The drug can identify these cells by detecting the presence of a molecule called prostate-specific membrane antigen (PSMA), this is a unique protein found on the surface of 80-90% of prostate cancer cells (tumour cells). If the prostate cancer spreads to other parts of the body, the PSMA will also be found in those areas.

This type of therapy has many advantages. It can, in theory, target all areas of prostate cancer, even when it has spread around the body. The targeted treatment means less damage is done to healthy surrounding tissues, which can also lead to fewer side effects.

The treatment has been licenced by MHRA and is available in private clinics. It is currently being appraised by NICE and is not yet available on the NHS. The VISION trial tested this treatment in patients with late-stage prostate cancer who had already been treated with chemotherapy and hormonal drugs. Currently the trial results are looking positive and it looks promising that lutetium therapy will be available for men with advanced prostate cancer in the future. Other ongoing trials are also looking at using lutetium therapy earlier in the treatment pathway, where the disease is less widespread and the benefit from the therapy is likely to be much greater.

Bone Health

Our bones are living matter. They are constantly dying and regenerating. As we grow older, we need to maintain strength in our bones through use. Gentle resistance exercises and weightbearing exercises such as brisk walking or swimming are particularly important to avoid osteoporosis and a deterioration of bone tissue which can lead to fractures. Unfortunately this deterioration is made worse by:

1) certain hormone treatments for locally advanced and advanced prostate cancer (e.g. Zoladex, Prostap), designed to lower testosterone levels

2) metastasis of the cancer to the bones in the advanced stages, particularly to the ribs, hips and spine.

Calcium and Vitamin D

Calcium intake is one of the keys to maintaining good bone health. If you are avoiding dairy products, calcium may be found in many other foods: green fruit, vegetables, soya milk and baked beans.

Note: Too much salt, caffeine or alcohol will deplete your calcium.

Vitamin D3 is vital to help fix calcium in your body. It can be obtained naturally via careful and limited exposure to sunlight, and in oily fish and supplements. Most men in the UK are deficient in Vitamin D3, due to inadequate sunlight in the winter months and precautions against sunburn in the summer. So, some men could find Vitamin D3 in tablet form helpful in the fight against prostate cancer, alongside other treatments.

Osteoporosis

Many osteoporosis treatments combine calcium and vitamin D3 in tablet form. Bisphosphonates such as **Zoledronic Acid** (Zometa) or **Alendronate Acid** are sometimes prescribed.

Chemotherapy

When is chemotherapy used?

Chemotherapy was traditionally used as a treatment when all second and third-line therapies have failed. However, results of the STAMPEDE trial released in 2015 have shown that chemotherapy is most effective when used early for men with metastatic and men with high risk non-metastatic cancer in conjunction with standard first-line Hormone (ADT) treatment. This also has the advantage that the patient may be fitter and more able to withstand the side effects of chemotherapy treatment.

Commonly you may be recommended chemotherapy when standard hormone treatments have become ineffective and the more advanced drugs such as abiraterone and/or enzalutamide have not worked. There is no 'right time' to start chemotherapy. The treatment will affect your quality of life for 6 months or sometimes longer. On the other hand, delaying having chemotherapy until you are seriously ill and unfit may mean worse side effects. It is best to be as strong and as fit as you can beforehand. The 'early chemotherapy' option should be discussed with your oncologist in detail following your diagnosis and full staging of the disease.

Prostate Cancer chemotherapy is usually administered with the 'first line' drug **Docetaxel** (Taxotere), which is always used in combination with a cortico-steroid such as **Prednisolone**, an anti-inflammatory that helps reduce nausea.

What can the patient expect?

Docetaxel is administered as a one-hour infusion every three weeks, usually for up to ten infusions, depending on the patient's tolerance and response. It acts like a poison to prostate cancer

cells, causing cell death. Prednisolone given at the same time aims to reduce any inflammation and pain. A patient's hormone treatment may be continued in parallel. In trials, 50% of patients after chemotherapy achieved a 50% reduction in PSA on average, though many men achieve much lower PSAs. As prostate cancer seems to present itself in a variety of forms, every patient's experience will be different. When docetaxel is successful, patients can expect their lower PSA to remain for several months or even some years.

Side effects of Chemotherapy

Because docetaxel is toxic, and not specifically targeted at prostate cancer cells, it can and does damage normal cells as well. The number of side effects listed is quite large, common ones being temporary hair loss, damage to fingernails and toenails, and bone marrow. Pain, tingling, numbness and weakness can be a sign of neuropathy. Often hands and feet are the most affected areas.

