

Prostate Cancer

Information Booklet

2010-11

Knowledge Empowers

PCaSO Prostate Cancer Network
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Foreword

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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, *Knowledge Empowers* has been compiled by



PCaSO Prostate Cancer Network

the Support Organisation for Dorset, Hampshire
and Sussex areas

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Prostate Cancer Information Booklet

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The information contained in this booklet should not be taken as medical advice, which should always be obtained from qualified medical practitioners.

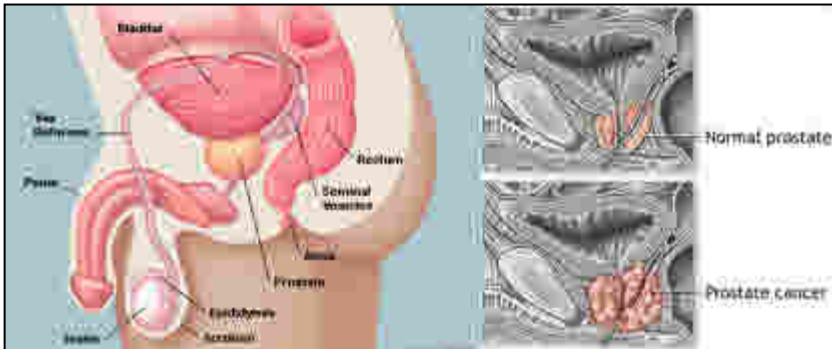
A1 : The Prostate and Prostate Cancer

Some Facts

What is the prostate?

The prostate is a sex gland found only in males. It lies at the base of the bladder, surrounding the tube called the urethra which carries urine and semen to the end of the penis. It is about the size of a walnut. During sexual intercourse, at orgasm, the prostate responds to muscular contractions to bring together the component elements of semen (sperm, lubricants and nutrients), and cause them to pass down the urethra. A healthy prostate is essential to full sexual function. 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, common in older men.

In a recent survey, fewer than 1 in 10 men knew where their prostate was or what it did. Many did not even know that they had a prostate.



Prostate cancer: who is at risk?

By the age of 60 many men will have developed the disease. Once regarded as the curse of older men, younger men are being diagnosed in their 50s, and occasionally in their 40s and even late 30s. **Men of African-Caribbean origin and those with a family history of the disease are especially at risk.** Breast Cancer and Prostate Cancer have many similarities, and a family history of breast cancer may also be a warning signal.

'Pussycats and tigers'

It has been found that most men over the age of 50 have some evidence of cancer in the prostate, but this need not necessarily be a cause for concern,

as many cancers grow so slowly that they may never develop to be life-threatening. Unfortunately research is still not sufficiently advanced to predict which cancers are slow-growing and which are aggressive.

Indeed, there is increasing evidence that prostate cancer may be not one, but several diseases. The indolent cancers, colloquially named the ‘pussy-cats’, may only require careful monitoring, without necessarily needing any radical treatment. The aggressive ‘tigers’, however, will need active treatment before the cancer starts to spread outside the prostate and invade other areas of the body.

Some facts

- **Prostate Cancer is the most common cancer in men.**
- **Each year in the UK some 35,000 men are diagnosed with prostate cancer, and about 10,000 will die of it.**
- **Despite earlier diagnoses of prostate cancer, the UK annual death rate remains stubbornly around 10,000.**
- **Localised (early stage) prostate cancer, where the cancer is confined within the prostate, 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 this is not usually the case. Localised prostate cancer does not normally have any symptoms.**
- **Localised disease offers a much wider choice of treatment options — more than for most other cancers.**
- **Once the cancer begins to spread outside the prostate (locally advanced) 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 (advanced), the disease can only be controlled.**

What causes prostate cancer?

Although the causes are not yet fully known, there is clear evidence of links to diet and lifestyle. Lack of exercise, obesity, and low exposure to sunlight may also be contributory factors. There are also genetic links, so it is important for every man to be aware of the disease, and to see his GP if he has concerns.

A2 : The DRE and the PSA Blood Test

The Digital Rectal Examination (DRE)

A simple way that a doctor can check your prostate is by feeling it using a gloved finger in the back passage. This is called a Digital Rectal Examination. If any abnormalities are felt, it may be a sign of a problem.

What is the PSA test?

It is a blood test that measures the level of Prostate Specific Antigen (PSA), a protein secreted mainly in the prostate. The blood sample is normally taken at the GP surgery and is then sent away for analysis. The result is generally available within a week. PSA is made by the prostate gland and a raised level of PSA in the blood can be an early indication of prostate problems.

What does it tell me about my prostate?

Sometimes a raised PSA level can be a sign of prostate cancer. More often though, it points to something less serious, like an inflamed or infected prostate (prostatitis), or an enlargement of the prostate that often comes as men age (Benign Prostatic Hyperplasia, or BPH).

How good a test is the PSA?

The PSA test is not a foolproof test for prostate cancer – indeed it is more a measure of prostate health – but at present it is the best simple test we have. Most men (typically two out of three) who have raised PSA levels may turn out not to have prostate cancer. Worse, about one sixth of men with a 'normal' PSA will actually have prostate cancer.

Note: You should be aware that elevated PSA readings may be obtained if the blood sample is taken after vigorous exercise, shortly after a DRE, or if ejaculation has occurred in the previous 48 hours.

Pros and Cons of knowing your PSA level

- It may reassure you.
- It can find cancers earlier than is possible by a DRE alone.
- It may lead to treatment at an early stage and provide a cure.

But:

- It may lead to a biopsy when you have no cancer.
- A mildly elevated PSA may lead to investigations and possibly unnecessary subsequent treatment of an indolent (i.e. 'pussycat') cancer (see 'Active Surveillance' on page 16).

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 leaches into the bloodstream with age. It is measured in nanograms per millilitre, and can range from less than 1ng/ml to readings in the 1000s. Readings from 1 – 4 (depending on age) are generally normal. A single reading is of little value, unless it is high (say over 10ng/ml). The higher the reading, the more likely that you have prostate cancer.

What if my PSA is high?

If the reading is marginal (say 3-5 ng/ml), a repeat test should be requested after a period of, say, 3 months, since the rate at which the PSA level may be increasing (measured as *PSA velocity* or *PSA doubling time*) is also a possible indicator of prostate cancer. Indeed, many clinicians 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.

If the PSA reading is high, or there are other indications, further tests may be requested to determine if cancer is present. These tests are outlined in the next section two pages.

Other tests your GP could arrange

Research is continuing to find other protein or genetic markers that can give a more precise diagnosis of prostate cancer and its aggressiveness. These need to be rigorously tested on a large number of men before they become nationally available. **PCA3** is available in the UK (not under NHS yet). This is obtained from a urine sample, taken immediately after the GP has massaged your prostate, releasing prostate cells into the urine. It claims higher accuracy at diagnosing the disease and its degree of aggressiveness.

Free and Bound PSA ratio (or Free to Total PSA). PSA may be *free* (not bound to a protein), or *bound*. Research indicates that if more than 25% of PSA is free, there is *less* chance of having prostate cancer. Currently it is not widely used, but knowing this PSA ratio may help avoid further unnecessary invasive tests. With this test, it is possible to assess your risk of having prostate cancer, and its aggressiveness, with a risk calculator, now supported by many clinicians, available at: <http://tinyurl.com/39s9q6y>.

Post-treatment PSA tests

For those who have had treatment, follow-up PSAs are normally given at regular intervals. A High Sensitivity PSA test that records levels down to 0.003ng/ml is available, and may be used after some radical treatments. The PSA test is a reasonably accurate predictor of post-treatment recurrence.

A3 : Further Tests for Prostate Cancer

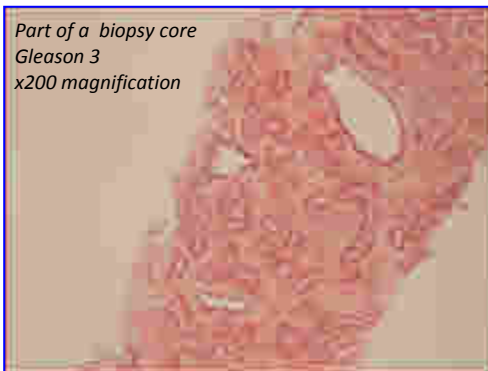
This section deals with biopsies, ultrasound, imaging tests, and scans.

No one test is conclusive, so a number of tests are often required.

Biopsy

Following any abnormality indicated by a DRE examination and/or the PSA test, a trans-rectal ultrasound (TRUS) and biopsy of the prostate is usually recommended first. This is done at the hospital as an out-patient and the test itself normally takes no longer than about ten minutes, although you may remain in hospital for a little longer. Although a local anaesthetic is given, some men find the procedure a little uncomfortable.

A lubricated ultrasound probe is inserted through the back passage in order to provide a 'map' of the prostate. The doctor will then pass a fine needle through the prostate to extract samples of tissue (typically 8 -12). These are sent for examination to a pathologist, who will then determine whether any cancerous tissue is present, and if so, a Gleason Score (see A4) will be awarded. Antibiotics are given prior to and immediately following the procedure. There may be some blood in the urine and/or the back passage from a few days to 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 cores removed may miss the cancer. The greater number of samples taken, the more likelihood of finding the cancer. Greater sampling, however, can lead to increased risk of complications. Recent research suggests that it is possible that prostate biopsies may under-estimate

the extent of the disease, due to sampling error.

