



## **PSA and Prostate Cancer Screening**

PSA stands for Prostate Specific Antigen, however it is neither specific nor an antigen. PSA is in fact an enzyme found in the male ejaculate and prostate, but also found in breast tissue, amniotic fluid and the female ejaculate. Its main function is to aid the transition of semen through the thick cervical secretions, by breaking down cervical mucus. It has gained much attention due to its potential to be an early marker for prostate cancer, and consequently used as a screening tool.

Prostate cancer is rare in the under 50's and its incidence increases with age, with most diagnoses being made between the ages of 70-74 years of age<sup>1</sup>. The main symptoms of prostate cancer relate to prostate enlargement, and the obstruction of the flow of urine from the bladder. Nocturia (waking up to go the toilet at night), hesitancy (difficulty in initiating the stream of urine), poor urine flow and dribbling at the end of passing urine are common features of prostate enlargement.

Prostate cancer is a major health problem, affecting over 500,000 men and causing over 200,000 deaths worldwide each year<sup>2</sup>, and the advent of the PSA test heralded the possibility of detecting this cancer when it was still localised to the prostate when a potential cure could be achieved.

### **So why do we not routinely screen for prostate cancer – like breast or cervical cancer?**

There are a number of problems with using the PSA test as a screening tool. An ideal prostate cancer screening test would pick up all the cancers (have a high sensitivity) while avoiding individuals who do not have the disease (high specificity). The PSA test has a relatively high sensitivity but has a low specificity. Only 1 in 5 of every positive PSA test is caused by prostate cancer<sup>3</sup>.

A further problem with using the PSA test as a screening tool, is that it does not differentiate between indolent and life-threatening cancers. The incidence of all cancers increases with age, and at the age of 80 over 80% of males have prostate cancer, however the vast majority of these cancers are silent – only 3% of individuals at this age will die from their prostate cancer<sup>4</sup>. The lack of understanding of the natural history of prostate cancer results both in over-diagnosis and over-treatment of individuals – who may have been better off not having the test in the first place.

### **So what is recommended?**

There is a general international consensus that there is not enough evidence to support population screening with the PSA test.

- American Cancer Society – does not support routine screening
- American Urology Association – PSA should be offered to well informed men aged 40 years or older
- US Preventative Services Task Force – Men younger than 75, the benefits of screening for prostate cancer are uncertain and the balance of benefits and harms cannot be determined.
- European Urological Association – population screening is not recommended due to a large over-treatment effect

NHS – 'Individuals should be provided with as much information as possible to make an informed choice, to enable them to decide whether or not to have the test'<sup>5</sup>.

There are often lots of factors which influence whether or not an individual should decide to have a test. Usually if there are symptoms (as described above), then most General Practitioners would advocate the use of the test.

## **In Summary**

At present any PSA test should be approached deliberately with the individual being informed of both the potential benefits and consequences of a positive test result. Additional information can be downloaded on the links below

## **The Future**

In the not too distant future it is likely that the 'PSA test' will become sensitive enough to differentiate between potentially life-threatening cancers and indolent types and at this point it may become part of the national cancer screening programme, inline with bowel, breast and cervical cancer.

## **References**

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3. Schroder Fh et al. Screening and prostate-cancer mortality in a randomized European study. *N Engl J Med* 2009;360:1320-8
4. Burford DC, Kirby M, and Austoker J, Prostate Cancer Risk Management Programme information for Primary Care; PSA testing for asymptomatic men. 2008, NHS Cancer Screening Programmes. : Sheffield.
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