Patients' experiences vary. A lucky few are fairly free of side effects; in others, they can be quite severe. Aches and pains, and extreme fatigue, particularly in the first week after the infusion, are quite common. Because of the damage to bone marrow, red blood cells can be depleted, leading to anaemia; white blood cells are also reduced, which means that the immune system is compromised. Filgrastim lowers the risk of infection and helps the body make more white blood cells.

Other side effects can include loss of appetite, feeling sick and mouth ulcers. Any infections during the chemotherapy cycle have to be dealt with immediately and may even interrupt the treatment cycle. In this event you must contact your GP straight away.

A newer drug building on the success of docetaxel is **Cabazitaxel**. This is a 'second generation' docetaxel or 'second line' treatment. It has been approved by NICE for patients who have previously been given docetaxel. The side effects are slightly different, also cabazitaxel does not tend to cause problems with numbness, tingling and fatigue, that is common with docetaxel.

Recurrent Cancer

After your initial treatment for localised or locally-advanced prostate cancer is complete, the next stage of your recovery is monitoring and checking that all the cancer has been eradicated from the body. Some prostate cancer cells might have been able to spread outside the treatment areas before they could be removed or killed. At some point these cells may begin to multiply and produce enough PSA to become detectable by a blood test. Monitoring for recurrence or 'relapse' typically involves regular PSA tests, which are usually repeated every 6 months for the first 5 years, then yearly. A DRE prostate exam is sometimes performed every year but may be omitted if the PSA level is undetectable.

If your PSA starts to rise, it could be a sign of your cancer returning, or it could be a sign of something else, dependent on which treatment you have had. The rate (or velocity) at which your PSA rises after prostatectomy or radiation therapy can be a significant factor in determining how

aggressive your cancer is and can therefore be useful in deciding how aggressively it might need to be treated.

Recurrent Prostate Cancer after Surgery

If you had the prostate removed by surgery, your PSA should be undetectable with a reading of less than 0.01ng/ml, which is effectively zero, but by definition can never get all the way to zero. Following a prostatectomy, the most recognised confirmed PSA reading relating to recurrence is >0.20ng/ml.

Should your PSA start to rise after surgery, then 'salvage' radiation therapy could be right for you. EBRT is delivered to the area that the prostate used to occupy (called the prostate bed), the object being to eradicate any cancer cells that were left behind after surgery. Approximately 80% of men with a rising PSA after surgery have a regrowth contained within the prostate bed. Salvage radiation therapy (like all salvage therapies) is likely to cause an increase in side effects on top of those previously experienced with surgery.

Following scans, MRI and/or PSMA PET, if the cancer is found to have spread to other areas of the body and become metastatic then salvage radiation therapy is unlikely to be the best choice, as it will only target the prostate bed and potentially the nearby lymph nodes. Hormone treatment (ADT) is likely to follow in order to contain and slow the cancer growth.

Recurrent Prostate Cancer after Radiotherapy

Following radiation therapy, your consultant will need to look for confirmation from several PSA tests, because PSA can jump or 'bounce' for a short period, before returning to its low level, which is called your 'baseline' or 'nadir' reading (as measured on two consecutive tests). PSA bounces can typically occur between 12 months and 2 years following the end of your initial therapy. If your PSA rises more than 2.0ng/ml above your baseline reading, that can be an indication of cancer recurrence.

Many patients will now have a course of Hormone treatment in addition to radiation (EBRT), but should your PSA start to rise after this treatment has finished, there are options. Low dose-rate Brachytherapy (seed implant), can treat the prostate provided there is no spread outside the gland. Likewise, it would be possible to have Cryotherapy (freezing), although men with higher-grade disease do not respond well to this treatment. Surgery to remove the prostate is difficult after EBRT and very few surgeons would take this on, it would depend on several factors such as age and aggressiveness of the tumour.

Salvage HIFU can be used after several first-line treatments such as EBRT, Brachytherapy, Cryotherapy; and also if HIFU itself has been used as a first treatment. Men with a rapidly rising PSA are likely in the first instance to be given Hormone treatment in order to arrest the cancer growth, and imaging scans, such as PSMA PET will then detect any spread outside of the prostate bed. Salvage HIFU and Cryotherapy are only available in specialised centres.

Emerging Therapies and Treatment Options

Because every cancer profile is different, each cancer needs a custom treatment.

Worldwide, there are many emerging therapies being tested on patients in clinical trials. There are some already showing highly promising results in those trials for the treatment of prostate cancer.