A more precise test, a **template biopsy**, may be conducted for some forms of treatment, or when suspicions are high but normal biopsy results are inconclusive. This involves having a general anaesthetic.

In order to ascertain whether the cancer has spread beyond the prostate, imaging tests are often recommended. These are:

Nuclear bone scan

This test is to show whether the disease has spread to the bones. A small amount of low dose radio-active material is injected into the arm about three hours before the scan. The scan takes about 45 minutes, and images of any bones showing the disease will show up on the scan. A bone scan will not usually be done unless the PSA score is greater than 10 and Gleason score is higher than 6 (see A4). It is painless and quite harmless.

CT scan

This is short for 'computerized tomography'. It is a test that uses a rotating X-ray beam to scan the body from several angles. This is used primarily to check whether the lymph nodes are enlarged, which is often an indication of whether the disease has spread to these lymph nodes. The amount of radiation is low and is no cause for concern. Again, this test is usually done where there is a possibility of spread of the disease to other organs.

MRI scan

A magnetic resonance imaging scan creates a cross-section of the soft tissues around the selected part of the body by using magnetic fields, and the test is done as a further check to see whether there is any spread outside the prostate. The machines for these scans use a tunnel in which the body is located. Some may find this a little claustrophobic, but the head usually remains clear of the tunnel, so that the patient can see some daylight. The machine can seem rather noisy and the patient is asked to keep as still as possible during the process. It is possible to speak to the radiographer through a microphone/headphone system. The procedure is quite harmless.

Other tests that may be recommended are:

Bone density test

A bone mineral density test (BMD), sometimes called a DEXA scan (dual energy X-ray absorptiometry) measures bone mass, helps determine bone strength, and can predict the risk of future fracture. It may be requested from the GP before long-term hormone treatment (see p.31) in order to establish a baseline value, and on completion of the course.

Cystoscopy

This is an examination of the bladder by passing a thin flexible tube through the urethra. It is occasionally recommended to eliminate any possibility of bladder disease.

A4: The Gleason Score and Staging of Prostate Cancer Explained

The Gleason Score

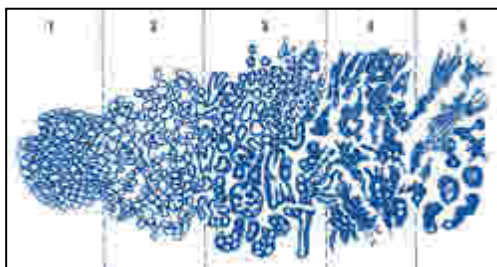
A 'Gleason' score rating is given as a result of examining cancerous tissue obtained from the needle biopsy under a microscope by a pathologist. The cells identified are given a grade number from 1 to 5, depending on the abnormality of the cells, 1 being the lowest, 5 the highest. The grades of the two 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 of 2 – 5 are now rarely reported

A score of 6 is classed as 'favourable'

A score of 7 is classed as 'average'

Scores of 8 – 10 are classed as 'adverse'.



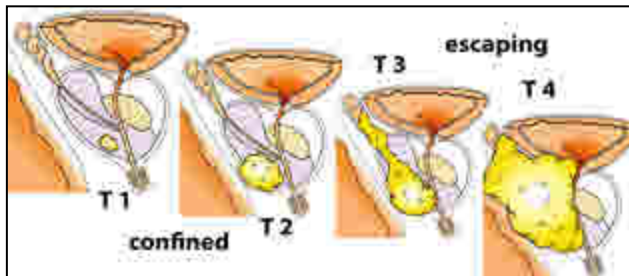
*Diagram of Gleason patterns grades 1-5.
Grade 5 is the most aggressive.*

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

Staging of Prostate Cancer

The current system of staging prostate cancer is known as the **TNM** system (tumour/nodes/metastasis). The **T** stage of the disease refers to the form of the primary tumour in the prostate. As this is perhaps the most relevant, it is described in full on the next page.

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.



T Stage disease

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

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

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

T1c: Cancer is found by needle biopsy done because of an elevated PSA.

T2: Doctor can feel that tumour appears 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 only 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 may be fixed to the pelvic wall.

N and M Stages

N Stage disease refers to the pelvic lymph nodes near the prostate. It is rated from 0 to 3, depending on the presence and extent of the spread, N1 being up to 2cm, to N3 being greater than 5cm.

M Stage disease refers to the *metastasis*, i.e. the degree to which the prostate cancer has travelled out of the immediate area of the prostate to other organs of the body. It is rated 0, M1a, M1b or M1c, depending on whether the disease has spread to the bones or other distant sites.

Your Risk Category

The NICE Guidelines for Prostate Cancer (2008) give three categories of risk: low risk, intermediate risk and high risk, depending on a combination of PSA, Gleason score and T stage. The category will help to inform the most appropriate treatment for you.

	PSA		Gleason		T Stage
Low risk	up to 10	AND	6 or less	AND	T1-T2a
Intermediate risk	10 - 20	OR	7	OR	T2b-T2c
High risk	More than 20	OR	8 - 10	OR	T3 - T4

A5 : Questions You May Wish To Ask

When we are newly diagnosed, it is often difficult to know the kind of questions to ask our consultant or nurse specialist. We have listed some that we find are commonly in the minds of the newly diagnosed. We hope that this 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 of these, plus other questions that are important to you.

*He who asks a question is a fool for five minutes;
he who does not ask a question remains a fool forever.
(Chinese proverb)*

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.

We have listed below some basic questions to ask your consultant. He or she may refer you to a nurse specialist, who may have more time to go into greater depth of detail about treatments and side effects.

Try to list your questions before you go and take them with you, or you may wish to photocopy these two pages. Why not 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.

Most hospitals now adopt a multi-disciplinary team (MDT) approach to managing treatment. A team would typically consist of a urologist, an oncologist, a pathologist, a radiologist and a urology nurse.

Questions for your consultant

1. What T stage is my cancer? (see page 11)
2. What is my Gleason score, and how is it split? (see p. 10)
3. Is my PSA increasing abnormally? (see p. 7)
4. Can you tell me whether the cancer is fast or slow growing?
5. As far as you know, is the cancer confined to my prostate?
6. Do you advise any further tests, and when will I have them? (page 9)
7. Will you tell me what the results mean?
8. Is there a team managing my case?
- 9.. Is there a Nurse Specialist looking after my case? (page 42).
10. What is the long-term situation for me? (You may prefer not to ask).

Treatment options and and general questions

1. What treatments are available for my type of cancer? (page 14)
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 health authority be willing to fund treatment elsewhere?
6. How quickly do I need to decide on treatment?
7. What are the possible side effects from the treatments? (pp. 33-34)
8. Can anything be done to ease the side effects?
9. Do you have any literature for me to take away to read?
10. What happens if I decide not to have treatment? (pages 16-17)

Three important questions for surgery:

1. Is it possible to have nerve-sparing surgery? (page 18)
2. How many operations like this have you done, and what are your results? (Don't be afraid to ask - it's your body !)
3. Who will be doing the operation?

Three important questions for for radiotherapy:

1. What type of radiotherapy will I have - conformal, IMRT, IGRT?
2. What dosage will I receive, and over how many weeks? (page 23)
3. Do I need hormone treatment as well?

Three important questions for hormone treatment:

1. If I am to have hormone treatment, do I need to have a bone density scan ? (page 9)
2. Do you recommend intermittent hormone therapy? (page 29)
3. What drugs can I have to ease any side effects?

Clinical Trials

1. Are there any clinical trials or research being done for my stage?
2. Would I be a suitable candidate? (page 43)

Support

1. Can I see my oncologist/urologist and specialist nurse? (page 42)
2. Can you give me details of local prostate cancer support groups?
3. Can I do anything to help myself with diet and supplements?

***Take charge of the disease:
Don't let the disease take charge of you.***

B1 : Summary of Treatment Options

Section B is designed to give basic information on the current treatments for prostate cancer. Doctors, consultants or nurses may not always inform the patient of all the possible options, nor will they necessarily recommend a particular treatment. It is not always easy, in these circumstances, to make a decision as to which treatment to choose.

Not all treatments will be suitable for every case. Some options are standard treatments; others, marked with an asterisk (*) are relatively new, with unproven long-term results. All treatments have consequences and side effects, which are detailed in this section and in Section C.

