

# What is PSA?

**PSA is a protein produced by the prostate gland. Men normally have low PSA levels in blood, which usually increase with age as the prostate enlarges.**

The PSA test is not a specific test for cancer; it is a marker of cancer risk. Thus a single test should not be used as the only indicator of cancer risk. If PSA level is high, a test is usually repeated a few months later. To confirm cancer presence, a prostate biopsy is necessary, which will also help determine how aggressive a cancer is.

PSA testing is used in two ways; to identify men at risk before they develop cancer symptoms and to monitor men with prostate cancer.

## PSA a risk marker

Total PSA is made up of free PSA (not attached to other proteins) and fragments of PSA (attached to other proteins). If the total PSA result is above the midpoint for age, but the proportion of free PSA is high, this usually indicates low risk of prostate cancer. High total PSA with a low proportion of free PSA suggest increased risk.

The rate of change in PSA level is also used as an indicator of prostate cancer risk. If the level doubles within a year it should be followed up. At least three measurements, several months apart, are needed to confirm this.

## PSA monitoring

For men with prostate cancer, PSA is repeated over time to check cancer progression. Specialists use PSA level as one factor in determining treatment. In all men PSA assay results vary day to day, hence results need to increase by more than 20-30% to be significant.

After total prostatectomy, PSA is extremely low, at or below the lowest level which can be measured

by the test. For this group of men, any increase represents progressive change and should be confirmed by repeat tests. The PSA rate of change, factors about the cancer and the man's general health and family history should all be considered.

## What is 'normal'?

Because PSA increases with age, the upper limit of normal also increases. The mid-point of normal (median result) may also be used to assess risk.

## What does a high PSA mean?

Most men with a high PSA do not have prostate cancer. PSA increases in cancer but also in non-cancer conditions, including benign prostatic hyperplasia, and any prostate inflammation or infection. It can also increase after rectal examination or ejaculation.

Some prostate cancers do not release much PSA. Patients with these types of cancers will produce false negative results.

## Laboratory differences

A large protein, PSA exists in many different forms and each man has a different proportion of these forms in his blood. Cancers can affect the proportion as well.

PSA is measured using an immunoassay, a method that uses antibodies which react with the substance being measured. The result shows how much antibody reacted with the specimen.

Because test kit manufacturers each produce their own antibody they vary and can react differently according to the form of PSA present. Hence a blood sample can return different results if measured in different laboratories on the same day. For this reason repeat tests on the same man should be measured by the same method where possible.

When a laboratory switches methods, it is common practice to provide results for both the old and new tests for a period of time to allow the treating clinician to assess if the result is truly changing.

### Total PSA – age related reference intervals and medians

Age	Reference interval (ug/L)	Age related medium (ug/L)
< 50 years	0.2 – 3.0	0.6
51 – 60 years	0.2 – 4.0	0.8
61 – 70 years	0.2 – 6.5	1.1
> 71 years	0.1 – 8.5	1.6

## More information

Please phone Enquiries on (08) 8222 3000 and ask for the on call Biochemist.

### Resources

[https://www.andrologyaustralia.org/wp-content/uploads/Factsheet\\_PSA-Test.pdf](https://www.andrologyaustralia.org/wp-content/uploads/Factsheet_PSA-Test.pdf)

<http://www.prostate.org.au/>

<https://labtestsonline.org/understanding/analytes/psa/tab/test> ■

SA Pathology enquiries

Metropolitan 8222 3000 Regional and Country 1800 188 077