Precision Medicine

Scientists are working on ways of matching specific treatments to the particular genetic make-up of the patient and the tumour. Cancer cells are mutations and each mutation is unique with its own weaknesses. Analysing the cancer and then having a custom-tailored treatment to attack those specific weaknesses has been shown to have the potential to be effective. But the scientists themselves say there is a long way to go.

PARP is an enzyme that helps repair DNA when it becomes damaged. A **PARP inhibitor** blocks the enzyme and stops cancer cells from repairing their damaged DNA, causing them to die. PARP inhibitors, such as **Olaparib** (Lynparza) in trials has been proven to be effective against cancers with mutations in genes that repair damaged DNA. These 'DNA damage repair' (DDR) genes include the breast and ovarian cancer risk genes BRCA1 and BRCA2. Approximately one-third of metastatic prostate cancer patients have these mutations in their tumours and may be candidates for treatment with PARP inhibitors.

NICE guidelines (May 2023) state: Olaparib is recommended as an option for treating hormone-relapsed metastatic prostate cancer with BRCA1 or BRCA2 mutations that has progressed after abiraterone or enzalutamide hormonal treatment.

It is hoped that in the future, screening of metastatic prostate cancer patients to identify those who have gene mutations and may benefit from PARP inhibitors will become common practice.

Immunotherapy

Immunotherapy has become a standard treatment for some types of advanced cancer, both lung and skin cancers have been treated with immunotherapy drugs. It is now being developed for advanced prostate cancer patients. It works by helping the immune system to recognise and attack cancer cells and can be delivered on its own or with other prostate treatments such as chemotherapy or radiotherapy. Some treatment types of immunotherapy are also called targeted treatments or biological therapies.

Some men with otherwise untreatable prostate cancer can benefit from an immune system-stimulating treatment which could help prolong their life, or even stop their cancer growth entirely. Previous trials using immunotherapy in prostate cancer have been unsuccessful, but the latest research examined the genetics of the tumours.

Still in an early stage, an emerging treatment is CAR-T cell therapy which involves taking out a person's own immune T-cells, altering their DNA to spot cancer cells, and then putting them back into the patient to seek out and destroy tumours.

Genetic Testing and Counselling

It has been known for a while that around 5% of men with prostate cancer inherit from their parents mutations in the genes responsible for repairing damaged DNA (which include BRCA 1 and BRCA2 but there are many more). Newer research suggests the percentage increases in men with advanced prostate cancer. Men with these mutations are more likely to do better on certain types of treatment.

These results suggest that, in the future, men with advanced prostate cancer should be tested for DNA damage repair mutations as it could improve their chances of getting the right treatment. In those cases where such a mutation is found the man's family may then be offered genetic counselling and testing for the DNA damage repair mutations.

Vaccines

Researchers are also testing vaccines to treat cancer. Normally vaccines help protect us from disease and are made from weakened or harmless versions of the disease they are intended to fight. A vaccine can stimulate the immune system into action, by recognising and attacking the harmless versions of the disease. Once the body has made these attacking antibodies, it can recognise the harmful versions of the disease and mount an attack against those cells. Researchers are developing vaccines to recognise proteins that are on particular cancer cells, which helps the immune system to recognise and mount an attack against those particular cancer cells.

Proton Beam Therapy

For men with early-stage, localised prostate cancer, conventional radiotherapy uses photons that produce high-energy radiation beams that destroy the cancer cells, but to get to them the beams must pass through healthy tissue and the beams also carry on beyond the tumour site, this can cause damage to other organs, particularly the rectum, and create side effects.

The potential advantage of protons over photons is that there may be significantly less collateral damage. The proton beam can be very accurately focused, such that the major part of the energy is targeted at the cancer to be treated. Damage to tissues surrounding the cancer is significantly reduced. It should be noted that this type of therapy is only suitable for around 15% of all cancers.

Currently the therapy is employed for eye and some brain cancers, but a small number of patients have been treated for prostate cancer. At high energy, protons can destroy cancer cells. However, current research has not shown that proton therapy provides any more benefit to people with prostate cancer than traditional radiation therapy. Proton therapy is only available in a very small number of specialised units.

More data is needed before this therapy will be recognised as a standard treatment for prostate cancer.

Clinical Trials

Every year in the UK, many people take part in clinical trials and every trial is reviewed by an Ethics Committee before being allowed to take place. All trials are designed so risk to those taking part is kept to a minimum. Each trial has strict criteria, relating to those people allowed and suitable to take part and everyone on a trial is monitored carefully, with safety and well-being a priority. Anyone taking part can withdraw from a trial at anytime and it will not affect your NHS treatment programme. Results of a trial are made available to those taking part.