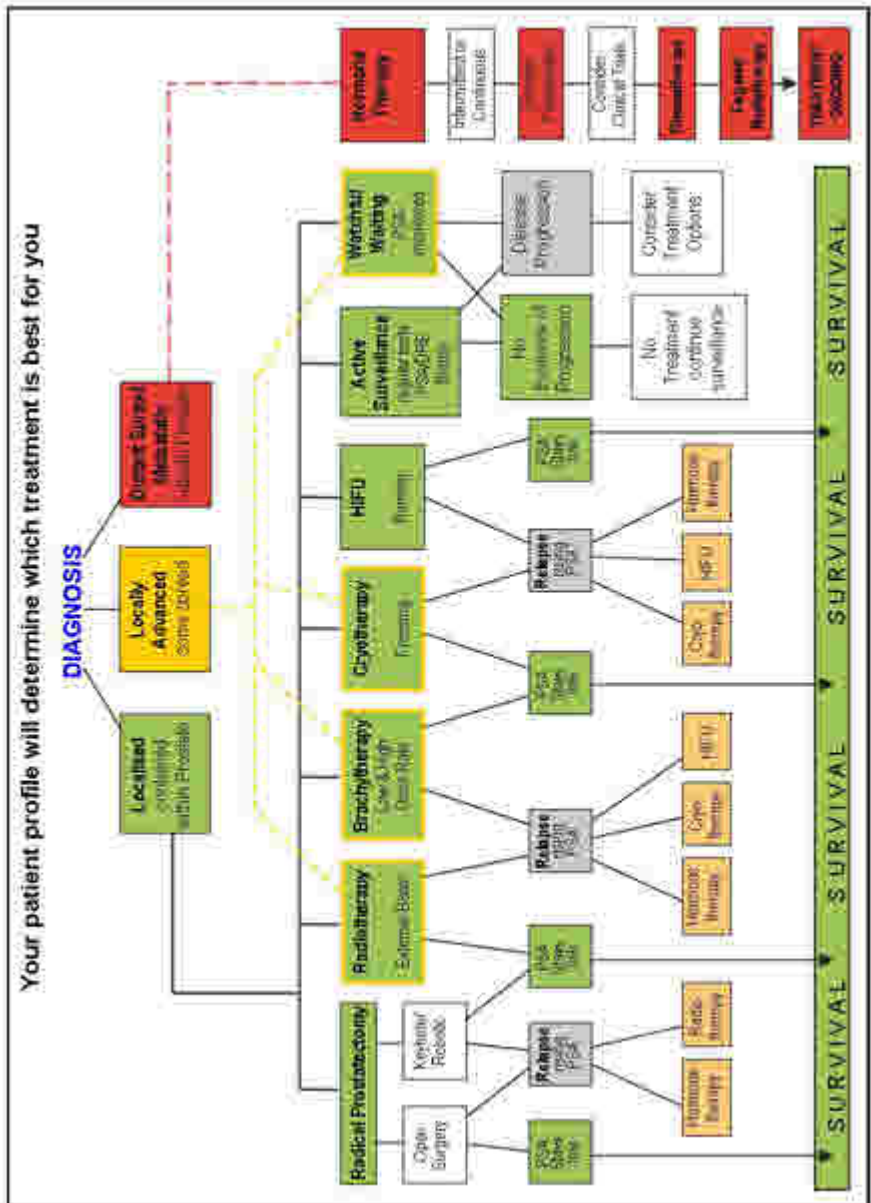
- **Active Surveillance** – pro-active monitoring of early-stage cancer with curative intent.
- **Watchful Waiting** – regular check-ups, leading to hormone treatments or palliative care, where appropriate.
- **Surgery** – an operation to remove the whole prostate, suitable only for localised cancer. This is done by one of three methods: open surgery, keyhole surgery (laparoscopic), or robotically assisted surgery.
- **External Beam Radiotherapy** – using radiation to destroy the cancer cells, involving short, daily treatments.
- **Brachytherapy** – the implantation of radio-active seeds in the prostate.
- **High-dose rate Brachytherapy*** – the insertion of seeds through catheters, removed after a one-off treatment.
- **Hormone Treatments** – used either where the cancer has spread outside the prostate or prior to curative treatments.
- **Cryotherapy*** (sometimes called cryosurgery) – the freezing of the prostate, sometimes used as a treatment after failed radiotherapy.
- **High Intensity Focused Ultrasound*** (HIFU) – the cancer cells are heated and destroyed by ultrasound.
- **Photodynamic Therapy*** (PDT) – the use of low power laser fibres to kill the cells. It is still experimental and not available on the NHS.

Notes: The last three may not be available in your hospital, and statistics on long-term outcomes are not yet available.

Some of these treatments may effectively be used in combination.

After all treatments, regular PSA readings are taken in order to check the success of the treatment. A cure may not be known for several years.

Flow Chart of Treatment Options



B2: Active Surveillance and Watchful Waiting

Early prostate cancer

Some men with early stage prostate cancer may not need to be treated. The cancer will grow so slowly, if at all, that the man will live out his natural span, and die of something else before the cancer causes any symptoms. Unfortunately, not all early prostate cancers behave like this. Some will progress at a significant rate, so that over a period of years the cancer will grow sufficiently to cause symptoms, and may then spread to other parts of the body and become life-threatening.

1. Active Surveillance

Active Surveillance is an alternative, pro-active approach which aims to monitor men with early prostate cancer who do not need immediate treatment, so as to spare them the side-effects that may be caused by treatment that may prove to be unnecessary.

Men on active surveillance are closely monitored with a PSA blood test every few months and possibly repeat biopsy sampling of the tumour, typically every two years. Some doctors now believe that the **Free to Total PSA Ratio** (see p. 7) and **MRI scans** (see page 9) are also useful additional monitoring tools.

Those cases that show signs of tumour progression will be advised to receive curative treatment, normally with surgery, radiotherapy or brachytherapy.

The aim of active surveillance is to treat only those cases where it becomes necessary, thereby avoiding the disadvantages of treatment for those that do not need it. Results suggest that many men on active surveillance will never need treatment for their prostate cancer.

It should be noted, however, that the terms 'watchful waiting', 'active surveillance' or 'active monitoring' can be used indiscriminately, which may cause some confusion. It is therefore important to ascertain from your doctor or consultant whether the programme involves just regular DRE examinations and PSA tests (to be followed by hormone treatment where necessary), or whether the more pro-active approach, with more frequent checks and possible repeat biopsies and other tests, is involved.

Advantages and disadvantages

- **Active Surveillance** may avoid unnecessary treatment, with its resultant side effects. These are detailed under each treatment section in the following pages of this booklet.
- It will also give the opportunity for a change of diet and lifestyle which may help in keeping the cancer under control.

But:

- It can create on-going worry about having cancer and 'doing nothing'.
- It may mean having repeat biopsies, with their associated risks.
- Biopsies may not always reveal the extent of the cancer and there is a possibility that you may be harbouring a more significant cancer than the tests indicate.
- It could happen that the 'window of opportunity' for curative treatment may be missed, should the cancer become more aggressive.

Monitoring your PSA

PSA velocity (the rate at which the PSA increases) and/or doubling time, together with other factors, play an important part in any active surveillance programme, so it is important that a careful record is kept. You have the right, of course, to opt out of Active Surveillance and have treatment at any stage.

2. Watchful Waiting

Watchful Waiting is another alternative to radical treatment, either for older men, where the disease may grow so slowly that it may not affect the person's quality of life, or for those whose health may not allow them to undergo radiotherapy or surgery. It will involve attending an out-patients' clinic once or twice a year for regular PSA and DRE tests. More active treatments, such as hormone therapy, can then be considered depending on a rise in PSA levels. It should be born in mind, however, that 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, however, does not necessarily mean doing nothing. Men may like to consider dietary changes, nutritional supplements, or an exercise regime that may help in slowing, or even reducing the growth of the cancer cells, as outlined in Section D of this booklet.

B3 : Radical Prostatectomy

A radical prostatectomy is an operation where the whole prostate gland and the seminal vesicles are removed. The prostate is normally taken out through the abdomen (called the retro-pubic approach). Some surgeons, however, approach it through the perineum (the area between the anus and the scrotum), but this is now much less common. With abdominal surgery the pelvic lymph nodes, part of the immune system, will be sampled to see if the cancer has spread to them. Radical prostatectomy is offered only to those with localised (early stage) cancer, a life expectancy of 10 or more years, and where the man's age and general health allow.

Nerve-sparing surgery, to preserve erectile function, is normally done where possible, and you should ask the surgeon about this. If the cancer is found close to the edge of the prostate, this lessens the chance of a complete cure. Nerve preservation does not necessarily ensure that erections can be subsequently achieved, as the nerve bundles lie extremely close to the prostate and some bruising of the sensitive nerves is inevitable. In some cases useful erections can take up to two and a half years after the operation to return.

Advantages and disadvantages of surgery

- **The cancer may well be completely eradicated.**
- **You will know afterwards exactly how far the cancer had developed.**
- **It will also get rid of any BPH (Benign Prostatic Hyperplasia), the age-related benign swelling of the prostate.**
- **Later radiotherapy or hormone treatments are possible, if needed.**

But:

- **All major surgery has risks. The older you are, the greater the risk.**
- **As with most other treatments, ejaculatory function (but not the ability to reach orgasm) is lost.**
- **Even with nerve-sparing surgery, risk of impotence is possible.**
- **Risk of severe long-term incontinence, however, is low (up to 4%).**

How is the operation performed?

It is always performed under a general anaesthetic. The urethra is cut during the operation and, after removal of the prostate, is then reconnected to the bladder with stitches. The patient wakes with a catheter in the urethra, which stays in place for a period after leaving hospital, a tube in the abdomen and arm drip(s), which are removed during the hospital stay.

After the operation

Painkillers are prescribed as needed, and the wound dressings removed before leaving hospital. Constipation can 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, 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 can last from three to six months. You will be given incontinence pads to wear for this period. In very few cases (about 2-4%) incontinence is permanent, and this can be controlled by fitting an artificial sphincter, entailing a further small operation.

Follow up care

After 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 remained entirely enclosed within the prostate, or whether it extended up to the cut edge of the prostate. This latter is called a **positive surgical margin**. If positive margins are found, there is a greater likelihood of a recurrence of the cancer over time.

