



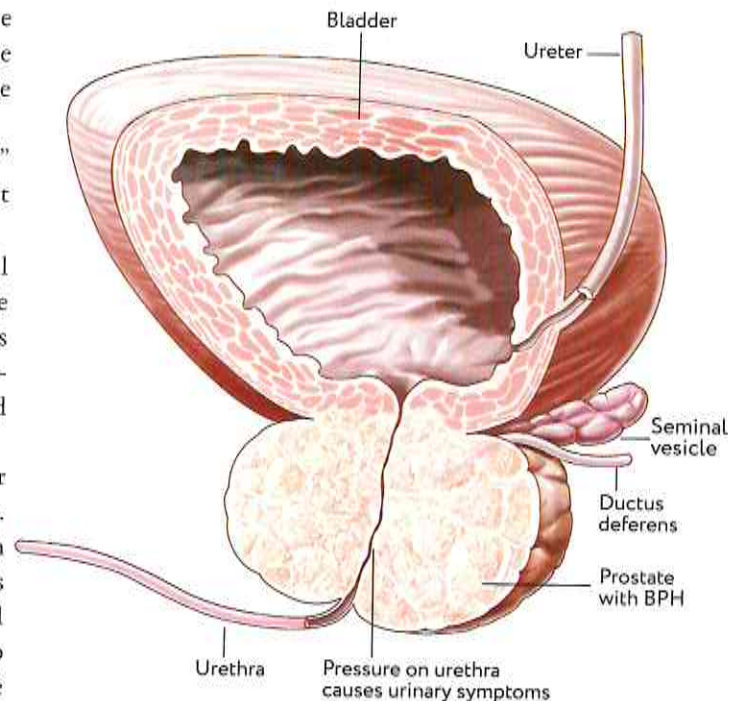
The prostate is a male sex gland. It produces fluid that becomes part of semen. As shown in the illustration, the prostate surrounds part of the urethra, the tube that empties the bladder and through which semen is ejaculated. The prostate's size and shape are often compared to a walnut.

The prostate produces a protein called "prostate specific antigen" (PSA). PSA prevents the semen from becoming too thick, and it may assist fertilisation after intercourse.

PSA blood tests: While most PSA is in the semen, a very small amount gets into the blood. To determine the level of PSA in the blood, a small amount of blood is drawn from a vein and tested. As PSA may sometimes indicate the presence of a benign (non-cancerous) growth or a malignant (cancerous) growth, PSA is called a "tumour marker".

Doctors find PSA blood tests helpful, but the tests cannot tell for certain whether prostate cancer or other prostate diseases are present.

The normal PSA level was historically considered to be between 0 and 4.0 nanogram per millilitre of blood, with slight variations up or down, according to age. We now understand that a PSA level should be around 1.0 ng/mL or less for a man of 40, increasing to about 4.0 ng/mL at age 70. If a man has a PSA level above the normal range for his age, further investigation may be indicated because his risk of prostate cancer increases as the level of PSA rises.



PSA and benign prostate growth

In most men, the prostate usually grows very slowly over many years. This enlargement is called benign prostatic hyperplasia or BPH. BPH is a non-cancerous condition but can cause problems with urination.

In men with BPH, the prostate is often inflamed slightly. As a result, PSA can leak from the prostate into the blood, causing a high PSA level. In some men with BPH and no inflammation, their PSA levels may be normal. Inflammation is a tissue reaction, and it does not mean that the prostate is infected.

PSA and prostate cancer

PSA blood tests have a role in the detec-

tion and treatment of prostate cancer. They are performed to help the doctor:

- determine the likelihood that prostate cancer is present
- decide which treatment is likely to be best
- monitor the cancer during treatment.

In men with prostate cancer, PSA can leak from the prostate into the blood stream, causing the PSA blood level to be higher than normal.

However, a high PSA blood level is not proof that prostate cancer is present. Only the removal of a small piece of prostate tissue (biopsy) and its examination under a microscope can determine whether the prostate is cancerous.

If cancer is present and the PSA blood

level is elevated, this does not necessarily mean that cancer cells are in the blood or have spread to other parts of the body.

Free:Total Ratio

If your PSA level is above the median for your age, then the pathology laboratory may report a free:total PSA ratio. This is because some PSA in the blood is bound to proteins whilst some is not ("free"). The ratio may assist in guiding a doctor as to whether a PSA rise is more likely due to BPH (the free:total ratio is high) or more likely due to cancer (the free:total ratio is low). Discuss this with your doctor if you have any concerns.

Talk to your Doctor

This pamphlet is intended to provide you with general information. It is not a substitute for advice from your doctor and does not contain all the known facts about PSA or PSA blood tests.

It is important that you have enough information so you can assess the benefits, risks, limitations and consequences of PSA tests.

Carefully read all the information in this pamphlet. Some technical terms are used that may require further explanation from your doctor. Write down any questions, and discuss them with your doctor. This pamphlet should only be used in consultation with your doctor.

Urologists are doctors who specialise in treating diseases of the prostate and other organs of the urinary tract.