Clinical trials are organised into four phases, of which Phases 2 and 3 are perhaps the most relevant. Phase 2 trials normally recruit a relatively small number of patients (typically 50-100) in order to establish whether the new drug/method is showing some useful activity. Phase 3 trials recruit a much larger number of patients that could run into thousands.

Patients are divided into different 'arms' of a study: those receiving the new drug or treatment method and those having standard treatment (the 'control arm'). In 'blind' or 'double-blind' randomised trials even the doctor may not know which arm the patient is on.

Trials are run across many of the teaching hospitals of the UK. An individual trial may be recruiting across different UK trials units, as well as worldwide. So, it is important to find the trial unit that is most conveniently located to you, and to check whether or not any travel expenses are paid.

Advantages and disadvantages:

- Even if you are on the control arm, you will be receiving the very best conventional

treatment, which will be monitored closely – perhaps more closely than if you were not on the trial programme, and by some of the best specialists in the field

- You may, however, have to set time aside for regular travel to a more distant centre than your local hospital, but in some cases all expenses are covered
- You will need to be happy with the fact that the treatment may be 'blinded', i.e. you may not know on which arm of the trial you have been placed.

How to get on a Trial

In the first instance it is best to request your GP to forward your name to the appropriate unit for evaluation.

There are a high number of prostate cancer trials currently recruiting and under evaluation, too many to list in this booklet. Comprehensive information about trials and a list of prostate cancer-specific trials can be found on the following website address:

Visit the Cancer Research UK website: **https://www.cancerresearchuk.org/about-cancer/find-a-clinical-trial .** Also go to **www.bepartofresearch.nihr.ac.uk**

Should you want to enter a trial, remember you have to fit the trial criteria and need to be referred by either your hospital consultant or GP.

TRANSFORM trial

Prostate Cancer UK is launching a £42 million research programme – the TRANSFORM trial – to find the best way to screen men for prostate cancer, so one day all men at risk are invited for regular tests to find aggressive cancers in time for a cure. The trial will involve hundreds of thousands of men and will compare the most promising tests and provide definitive evidence about the best way to screen for prostate cancer.

The trial will start recruiting in early 2025. An initial stage one of the study will take place over three years and involve approximately 12,500 men. It will test whether standard prostate MRI scans or new, shorter bpMRI scans can detect cancer in men from the general population who have no specific symptoms of prostate cancer. It will specifically look at the effect of MRI in men who have a normal or raised PSA blood test, the pilot will also review the impact of genetics, using simple blood tests called polygenic risk scores. This first phase of the study will help the researchers decide on the best screening tests to use in the main study. There will be multiple points during the trial where new evidence will be generated that might lead to an immediate screening programme. The first point at which we may see new evidence will be around three years after it begins.

In stage two, involving up to 300,000 men, the researchers will test the most promising option, or options from stage one to see how well this screening method detects cancer as well as any harms it causes, if new screening tests become available, they can also be included in the trial.

It is expected that the study will run for at least 15 to 20 years to find out if screening can reduce deaths. Men on the trial will be followed up for at least a decade after to see if prostate cancer affects them. TRANSFORM could save the lives of thousands of men every year. If you want to be part of this revolutionary study then please do respond to your invitation letter, if it arrives!

Other Sources of Support and Information

National Federation of Prostate Cancer Support Groups (Tackle)
www.tackleprostate.org

Prostate Cancer UK
National Help line: **0800 074 8383**
www.prostatecanceruk.org

Prostate Cancer Research
020 3735 5444
www.prostate-cancer-research.org

Macmillan Cancer Support
Help line: **0808 808 0000**
www.macmillan.org.uk

Cancer Research UK
Help line: **0808 800 4040**
www.cancerresearchuk.org

Penny Brohn UK
Help line: **0303 3000 118**
www.pennybrohn.org.uk

Acknowledgments

Cancer Partners UK for supplying us with the photograph on page 24.

Our thanks to our medical advisers Prof Chris Parker and Prof Chris Eden for their support and input.

Also to Dr Steve Allen for his specialist input.

Except where otherwise acknowledged, this version of the booklet has been edited by Roger Bacon based on previous content by Ian Graham-Jones, Peter Loader, David Rowlands, Jim Stansfeld and Sandy Tyndale-Biscoe.

The Healthy Living pages have been edited by Tony Ball

Booklet design, typeset and illustrations by Colin Woodman.

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Prostate cancer practice can change and NICE guidelines updated. For the latest changes and amendments to information in this book, please visit our website - **www.pcaso.org/publications**.