You will normally be seen every 3 months for the first year, every 6 months for the next two years, and annually after that. A PSA will be needed for these visits, and the high sensitivity test may be recommended. Any sustained result less than 0.1ng/ml will indicate the likelihood of a cure, with little chance of recurrence. Should PSA levels increase over time, further treatment (e.g. radiotherapy) may be recommended.

Most surgeons will argue that, until new techniques become more widely available and long-term results from these prove otherwise, a radical prostatectomy, **performed by a proficient surgeon doing a high number of such operations per year**, remains one of the best options for a complete cure. It needs to be stressed, however, that the operation may not suit everyone, and should only be considered by relatively fit men with a reasonable life expectancy. As with all operations, there can be complications as well as hospital acquired infections. The risks can, of course be lessened by a combination of preparation by the patient, the skill of the surgeon, good nursing and cleanliness, as well as sensible after-care on the patient's part.

Side effects of surgery

As the seminal vesicles that produce man's ejaculate as well as the prostate are removed, ejaculatory function is lost, so that the man's orgasm will be dry. This need not be a concern; many men report the experience as being enhanced. (Should a younger man who wishes to father children consider surgery, opportunities for sperm banking should be discussed). Partial erections after nerve-sparing surgery are to be expected, but better function can return over a period of time. Urologists are now often recommending the use of low-dose Viagra (or similar) on a regular basis. Other methods of obtaining erections are available on the NHS (see p. 33).

At the hands of a skilled surgeon, incontinence is rarely permanent, though some incontinence is common for a few months, as the sphincter, the muscle that controls the urine flow, is tethered by dissolvable stitches. Pelvic floor exercises, done before and after the operation may aid speedier return to normality (see page 34).

Three main methods of surgery are now used: open, keyhole, and robotic. Current research is showing no appreciable difference in outcome for the three methods of surgery.

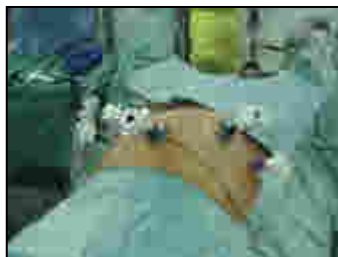
1. Open Surgery

An open radical prostatectomy is the common standard method. It is a major operation which requires 3–6 days in hospital and several weeks recovery time. The operation takes about 2–2½ hours. The surgeon will make a cut in the lower abdomen. A blood transfusion may occasionally be needed, and techniques are available to re-use some of the patient's blood. You should ask about this well before the operation. The catheter is removed after about two weeks. With the perineal approach, lymph nodes cannot be sampled but recovery time, however, is quicker.

The wound will take 4–6 weeks to heal completely and the scar will fade and shrink over time. Driving can normally be resumed after 4–6 weeks.

2. Laparoscopic Surgery

This is the removal of the prostate by keyhole surgery, known as a **laparoscopic radical prostatectomy** (LRP) and is considerably less invasive than conventional open surgery. It has been used since 2000 in the UK. Laparoscopic prostatectomy uses four 'ports' (see picture) in the lower



abdomen with incisions of about 5mm to perform the operation, with a longer incision below the navel of about 2cm, through which the prostate and seminal vesicles are removed. The abdomen is first inflated 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. At the hands of an experienced surgeon, the operation typically takes a little longer than for open surgery, up to 3 hours.

3. Robotically Assisted Laparoscopic Surgery



The latest robotic surgery uses a 'Da Vinci' robot. It uses similar techniques to the conventional laparoscopic method, except that the operation is performed by the surgeon from a remote console, giving '3D' vision with greater magnification and precision. The learning curve for the surgeon, however, is shorter than for LRP. Although comparatively few robotic operations have been carried out so far in the UK, results are proving as effective as the other methods. At the time of printing there are now over 20 robots in UK hospitals, both private and NHS.

Advantages and disadvantages of methods 2 and 3

- It is less invasive and causes less trauma than open surgery.
- There is considerably less blood loss.
- It requires a shorter stay in hospital – normally 2-3 days.
- There is little or no post-operative pain.
- The catheter is needed for less time than for conventional surgery.
- You are normally mobile from the second day and return to normal activity is usually 3 weeks.
- Greater precision and surgical accuracy, with a more precise view.

But:

- Fewer centres offer it as an option to open surgery.
- Success in this procedure depends very heavily on the expertise of the surgeon. A surgeon needs to perform a high number of such operations annually before satisfactory results can be assured.
- Results by surgeons that have only done a small number of such operations have shown complications: so choose your surgeon with care.

B4 : External Beam Radiotherapy

Radiotherapy is the use of high energy rays, usually X-rays, to kill cancer cells. It is used to either get rid of the cancer (curative) or to reduce pain and other symptoms (palliative). When used for curative treatment, there are two basic methods: **external beam** and **internal seed implants**. This second method, known as *brachytherapy*, is described in section B5.

External beam radiotherapy (EBRT) as a curative treatment for cancer has been used for many years with good success. Cancer cells differ from normal body cells in that they reproduce faster and are thereby more susceptible to high energy rays. In consequence repeated exposure to high energy rays will kill off cancer cells but allow normal cells to recover. However not all cancer cells act in the same way, so it is necessary to adjust the exposure and duration to achieve optimum effect.

The treatment and side effects

The treatment itself is painless, It involves daily attendance, 5 days a week, at the centre for short sessions for up to 7 weeks. Short-term side effects such as bladder or rectal irritation, tiredness and nausea, are common. Long-term side effects can include alteration of bowel habit and impotence problems. As with other treatments, ejaculatory function is either lost or degraded. There is now evidence of a small risk of developing bladder or rectal cancer more than 7 years after treatment.

These side effects should be discussed in detail with the consultant oncologist prior to the patient's agreement that the treatment should proceed. Curative radiotherapy can normally only be applied once so, if there is a re-occurrence of the cancer at the same site, which is unusual, an alternative treatment method has to be applied. It should also be noted that subsequent surgery at the radiated site is very difficult. An LH-RH analogue (see page 28) is often used to shrink the cancer before radiotherapy starts. This also helps reduce the risk of recurrence.

Recent developments

Over the past few years there have been substantial advances in the methods which have been used to apply radiotherapy.

Conformal radiotherapy, (see drawing on the right) where the radiation beam is shaped to reduce the radiation to the surrounding



areas, thereby minimising unwanted side effects, is now in common use. Recent developments are the use of **Intensity Modulated Radiation Therapy (IMRT)** and **Image Guided Radiation Therapy (IGRT)** equipment (see picture below). These take conformal radiotherapy a step further in the precision in 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 a little more time in the treatment sessions. Although not yet widely available in the UK, this new equipment is impressive, with good short-term results.

External beam radiotherapy is often used as a follow-on treatment in cases where surgery or other treatments have not been totally successful, and can improve overall survival.



Radiation dosage

This is measured in Grays (Gy). The standard is 74 Gy in daily 2 Gy doses, or fractions. There is evidence that increased dosage over a shorter period has some benefits. This is called 'hypo-fractionation', and is still the subject of much controversy and research.

Palliative radiotherapy and bone pain

Radiotherapy is sometimes used for the treatment of bone pain associated with secondary tumours (palliative treatment). Treatment at a lower dosage (normally 64 Gy) is given to the affected bone or area. 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 very seldom used, it normally gives good pain relief. The side effects, however, can be severe.

Another treatment for bone pain is the use of a radioisotope called Strontium 89. This is given as an intravenous infusion which is then taken up by the affected bones. Most men feel the benefit within a few weeks, although for some the pain may get slightly worse before it gets better.

B5: Brachytherapy

Low dose rate brachytherapy, unlike external beam radiotherapy, treats the cancer by permanently inserting radio-active seeds of Iodine-125 (or similar) directly into the prostate.

Who is suitable for brachytherapy?

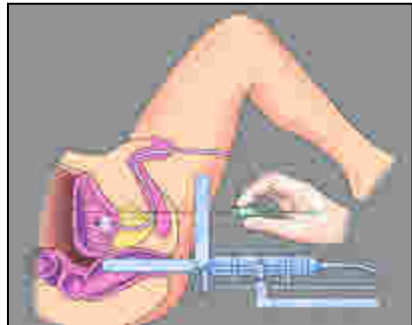
Like surgery, it is a treatment for organ-confined prostate cancer, and is best suited for those whose prostates are not over-enlarged and for those who have few, or mild urinary symptoms. Where there is a possibility of spread, a short course of radiotherapy is sometimes offered beforehand. The general advice is that PSA should be no more than 20, the Gleason score no more than 7, and the cancer stage should be T1 or T2.

What is involved?

The process is done in 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 to identify the exact size and shape of the prostate by computer imaging, and to plan the radiation dosage required.

- 3) The second stage 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 are taken during the procedure. You will wake with a catheter in place, which is removed before you leave hospital. A CT scan (see page 9) is 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.



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, 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 up to six months. Otherwise there are no restrictions.

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, (e.g. constipation or frequency) can occur 3–6 months after the treatment. Erectile problems can occur in up to 60% of men, but the risk is claimed to be lower than with surgery or conventional radiotherapy.

