PROSTATE CANCER

Prostate cancer is the most common cancer among males in South Africa and occurs more often in men older than 50 years. Although the prevalence of prostate cancer is high, most men will not die from their prostate cancer due to the slow growth of the cancer (most are non-aggressive). According to the SA National Cancer Registry (2013), the average lifetime risk for developing prostate cancer is 5.6 %, or 1 in 18, for all males. Asian males have a 1:27 risk, black males a 1:29 risk, coloured males a 1:15 risk and white males a 1:9 risk; with the risk increasing with age.

The aim of screening is to detect prostate cancer in its early stages when it is still confined to the prostate and is potentially curable. When treated at this stage the survival rates in the USA at 5 and 10 years are 100% and 92%, respectively. In Europe, screening for prostate cancer using prostate-specific antigen (PSA) levels reduced the risk of developing metastatic prostate cancer by 31% compared to no screening at an average follow-up of 12 years, according to the most recent data from four of the European Randomized Study of Screening for Prostate Cancer (ERSPC) centres.

Low-risk prostate cancers do not spread beyond the prostate gland and therefore not all prostate cancers need treatment. Treatment for prostate cancer may have risks and side effects including urinary incontinence, erectile dysfunction and bowel dysfunction. There is, therefore, a continuous search for more specific markers of prostate cancer that will enable more effective screening and diagnosis of high-risk cancers and decrease the amount of unnecessary biopsies and treatment of low grade cancers.

SYMPTOMS

Often no symptoms in the early stages, therefore screening is required.

Typical symptoms include:

- Frequent urination, particularly at night (nocturia),
- Difficult urination (dribbling, hesitant urination or creased stream),
- Erectile dysfunction and
- Blood in the urine or semen.

It is important to note that some of these symptoms may also be caused by non-malignant conditions, such as infection (prostatitis) or benign prostatic hyperplasia due to the gradual enlargement of the prostate gland as a result of aging.

SCREENING

- All men from 50 years of age should be screened regularly.
- Screening should start at 40 years in cases where a close relative had early onset prostate cancer; and at 45 years if a first-degree relative (father/ brother/son) was diagnosed with prostate cancer before the age of 65.
- Screening involves an annual digital rectal examination (internal examination of the prostate by the rectal route) PLUS a blood test for a prostate cancer marker called prostate specific antigen (PSA).

PROSTATE-SPECIFIC ANTIGEN (PSA) SCREENING

- PSA is a protein made by prostate cells of which a limited amount passes into the blood stream.
- Screening does not lower one's risk of having prostate cancer, but increases the chance of finding it if present.
- PSA testing can detect early-stage cancers that a digital rectal examination (DRE) would miss.
- A "normal" PSA level does not guarantee that one is cancer-free as a small percentage of men with "normal" PSA levels may be found to have prostate cancer on biopsy.
- PSA is prostate-specific, but not cancer-specific.
- Non-cancerous enlargement of the prostate (benign prostatic hyperplasia/BPH) and prostatitis (inflammation of the prostate) are common causes for an increased PSA level.
- The blood sample for PSA should not be collected under the following conditions which may cause increased results:
  - Two days following cycling, other heavy exercise or sexual intercourse,
  - One week following rectal examination or rectal sonar,
  - Six to eight weeks following prostatitis, bladder infection, and/or any injury to the prostate, such as biopsy or surgery.
- PSA is only a screening test and should be used in combination with a rectal examination.
- The role of PSA is to help identify those patients at highest risk or cancer, who will need a biopsy.

INTERPRETATION OF PSA LEVELS
PSA increases with both age and as a result of an increase in the size of the prostate gland. For this reason, the use of age-specific reference ranges has been proposed:

40 – 49 years	0 – 2.5 ng/mL (nanogram/millilitre)
50 – 59 years	0 – 3.5 ng/mL
60 – 69 years	0 – 4.5 ng/mL
70 years or older	0 – 6.5 ng/mL

The probability of finding prostate cancer on biopsy increases with increasing PSA values:

- A PSA less than 2.5 ng/mL is considered low-risk (less than 2% cancer probability).
- A PSA greater than 10 ng/mL is generally regarded as an indication for biopsy (67% cancer probability), but up to 33% of biopsies in this group may be negative for cancer.
- For intermediate PSA values between 2.5 and 10 ng/mL an additional test called free PSA is performed to aid the decision regarding whether or not a biopsy should be conducted.

In an effort to make screening more specific for prostate cancer, testing of free PSA (expressed as percentage of total PSA) has been introduced. Free PSA is PSA that is not bound to a protein. A lower percentage free PSA is associated with a higher risk for prostate cancer, e.g.

- % free PSA less than 10% carries a cancer probability of greater than 80%, and
- % free PSA greater than 25% carries a cancer probability of less than 10%.

Recently another more cancer-specific form of PSA has been discovered. The proPSA marker is used in combination with the total and free PSA in a specific algorithm to give a prostate health index (PHI) score. The PHI score is used in the PSA grey zone of 2 - 10 ng/mL, where it shows improved specificity for prostate cancer, potentially reducing the number of prostate biopsies reported as negative for cancer.

DIAGNOSIS

- The definitive diagnosis of prostate cancer is made by examining prostate tissue under a microscope. Tissue is obtained by means of a prostate needle biopsy under transrectal ultrasound guidance.
- A biopsy is a small tissue sample taken with a spring-loaded needle, conducted by a urologist. A small probe containing an ultrasound generator and sampling needles (known as TransRectal UltraSound or TRUS) is inserted into the anal canal, to generate an image of the prostate on a computer screen to guide the urologist to insert the sampling needles into selected zones of the prostate. The biopsy samples are then analysed by a histopathologist in order to identify cancer.
- Most prostate cancers are a type called acinar adenocarcinoma and are low-risk, i.e. these cancers grow slowly and are unlikely to spread beyond the prostate.
- Prostate cancer is traditionally graded according to the Gleason system, which is used to determine how rapidly a tumour may grow or spread.
- A Gleason score of 6 or less is considered low-grade cancer, a score of 7 is intermediate-risk and a score of 8 to 10 indicates high-grade cancer.
- Recently, a newly-developed grading system has been proposed, incorporating the Gleason scoring, and consists of 5 Grade Groups, with Group 1 indicating a most favourable prognosis and Group 5 being the least favourable.
- The pathology report also includes other important information, such as how many biopsy core samples contain cancer as well as the volume of cancer involving each core.

TREATMENT
Prostate treatment depends on the age of the patient and aggressiveness of the tumour. This may include active surveillance, surgery, radiation therapy, hormonal therapy or chemotherapy. The prognosis for prostate cancer is good if diagnosed early and treated appropriately.

Additional information on staging, treatment options and support groups are available from CANSA on their website, www.cansa.org.za

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