Glossary of terms

antioxidant a substance that protects us from the dangerous free radicals

biopsy the removal of small samples of tissue for analysis

catheter a thin tube inserted into the bladder, usually via the penis

Gleason score the rating of the aggressiveness of the cancer

impotence the inability to achieve a useful erection

incontinence the inability to control urination or bowels

laparoscopy looking into the abdomen by means of a tiny camera

Ligand is any molecule or atom that binds with a specific receptor site on a cell

lymph nodes small organs that filter and destroy harmful bacteria and viruses

metastasis the spread of cancer outside the primary site

nocturia the need to urinate frequently at night

oligometastatic patients with a small number of metastasis (less than 5)

oncologist a specialist in the medical treatment of cancer

orchidectomy an operation to remove the testicles

pathologist a scientist who studies the causes and effects of diseases, especially one who examines laboratory samples of **body tissue** for diagnostic or forensic purposes

perineum the area between the scrotum and the anus

prostatectomy an operation to remove the prostate

radiologist a person who uses X-rays or other high-energy radiation, especially a doctor specializing in radiology.

seminal vesicles organs that contribute fluid to the ejaculate

testosterone a male hormone secreted by the testicles

urethra the tube through which urine and semen flow

urologist a specialist in disorders of the kidneys/bladder/prostate systems

Abbreviations

ADT androgen deprivation therapy

BMD bone mineral density test

BPH benign prostatic hyperplasia (enlargement of the prostate)

bpMRI Biparametric (2 Stages)

CT computerised tomography scan

DRE digital rectal examination

EBRT external beam radiotherapy

ED erectile dysfunction (problems with erections)

HDR high dose rate

HIFU high-intensity focused ultrasound

HR hormone relapsed (prostate cancer)

IMRT/IGRT intensity modulated/image guided radiation therapy

IRE Irreversible Electroporation

LDR low dose rate

LHRH Luteinising Hormone Releasing Hormone

LRP laparoscopic radical prostatectomy

MDT multi-disciplinary team

mpMRI multiparametric MRI (3 Stages)

MRI magnetic resonance imaging scan

NICE National Institute for Health and Clinical Excellence

PET positron emission tomography – a form of body scanning

PSA prostate specific antigen

PSMA prostate specific membrane antigen

RP radical prostatectomy

RALP robotically assisted laparoscopic prostatectomy

SABR stereotactic ablative radiotherapy

TCAP targeted cryo-ablation of the prostate (i.e. cryotherapy)

TNM tumour/nodes/metastases: a scale for measuring tumour spread

TRUS trans-rectal ultrasound scan

TURP trans-urethral resection of the prostate (an operation to treat an enlarged prostate)

About PCaSO

Who we are

PCaSO Prostate Cancer Support Organisation was formed in 2002 from PSA Solent. Since its formation it has become one of the largest such groups in the country. We cover Sussex, Hampshire and Dorset, though we have a number of members throughout the UK. It is run entirely by volunteers who, with their families, have been affected by this cancer.

We have a WhatsApp group for members and hold regular Zoom meetings across our region, open to all, and have a membership of around 1,000. Our meetings are supported by many urologists, oncologists, dietitians and researchers in the area, who give us talks on a variety of prostate cancer related topics. We also try to hold face to face meetings at various venues across our region, where there is always the opportunity to meet and talk to fellow sufferers over refreshments. Our help line and website are available for anyone with concerns.

Our newsletter Updates is currently distributed by email and keeps members informed of our activities with a range of articles. We raise money to support our members; for free PSA Testing awareness events; for equipment needed in local hospitals; and for research. Besides this information booklet, we produce a Healthy Living booklet, aimed at anyone looking to reduce their risk of cancer. We also have a number of individual leaflets to help raise awareness, all publications are available to view on our website and can be requested in hard copy by emailing info@pcaso.org .

Membership.

Our membership is free, which includes both you and your partner, though we invite donations and standing orders. If you would like to join us, please contact our membership secretary, whose address is on our website, www.pcaso.org where you can either download a membership form or complete the form online. Our help line **07879 903407** and website are available for anyone with concerns.

Tackle Prostate Cancer

PCaSO is one of some 90 group members of Tackle Prostate Cancer, the campaign name of The National Federation of Prostate Cancer Support Groups which is the only national independent voice for prostate cancer patients. They campaign nationally on our behalf and run regular online workshops for member groups.

Prostate Cancer Support Organisation

A patient support organisation primarily covering
Dorset, Hampshire and Sussex areas
offering a free and confidential service

PCaSO Helpline
07879 903407

E-mail: info@pcaso.org
Website: www.pcaso.org

Registered Charity No. 1170536

KE-Version 10-November 2024