Advantages and disadvantages

- It allows a higher dose of radiation to be delivered directly to the prostate when compared with external beam radiotherapy.
 - There is only a short stay in hospital and in most cases no catheter after the treatment.
 - Incontinence and impotence rates are lower than for surgery and similar to radiotherapy.
 - Only a few days off work are needed.
- But:
- The result of the treatment will not be known for some months.
 - There will be temporary worsening of urinary symptoms for about three months after treatment.
 - Surgery is generally not possible after radiotherapy or brachytherapy treatments. Brachytherapy is normally not possible after external beam radiotherapy.

High Dose Rate Brachytherapy

This new method uses thin catheters placed into the gland with the aid of a template through which iridium seeds on rods are inserted. Computers control the length of time the radiation is given to the catheter, and so control the radiation dosage to different regions of the prostate. This method is sometimes used in combination with standard radiotherapy. The catheters are withdrawn immediately after the treatment session, with no radio-active material remaining in the prostate.

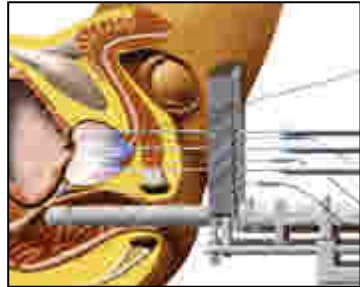
B6 : Cryotherapy

What is Cryotherapy?

Cryotherapy, Cryosurgery, or Targeted Cryo-ablation of the Prostate (TCAP) involves inserting, under ultrasound guidance, a number of probes into the prostate gland. A gas (e.g. argon) 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. An ice ball is formed which destroys the tissues and tumour in close proximity to the tips. By suitable positioning of these probes, the whole tumour or prostate is treated. The process also involves the use of a second gas (e.g. helium) to thaw the area, and several freeze/thaw cycles may be used. Additional probes are used to measure the temperature to ensure adequate control. The illustration shows ice crystals forming in the prostate.

Who is it for and what is involved?

Cryotherapy is normally considered by most urologists only as an option when radiotherapy has failed but the cancer is still in the prostate. Cryotherapy is not suitable for those with an over-enlarged prostate.



The treatment requires close teamwork between radiologists and urologists who use transrectal ultrasound for the insertion and guidance of the five to eight needles. This is done under general or spinal anaesthetic, lasting about 1-2 hours. The patient will normally be discharged from hospital 2-3 days after treatment but with a catheter in place, which will usually remain for two weeks. PSA levels should gradually return to normal after treatment.

What are the advantages and disadvantages?

- It is a relatively non-invasive technique with minimal blood loss.
- There is a short recovery time and the operation can be repeated if it is not totally successful.
- Side effects can include soreness of the perineum, some incontinence and a high rate of erectile and ejaculatory dysfunction.

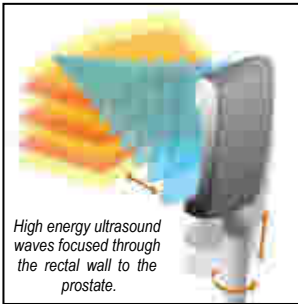
Note: There is no long-term data on the effectiveness of this treatment. It is only available at a few centres in the UK.

B7 : High Intensity Focused Ultrasound

What is HIFU?

High Intensity Focused Ultrasound (HIFU) is a technique that is non-invasive and aims to retain good quality of life for the patient. It is suitable for locally confined prostate cancer T1 or T2, and the prostate may need hormone treatment to reduce its size. Unlike cryotherapy, which is normally a treatment for recurring cancer after other methods have failed, HIFU is usually undertaken as a primary treatment with curative intent, though it can also be used to treat recurrence after radiotherapy. A small TURP operation may be needed in association with the treatment.

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, and the tightly focused beams raise the temperature to destroy the 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 2 weeks. Usually the whole prostate is treated, but research is in progress to treat only the diseased parts of the prostate, leaving the healthy part intact, lessening any side effects. This is called 'focal ablation'.

What are the advantages and disadvantages?

- Repeat treatments are possible if the cancer recurs.
- Normal activity can be resumed within a few days.
- No incisions are required, and there is no radiation toxicity.

But:

- There may be temporary urinary retention or urgency.
- Temporary urinary leakage can also occur.
- The catheter may be in for longer than for surgery, but impotence rates are often better.

Note: There is no long-term data on the effectiveness of this treatment. It is only available at a few centres in the UK.

B8 : Hormone Treatments

Hormone therapy is the accepted first treatment when cancer has spread beyond the prostate. It is also often used should the cancer return. It can also be used temporarily to shrink the cancer prior to some forms of treatment for localised prostate cancer.

In order to grow, most prostate cancers need the male hormones (androgens), the most common of which is testosterone. By inhibiting the generation of testosterone, the cancer will be starved and shrink. This treatment is often used when the prostate cancer has spread beyond the prostate or has recurred after treatment. It is also used in combination with radiotherapy in order to shrink the tumour so that the radiotherapy can be more effective.

Hormone treatment alone does not cure the cancer but may control it for 2 –10+ years before the cancer becomes **hormone refractory** or **hormone resistant** (HR), i.e. when it no longer responds to hormone therapy. A low PSA is usually a good indication of the effectiveness of hormone treatment. There are several methods used for hormone treatment. These are:

Orchidectomy

Orchidectomy is the surgical removal of the testicles. This is where most testosterone is produced, (though a small amount is also produced in the adrenal glands). This treatment is effective, but understandably is not favoured by most patients.

LH-RH (Luteinising hormone-releasing hormone) analogues

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). They are administered by the injection of a slowly dissolving pellet either monthly, three monthly or once a year. Less common is Histrelin, administered by a soft implant just under the skin at the top of the arm. When first administered, these drugs cause an initial surge of testosterone, which is counteracted by a short course of anti-androgen tablets shortly before and after the first injection.

Anti-androgens

These drugs do not stop the production of testosterone but block the effects of both testicular and adrenal androgens. Two common examples of these drugs are **Cyprostat** (Cyproterone acetate) and **Casodex**

(Bicalutamide). They are usually taken in pill form which makes them attractive to those who do not like the thought of an orchidectomy or regular injections. Anti-androgens can be used as a stand-alone therapy, referred to as 'anti-androgen monotherapy', or can be used in combination with LH-RH analogues, referred to as 'maximum (or total) androgen blockade'. Some men may prefer anti-androgens because of the reduced side effects, but evidence shows that they are not quite as effective as LH-RH analogues.

Oestrogen Therapy

The main oestrogen for prostate cancer is **Stilboestrol** (an abbreviation of 'diethylstilboestrol'). This is a synthetic female hormone which suppresses the effects of testosterone. Treatment is generally given in the form of a daily tablets.

Intermittent hormone therapy

Intermittent hormone therapy is a process in which the hormone treatment is started and stopped for periods while monitoring the PSA. The object of this process is to reduce the side effects of the treatment and, hopefully, to extend the period for which this treatment is effective. Some trials have shown that intermittent treatment can be as effective as continuous treatment.

Other drugs

If the 'first line' hormone drugs detailed above lose their effectiveness, there are other drugs which have been shown to work, although only for a limited period of time. These include steroids such as **Dexamethasone**, which stops the adrenal glands from producing testosterone. These 'second line' hormone drugs are often used in combination with the 'first line' hormone drugs.

Side effects of hormone treatments

Common side effects of both kinds of hormone therapy are 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 (see D1) can 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. Therapies or medication can, of course, be changed should these become a problem.

LH-RH analogue side effects. The main side effect is that the patient will be impotent and lose his sex drive; but unlike orchidectomy the process is reversed if the patient stops taking the drug. Some men may suffer from decreased size of testicles and some slight penile shrinkage.

Anti-androgen side effects. A common side effect of these drugs is tender or enlarged breast tissue (gynaecomastia), which should subside if treatment is ceased. 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 orchidectomy (where it is permanent) or LH-RH analogues.

Oestrogen Therapy carries an increased risk of blood clotting. Like the other drugs, side effects include breast enlargement and tenderness, erectile problems and mood changes. Other listed side effects are less common, and many men will experience only a few of these. It is reported that oestrogen patches on the skin may produce fewer side effects.

New hormone drugs under trial

***Caution:** while these drugs are currently showing promising results in trials, there is no guarantee that they will become approved by NICE (National Institute of Clinical Excellence) as standard treatments.*

It is hoped that new drugs may be able to prolong the time before the cancer becomes hormone refractory, or work more effectively on existing HR patients. Here a few examples:

Degarelix has shown in trials that it can reduce testosterone levels more quickly than existing LH-RH drugs. It works like a combination of an LH-RH agonist and an anti-androgen. It also has the advantage that it does not cause the initial surge of testosterone like the existing LH-RH analogues described above. It may be approved soon for selected cases.

Abiraterone Acetate (an androgen-synthesis inhibitor) has done well for many patients with advanced HR cancers. Trials are being conducted by the Royal Marsden in UK.

MDV3100 (an androgen-receptor antagonist) has similarities to Abiraterone, and is on trial in the US.

B9 : Chemotherapy

When hormone treatments fail

Patients with advanced prostate cancer will eventually become hormone refractory (see p 28). Until recently there was little available to help these patients except palliative care, but the situation has changed and chemotherapy is now a realistic option.

The drug **Docetaxel** (sold as Taxotere), is often used in combination with other drugs such as Prednisone, and is now a standard treatment on the NHS.

There is no 'right time' to undertake 'chemo'. The treatment will affect your quality of life for 6 months. On the other hand, delaying chemo 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.

What can the patient expect?