IMPORTANT: FILL IN ALL DETAILS ON THE STICKER

DEAR SURGEON: When you discuss this pamphlet with your patient, remove this sticker and put it on the patient's medical history or card. This will remind you and your patient that this pamphlet has been provided. Some surgeons ask their patients to sign the sticker to confirm receipt of the pamphlet.

PSA AND TREATMENT OF PROSTATE CANCER

If prostate cancer has been diagnosed at an early stage, the most common treatment options are:

- active surveillance (monitoring you closely and intervening only when and if required; low-grade, low-volume cancers are suitable for this approach)
- surgery to remove all of the prostate (radical prostatectomy)
- radiation therapy
- watchful waiting (for men who are older or perhaps not fit enough for aggressive treatment).

PSA during active surveillance: If the biopsy has established a suitable diagnosis of low-grade, low-volume cancer, some men may decide their best course of action is to wait and be monitored to see if the cancer progresses, which may never happen or may take many years. During active surveillance, the doctor will advise regular PSA blood tests and digital rectal examinations and even biopsies of the prostate at intervals to determine whether

the cancer may be growing and requires definitive treatment (for example, surgery).

PSA after radical prostatectomy: If the cancer is at an early stage, radical prostatectomy can be an effective treatment. If all cancerous prostate tissue is removed, prostatectomy can provide a cure.

When all prostate tissue is removed, PSA levels will be close to zero or undetectably low. If a significant level of PSA is present a few months after prostatectomy, cancerous tissue may be present. However, treatment is not always necessary. Some men with significant levels of PSA after prostatectomy may not have any symptoms for a long time.

PSA after radiation therapy: Measurement of PSA level after radiation therapy can indicate the effectiveness of the treatment. Over the longer term, the growth of the cancer is monitored by PSA levels and digital rectal examination.

PSA during watchful waiting: If the biopsy has established a diagnosis of cancer, some men may decide that the best

course of action for them is to wait and see if symptoms develop. During watchful waiting, the doctor may advise regular PSA blood tests and digital rectal examinations to determine whether the cancer may be growing.

If biopsy does not detect cancerous tissue, the doctor may advise follow-up PSA tests and digital rectal examinations at regular intervals.

PSA during hormone therapy for advanced disease: Hormone therapy can cause a decline in PSA blood levels, an indication that hormone therapy has been effective.

The three most common options of hormone therapy are:

- surgery to remove the testicles (orchiectomy); this ends the production of testosterone
- a "LHRH agonist", an injected drug that stops the testicles from producing testosterone during treatment
- an anti-androgen drug that blocks the effects of testosterone.

SCREENING TESTS TO DETECT EARLY PROSTATE CANCER

A PSA blood test may be done in conjunction with a digital rectal examination, where the doctor inserts a gloved, lubricated finger into the rectum and checks for bumps or other abnormalities of the prostate. When performed in men who have no symptoms of prostate disease, these two procedures are called "screening tests".

While screening tests are usually reserved for men older than 50 years, a doctor may recommend that screening tests start at age 40 for men who have a family history of prostate cancer or other risk factors or who would like to establish a "baseline" level to act as a benchmark and also to determine future risk of developing prostate cancer.

The objective of an annual screening test is to detect a cancer in its early stage so that prompt treatment can prevent spread of the disease and prevent a higher risk of premature death.

The benefits of prostate screening tests are still under study and debate. While some doctors recommend screening tests every one or two years, others do not. Some doctors prefer to inform their patients about the benefits, risks and limitations of screening tests, and then let each make his own decision.

Most men with a modest elevation of

PSA turn out, on further investigation, not to have prostate cancer. Conversely, a man can have a normal PSA level and actually have prostate cancer, although this is uncommon.

The key issue is that a PSA screening test (or any other test) cannot reveal whether the cancer is slow growing (and non-threatening) or fast growing (and aggressive). That is, the patient may ultimately die due to another age-related condition unrelated to prostate cancer, or he may die prematurely due to prostate cancer.

PSA screening tests have been controversial because doctors have been divided or undecided about whether:

- follow-up diagnostic tests (especially a biopsy) cause too many side effects (such as infection and bleeding) and unnecessary anxiety
- risks outweigh the benefits for prostatectomy and other treatments
- lives are saved due to the tests.

To solve these problems, research is ongoing to distinguish between slow-growing and fast-growing cancers.

For further information on "PSA testing for prostate cancer" and "Screening for prostate cancer", see the Consumer Health section of the Society's web page: www.usanz.org.au

PSA and other prostate conditions

An elevated PSA level may be due to reasons other than BPH or prostate cancer, including:

- injury to the prostate that occurs during biopsy
- acute or chronic prostatitis (inflammation and infection of the prostate due to various causes)
- age
- race
- a catheter in the urethra
- any surgery done via the urethra.

COSTS OF TREATMENT

Your urologist can advise you about coverage by public health insurance, private health insurance and out-of-pocket costs for any tests, treatment and medicines. You may want to ask for an estimate that lists the likely costs. It is better to discuss costs with your urologist before treatment rather than afterwards.

YOUR UROLOGIST