Docetaxel is administered as a one-hour infusion every three weeks, usually for ten infusions. It acts like a poison to prostate cancer cells, causing cell death. Prednisolone, sometimes called **Prednisone**, (a cortico-steroid) is usually administered at the same time, with the object of reducing inflammation and pain. A patient's hormone treatment can be continued in parallel. In trials, 50% of patients achieved a 50% reduction in PSA on average. 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 a significant period of time.

Side effects

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 hair loss, damage to finger and toenails, and bone marrow. Patients' experiences vary. A lucky few are fairly free of side effects; in others, they can be quite severe. Aches and pains, 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, and white blood cells are reduced, which means that the immune system is compromised. Any infections during the 30-week chemo cycle have to be dealt with immediately, and may even interrupt the treatment cycle.

B10: Photodynamic Therapy

Photodynamic therapy (PDT) has been used to treat cancer for more than 25 years, on surface or superficial lesions, such as skin cancer. More recently, it is being tested as a new treatment for organ-confined prostate cancer in a number of centres round the world, including University College London. Some centres have used PDT as a first-line treatment for prostate cancer. Others have used it after radiotherapy has failed. PDT is also called Vascular-Targeted Photodynamic therapy (VTP).

How is it done?

PDT uses a drug, called a photo-sensitiser, which is injected into the bloodstream of the patient under general anaesthetic. Within a few minutes, the drug circulates into all the patient's cells. Different centres are trying different photo-sensitising drugs.

An ultrasound probe is put into the patient's back passage, so that the prostate can be seen on a monitor screen. A template (a rectangular grid with holes in it) is placed on the patient's skin behind the scrotum.

Thin, hollow needles are then pushed through the template into the prostate. The needles can be seen on the ultrasound monitor and their position can be adjusted if necessary. Once the needles are in the right position, optical fibres can be passed through the needles. Some needles will be used to carry optical fibres that can *detect* rather than *deliver* light. Low powered laser light is shone through the fibres, activating the light-sensitive drug. The drug causes damage to the cell walls, which has the effect of starving the cells of blood, causing cell death.

The operation lasts about 2–3 hours. Patients need to stay out of bright light for the next 24–48 hours.

Photodynamic therapy, like all of the other treatments for prostate cancer can kill normal cells as well as cancer cells. However, it seems that cancer cells are more sensitive to PDT, whereas normal cells may recover much better than cancer cells.

Advantages and disadvantages

It is much less invasive, and quicker than surgery, and may have fewer side effects. But:

It is far too early to know whether PDT could be as effective as other treatments for prostate cancer. It is not yet approved as an NHS treatment.

C1 : Sexual Problems

The prostate is a sex gland. Diseases affecting it and their 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 have an impact on sexual function. Any treatment that damages the prostate will result in loss or severe impairment of ejaculatory function and hence fertility. If fertility is important to you, you should discuss creating a sperm bank with your consultant.

Most treatments 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. Radiotherapy treatments may affect erections less but, unlike surgery, there is generally no gradual post-treatment improvement. Brachytherapy is reported to be similar to EBRT in this respect. Results from HIFU are also fairly encouraging. Few patients achieve erections after cryotherapy. It should be noted that, with some treatments, orgasm is normally achievable in spite of these problems and may even be enhanced. 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.

There are a variety of treatments for erectile dysfunction. These include pills (e.g. Viagra, Cialis and Levitra), pellets inserted into the end of the penis (e.g. MUSE), vacuum pumps, and penile injections. Penile implants, and a treatment using a small pump in the scrotum, are not yet available on the NHS. All treatments can be at some cost to spontaneity.

Discussion with your partner is essential. Some treatments (e.g. hormone therapy) 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 to her.

Problems can be mental as well as physical. Many hospitals now have staff who have 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, and tablets, available in different strengths, are available on normal prescription through your GP. Asking for a repeat prescription can avoid any possible embarrassment.

C2 : Problems with Continence

Problems with our waterworks often result from diseases of the prostate, treatments, or simply the ageing process. These tend to fall into two categories – **urgency** and **lack of control**. Here are some general guidelines:

- Do not reduce your fluid intake – this can make the problem worse.
- Try to avoid drinks containing caffeine.
- Fizzy drinks may exacerbate symptoms.
- Alcohol can increase urgency.
- Avoid passing urine ‘just in case’ and try to increase time between visits to the toilet.
- Do not try to hold out at night – it will only keep you awake.
- Practise holding on in the daytime, which will help your night-time problems.
- If you have been given water tablets, you must continue to take them, unless advised otherwise by your doctor.
- If you are overweight, try to lose a few pounds.
- Carry out regular pelvic floor exercises.

Pelvic Floor Exercises for Men

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. (This is called ‘stress incontinence’).

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 repeated 100+ times daily. Fast walking is also an excellent exercise. These exercises have also been shown to improve erectile function.

Although there is no firm evidence that doing pelvic floor exercises prior to treatment is beneficial, this can do no harm, and indeed it may well help to get into the habit of routinely exercising the right muscles.

C3 : 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. Weight-bearing exercise and brisk walking or swimming are particularly important to avoid osteoporosis, a deterioration of bone tissue which can lead to fractures. Unfortunately this deterioration is made worse by:

- certain hormone treatments for locally advanced and advanced prostate cancer (e.g. Zoladex) designed to lower testosterone levels
- metastasis of the cancer to the bones in the advanced stages, particularly to the ribs, hips and spine.

Bone Density

A Bone Mineral Density test (BMD) or DEXA (short for dual energy X-ray absorptiometry) scan is recommended at the start of long-term hormone treatment to establish a baseline. The doctor will get the results and X-rays, which will come in the form of T-scores:



- between 0 and -1.0 is normal
- between -1.0 and -2.5 indicates low bone mass (osteopenia)
- below -2.5 indicates osteoporosis.

Calcium and Vitamin D

Calcium intake is one of the keys to maintaining good bone health. Unfortunately, many doctors regard calcium as only dairy products. But it is present in many other foods, besides dairy: green fruit, vegetables, soya milk, and baked beans. 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. Many osteoporosis treatments combine calcium and vitamin D3 in tablet form, as well as bisphosphonates such as Zoledronic acid (Zometa). This may also be prescribed for patients when cancer has spread to the bones.

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 helpful in the fight against prostate cancer, alongside other treatments.

D1 : Diet and Lifestyle

There have been many studies into both the cause and prevention of prostate cancer. Whilst the causes and path of each case of prostate cancer may be unique, every patient can take personal steps to help to fight the disease and improve his overall health. While doctors and consultants may determine medical and surgical therapies, nutrition and lifestyle changes are entirely within your control.

It is thought that a significant percentage of all prostate cancers may be prevented by adopting certain changes to diet and lifestyle, and it is also seen to be of increasing significance in many other diseases. Patients in control of their diet and lifestyle feel better psychologically because they are doing something which may help.

Why is diet important?

Before we offer you some ideas and suggestions, it may be worth exploring the surrounding rationale and case for nutrition. Cancer is a group of diseases that interfere with cell growth and which can lead to death. There is evidence from studies of cancer cells which suggests that components of diet can influence the regulation of cells. There is a body of authoritative opinion which says that this explains the dramatic differences in the global distribution of the disease. In the Far East, prostate cancer rarely presents itself as a life threatening disease.

Meanwhile you may wish to consider the guidance offered, or consult a trained dietician. You may also wish to discuss this with your GP or consultant – but don't be put off by them. Most clinicians get very little training on diet, and are generally sceptical because of 'lack of scientific evidence'. Whilst considerable evidence exists, more research must be completed before the full impact of diet and lifestyle on prostate cancer can be proven. Unfortunately, such research will take a long time, and pharmaceutical companies are unlikely to provide the funding, as they see no profit in it.

There are also vested interests in the food industry, which will resist any attempt to discredit their products, though there are signs that many companies are changing their products (and labelling) to make them seem healthier. The medical profession, however, is at least now united behind the '5 portions a day of fruit and vegetables' message, which is an important start.

Changing your diet: a summary

1. Reduce or eliminate consumption of red meat. Use soy or 'Quorn' substitutes. Choose oily fish, such as herring, mackerel and sardines, but avoid the smoked variety.
2. Reduce or eliminate the consumption of ALL dairy products, including milk, butter, yoghurts and cheese. Use soy substitutes. Dairy products and red meat produce a fatty acid which can increase the growth and spread of cancer cells by promoting the growth of blood cells in tumours.
3. Use 'extra virgin' olive oil for cooking and limit salad dressings to olive oil only.
4. Add garlic and spices (except salt) for flavour in cooking.
5. Increase your intake of fresh fruit, vegetables and whole grain cereals. The brighter and darker coloured vegetables, such as broccoli, red peppers, spinach, carrots, dark cabbage etc., are considered the most beneficial. Tomatoes, especially in a cooked version, are recommended.
6. Reduce or eliminate your consumption of pre-packaged or convenience foods which often contain unhealthy 'E' numbers, too much fat, sugar and salt. Examples include cakes and pastries, artificial crisps, snack bars.
7. Reduce, where possible, the use of added sugar, particularly white sugar. Add dried fruit or banana, for example, to sweeten breakfast cereal.
8. Eat beans, peas, lentils more than refined breads, pastas or white rice.
9. Watch the portions you eat to control your calorie intake and weight.
10. Avoid smoked and especially barbecued foods. Vegetables should be lightly steamed.
11. Organic produce is considered best, if you can afford it.

Lifestyle changes

Most of us do not get enough exercise. You need good exercise such as brisk walking, running, cycling, swimming for about 30 minutes at least 2 or 3 times a week. (If you are unfit, build up gradually). A fitter body will live longer, and it is already established that prostate cancer survival statistics are poorer for overweight men. Vigorous exercise improves the body's metabolism, and also releases endorphins (see page 40).

D2 : Food and Drink, Nutrition, Supplements and Vitamins

If you are about to undergo treatment, you should always discuss your dietary needs with the consultant and medical staff. Do bear in mind that, if you already have the disease, the general body of opinion is that, while dietary measures can prevent, control, or even reduce the cancer, they cannot eliminate or cure it.

In this section we give more detail on some diet items that may help prevent or manage prostate cancer: most are not proven, though often there has been some promising research. Scientists sometimes discover that a substance or food item affects prostate cancer cells. The tabloid press may then proclaim a miracle cure. Unfortunately, anything we swallow into our bodies will undergo significant changes in the digestive process before anything enters the bloodstream; it is usually very difficult to reproduce the same effect as in the laboratory. So caution is the watchword: beware of snake-oil salesmen! But don't give up hope. A healthy diet is enjoyable in its own right, and worth trying.

Food and drink

Broccoli. Eating broccoli and cauliflower regularly reduces the risk of deadly prostate cancer. A recent study found they were better than any other vegetable at protecting against aggressive tumours.

Chocolate. Stick to dark black chocolate, with a cocoa content of 70% or more, with no milk; it could help. Stearic Acid in cocoa butter is associated with a reduction in cancer cell growth.

Curries. Most include turmeric, found to have an effect on mice with prostate cancer. Combine with cauliflower and broccoli.

Peppers (red, yellow and green) contain many antioxidants. They are also one of the richest suppliers of Vitamin C in the plant world. Try in stir-fries, or stuff raw peppers with savoury fillings, then grill or roast them.

Pomegranate juice. A UCLA team study on 50 men who had undergone surgery or radiation treatment for prostate cancer found that those drinking the juice prolonged their PSA doubling time by up to 3½ times.

Red wine contains antioxidant flavonoids and resveratrol; *(but don't overdo it: alcohol is a toxic substance, and will leach calcium and nutrients from your body – as will smoking).*

Salads. It is a good idea to make one meal each day a salad. Expand the range of ingredients to include arugula (rocket), peppers, radishes, nuts and seeds (e.g. pumpkin, sesame, linseed), sprouts (e.g. mung beans, alfalfa) and watercress, but *avoid celery*, as it raises testosterone.

Soy products. Use Soy milk instead of dairy milk. It is available unsweetened, sweetened and with added vitamins. Soy 'meat' is called tofu or tempe. When cooked it is very similar to veal or chicken. Green soy beans can be used as a vegetable, usually available frozen. Try Soy margarine instead of dairy butter. Also soy cream, yoghurts and custard.

Sugar. Cancers just love sugar! Unfortunately, many pre-processed foods contain quite a lot of sugar. Get into the habit of checking food labels.

Tea. Green tea has been shown to kill cancer cells and is said to be many times more effective than ordinary tea. Drink at least 4 cups a day, preferably without milk, and with an added slice of lemon. Redbush (Rooibos) tea comes from South Africa, and has 50 times the antioxidants of ordinary tea. It is also naturally caffeine free.

Tomatoes contain lycopene (see page 40).

Nutrition and supplements

Allicin is found in garlic, and inhibits enzymes that activate cancer-causing chemicals.

Antioxidants. Scientists believe that antioxidants, as found in fruit and vegetables, nuts, cereals, drinks such as tea and red wine, are capable of boosting our bodies' immune/defence systems. It seems that they combat the excessive amounts of potential harmful cell invaders, called 'free radicals'. These are basically unstable substances in our bodies, created during normal cell process, as well as in response to pollution, too much sun, stress, and exposure to tobacco smoke. Free radicals left uncontrolled steal from any part of a cell they crash into, which may affect the healthy function of your body. Antioxidants wrap up the boisterous circulating free radicals and deactivate them before they can do harm. It's a delicate balancing act that is fundamental to health.

Apricot kernels are, like most nuts and seeds, very nutritious. Among the nutrients they contain is one called amygdalin, which is also known as vitamin B17. This has been shown to attack cancer cells in the lab, but no clear evidence that it is effective when ingested by prostate patients.

Warning: as apricot kernels contain cyanide, *no more than 7-10 kernels (7 grams) per day should be taken.*

Calcium is also present in nuts, seeds (especially sesame), soya produce, wholegrains, vegetables and fish. Animal protein and salt can also increase calcium loss in urine (see section C3). *Some research has shown calcium supplements may produce adverse prostate cancer outcomes.*

Endorphins are produced by the pituitary gland and the hypothalamus during strenuous exercise as well as orgasm. They act like opiates to kill pain and produce a sense of well-being. Endorphins work as 'natural fever relievers', whose effects may be enhanced by other medications.

Flavonoids – the umbrella name given to a group of particularly powerful antioxidants, found in plants. Over 4000 flavonoids are found in everything from oranges, grapefruits and onions, to tea. Flavonoids are thought to have a significant role in maintaining our health. They have names like 'rutin' in apples, 'quercetin' in broccoli and cranberries, 'catechins' in tea and apples, 'apigenin' in celery, plus 'genistein' and 'diadzein' in soya.

Lycopene is in abundance in tomatoes, pink grapefruit, shellfish and watermelons, and has been shown to be beneficial to prostate cancer patients. The greater effectiveness in tomatoes is only released via cooking, e.g. soups, purees, ketchups and sauces. Lycopene is available as a supplement in most health food stores.

Phytoestrogens are natural plant substances which have anti-carcinogenic potential. They also help to slow bone loss and are found in soya produce, sesame, sunflower and pumpkin seeds, chickpeas, linseeds, alfalfa and the herb red clover.

Saw palmetto is one of several herbal products that may help reduce swelling of the prostate, and a limited trial showed that it helped patients with BPH. Some research suggests saw palmetto may work as well as finasteride (a type of drug called a 5-alpha-reductase inhibitor) but without the side effects on your sex life.

Selenium used to be thought essential for healthier prostates, but recent research on prostate cancer patients has thrown some doubt on this. *Do not exceed 200 micrograms daily.* Pumpkin, sunflower seeds and Brazil nuts (*not more than 2-3 a day*) are a good source of selenium. (See also Vitamin E on page 41).

Zinc is important to our immune system, and is present in meat, dairy products and cereals. On a non-dairy, meat-free diet, it can be taken in tablets (often they are combined with selenium). *Do not to exceed 50 milligrams (mg) per day, as use of zinc supplements has been linked to adverse prostate cancer outcomes.*

Vitamins

In theory, a good balanced diet should not need vitamin supplements. However some doctors recommend a 'gold standard' multivitamin pill for the over 50s. But there is evidence that taking vitamin pills to excess is harmful; it is much better to have a healthy diet.

Vitamin A, or in reality Beta Carotene, from which Vitamin A can be formed. Along with Vitamins C and E, these are the antioxidants we are most familiar with. These are the key nutrients working with hosts of crucial antioxidants to boost our defence system.

Vitamin B12 can be found in animal products, including fish, meat, poultry, eggs, milk, milk products and fortified breakfast cereals, If you are on a vegan diet, you need to take it as a supplement. Vitamin B12 is involved in the metabolism of every cell in the body.

Vitamin B17 also known as amygdalin (see also 'apricot kernels'). Apart from apricot kernels, examples of other amygdalin rich foods are bitter almonds (amygdalin tastes bitter – sweet almonds do not contain it), apple pips, grape seeds, millet, broad beans, and many other seeds, beans and grains (but not wheat).

Vitamin C is an excellent antioxidant, and is found in most fruit.

Vitamin D helps the body absorb and retain calcium, essential for healthy bones. Sunshine is the best source of Vitamin D – *in moderation of course*. Vitamin D is also found in wholegrains, nuts, seeds and eggs.

Vitamin E. Wheat Germ Oil is an excellent natural source of Vitamin E. A recent trial of patients taking Vitamin E and Selenium supplements together, however, showed no benefit and has now been stopped. Vitamin E as a supplement not only increased the risk of heart failure but showed a slight increase in prostate cancer risk. Selenium supplements may show a possible increased risk of diabetes, but in its natural form may still be of benefit.

We hope that the guidance given in this section will encourage you to take positive action to improve your cancer journey.

***EAT HEALTHILY, KEEP FIT, ENJOY LIFE:
YOU ARE LIKELY TO LIVE LONGER!***

E1: The Role of the Clinical Nurse Specialist

One of the recommendations published in the NICE guidance on Prostate Cancer (2008) is *'Men with prostate cancer should be offered individualized information tailored to their own needs. This information should be given by a healthcare professional, for example a consultant or specialist nurse.'*

Urological Clinical Nurse Specialists play an important role as key-workers in caring for a prostate cancer patient. They have specialist knowledge which can be invaluable to a patient or his family, enabling them to ask detailed questions which they may feel uncomfortable posing to a consultant with whom they will generally spend less time. Similarly, Clinical Nurse Specialists should be on hand to help manage more complex or challenging symptoms or side effects associated with prostate cancer. Most urology departments also have specialist nurses dealing with incontinence and erectile dysfunction problems.

The Improving Outcomes Guidance for Urological Cancers (NICE), which sets out how prostate cancer services should be organised and delivered, is explicit on the importance of Clinical Nurse Specialists: *"All patients with urological cancers should be managed by multidisciplinary urological cancer teams. These teams should function in the context of dedicated specialist services . . . Nurse specialist members of urological cancer teams will have key roles in these services."*

Prostate cancer is by far the most common form of tumour for which a urological Clinical Nurse Specialist will be responsible. A major national survey of the NHS experience of over 1,100 men affected by prostate cancer, carried out by The Prostate Cancer Charity in 2005, showed that when asked the question: 'Who was the most helpful in providing you with emotional support?' specialist nurses were ranked the highest around the time of diagnosis and treatment decisions. Yet, 38% of men did not have the opportunity of speaking to a specialist nurse about these issues.

The National Audit Office 2005 survey of newly diagnosed men with prostate cancer showed more than 66% had not been given information about support or self-help; over 50% had no named nurse in charge of their care, and over 30% did not fully understand the explanation of how their treatment had gone.

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

E2 : Trials for Prostate Cancer

Clinical trials are organised into four phases, of which Phases II and III are perhaps the most relevant. Phase II 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 III trials recruit a much larger number of patients. Patients are divided into those receiving the new drug or treatment method and those having standard treatment (the 'control arm'). In 'blind' or 'double-blind' trials even the doctor may not know which arm the patient is on.

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 many cases all expenses are covered.
- You will also need to be happy with the fact that the treatment may be randomised, i.e. you may not know on which arm of the trial you have been placed.

How to get on a trial

It is vital to establish whether you are eligible for a particular trial, and the stage of your cancer should exactly match the criteria of that trial. Your consultant will, of course, advise you, but it is important that you do the research first. Details of current trials can be found on:

www.cancerhelp.org.uk/trials/index.htm

Some Current Trials for Prostate Cancer (as at 2010)

The following is a selection of trials that are currently open, and whose closing date is 2011 or later. Get more details from the website.

UKGPCS (Genetic Prostate Cancer Study)

RADICALS (radiotherapy comparisons after surgery) - see
www.radicals-trial.org.uk

IMPACT (BRCA1/BRCA2 genes)

STAMPEDE (hormone combinations)

TRAPEZE (Chemotherapy combinations for bone metastases)

E3: Some New Developments

***Caution:** while these drugs and treatments are currently showing promising results in trials, or outside UK, there is no guarantee that they will become approved by NICE (National Institute of Clinical Excellence) as standard treatments in the NHS. With any new treatment, it will take a few years to assess the long-term survival of patients with prostate cancer.*

Possible new Hormone therapy drugs

The drugs designed to improve or extend hormone treatments that are on the horizon are listed on page 30.

Possible new Chemotherapy drugs

Cabazitaxel (from Sanofi-Aventis) is a 'second generation' Docetaxel.

Many new drugs are building on the success of Docetaxel, and are on trial in combination with Docetaxel. These are grouped below:

Alpharadin (Radium 223), when injected into the blood stream, goes quickly into areas of bone activity (usually where bone metastases are active). It then kills nearby cells with radioactivity. **Aflibercept** suppresses the growth of new blood vessels that are needed for tumours to grow. **Atrasentan** seems to extend disease progression, and be effective in reducing bone pain for patients with bone metastases. **Custirsen (OGX-011)** blocks production of clusterin, a cell survival protein, and may therefore prolong the time to disease progression. **Dasatinib** is already being used to treat leukaemia. **Revlimid** (lenalidomide) is already used to treat some blood cancers.

Provenge (sipuleucel-T) works by stimulating the immune system to fight prostate cancer, by combining a potent toxin with a patient's prostate cancer cells and injecting them back into the patient. It is approved in US, but costs over \$90,000 for a cycle of treatment, which does however improve patient survival.

Zibotentan (ZD4054) inhibits tumour growth and spread, and formation of bone metastases.

Other treatment advances

CyberKnife is like surgery, but done via radiotherapy. A robotic arm can direct radiation from a linear accelerator to any part of the body. The first UK CyberKnife was opened at The Harley Street Clinic in February 2009.

E4: Screening for Prostate Cancer

Many other cancers have screening programmes, the advantage being that if a cancer is caught early, treatment usually has a greater chance of success. This is particularly true of prostate cancer, if it is detected early, it is likely to be well confined in the prostate, and there are many treatments available, leading to a cure in a high proportion of cases. PSA screening could save lives, according to a large European study.

But prostate cancer screening is not done because:

- The PSA test (not specifically a cancer test), is not reliable enough. 65-75% of men who have a raised PSA (see page 6) will not have cancer (i.e. 'false positives'). Conversely, about 25% of 'normal' readings may be 'false negatives'.
- False positives can lead to unnecessary biopsies and treatments, which carry risk and reduced quality of life. A PSA-based screening programme would clearly not be cost effective for these men.
- Prostate cancer is usually very slow growing and may never need treatment. But in up to 10% of cases the cancer will be aggressive, requiring intervention. Unfortunately the PSA test cannot distinguish between tigers and pussycats; nor can a biopsy, though it can indicate levels of aggressiveness (see page 10).
- Tell a man he has cancer (from the biopsy), and he will naturally want to get rid of it. Treatment can cost thousands of pounds; the patient risks a reduced quality of life, maybe avoidable if it is a known 'pussycat.'
- So there is considerable bias against PSA screening in the NHS, many doctors (20% in a recent study) even refusing to give a PSA test. **But men are entitled to request a PSA test, and doctors are not allowed to refuse it, though they may counsel a patient on the pros and cons.**

The view of PCaSO

The Prostate Cancer Support Federation's PSA debate in November 2009 with some of the UK's most influential clinicians, prostate charities and patients participating, agreed that: *'Every man at risk of prostate disease ... should be made aware of the PSA test, its benefits and limitations, and should be able to freely exercise his right to have it'.*

PCaSO agrees with this. The NHS will reconsider screening when a reliable test becomes available. Meanwhile PCaSO sympathises with men who have advanced cancer, which was not detected early enough for a possible cure.

Some Final Thoughts

When first diagnosed with prostate cancer, we enter a new experience: shock, disappointment and confusion. It's a new language and we have to come to terms with it. One of the best bits of advice I received in the early days was to record, or make notes on the consultations, and preferably to have your wife or partner with you.

Throughout our treatment pathway we have many decisions to make: PSA testing, biopsies, CT and bone scans, followed by treatment options such as active surveillance, surgery in its various forms, different types of radiotherapy, hormone and chemotherapy regimes or other, newer options where long-term outcomes remain unproven.

Fortunately, and unlike most other cancers, most prostate cancers develop slowly so there is no rush to make decisions unless judged to be aggressive or advanced. These decisions should be based on weighing up the benefits and risks of the procedures which are available. This is normally a very individual and personal choice and other patients who have been through the experience can help with this.

What seems to be very important is getting the very best advice. It is generally agreed that positive outcomes are very much influenced by using the best clinical experts – those who have had good experience and excellent results. Those who only do a few procedures each year should be avoided. Equally important is that the patient should approach his treatment pathway with a very positive attitude.

Jim Stansfeld
(1940-2009)

Founder member of PCaSO Prostate Cancer Network

Except where otherwise acknowledged, this booklet is the work of an editorial team of patients comprising: Roger Bacon, Ian Graham-Jones, Michael Hollingworth and David Smith, building on previous content contributed by Peter Loader, David Rowlands, Jim Stansfeld and Sandy Tyndale-Biscoe.

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Glossary of Terms and Abbreviations

antioxidant	a substance that protects us from the dangerous free radicals
biopsy	the removal of small samples of tissue for analysis
catheter	a small tube inserted via the penis into the bladder
Gleason score	the rating of the aggressiveness of the cancer
impotence	the inability to achieve a useful erection
incontinence	the inability to control urination
laparoscopy	looking into the abdomen by means of a tiny camera
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
oncologist	a specialist in the medical treatment of cancer
orchidectomy	an operation to remove the testicles
perineum	the area between the scrotum and the anus
prostatectomy	an operation to remove the prostate
seminal vesicles	organs that contribute fluid to the ejaculate
testosterone	a male hormone secreted by the testes
urethra	the tube through which urine and semen flow
urologist	a specialist in disorders of the kidneys/bladder/prostate system
BMD	bone mineral density test
BPH	benign prostatic hyperplasia (enlargement of the prostate)
CT	computerized tomography scan
DRE	digital rectal examination
EBRT	external beam radiotherapy
ED	erectile dysfunction
HIFU	high-intensity focused ultrasound
HR	hormone refractory
IMRT/IGRT	intensity modulated/image guided radiation therapy
LH-RH	lutening hormone-releasing hormone
LRP	laparoscopic radical prostatectomy
MDT	multi-disciplinary team
MRI	magnetic resonance imaging scan
NICE	National Institute for Health and Clinical Excellence
PSA	prostate specific antigen
RALP	robotically assisted laparoscopic prostatectomy
RP	radical prostatectomy
TCAP	targeted cryo-ablation of the prostate
TNM	tumour/nodes/metastases: a scale for measuring tumour spread



Prostate Cancer Network

is a patient support organisation covering
Dorset, Hampshire and Sussex areas
offering free and confidential

Help - Support - Information

to anyone concerned about this disease

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