

Prostate Specific Antigen

Total PSA and Free PSA

Reference range (% of total hemoglobin):

Total PSA 0-4ng/ml

Free PSA 25%

Methodology:

Immunoassay

Specimen required:

Serum

Stability:

28 days

Background

Prostate cancer is the second most common cancer in American men, following skin cancer. Nearly one out of every six men will be diagnosed with prostate cancer during his lifetime. It is also the second leading cause of cancer death in American men, behind only lung cancer⁽¹⁾. Prostate cancer estimates for 2013 from The American Cancer Society's suggest:

- Roughly 238,590 new cases of prostate cancer will be diagnosed
- Approximately 29,720 men will die of prostate cancer

PSA Defined

Total prostate specific antigen (PSA) is a protein produced in the prostate gland and in trace amounts in other tissues. The protein concentration increases proportionately to the size of the prostate but increases exponentially in prostatic cancer.

Free prostate specific antigen (fPSA, uncomplexed prostate specific antigen, PSA not bound to α 1-antichymotrypsin or other binding proteins, in serum) is calculated as a percentage of the total PSA in serum from those men with total values between 4 and 10 ng/mL. Free PSA percentage falls to a greater degree in those at high risk for cancer than in those with benign prostatic hypertrophy. Free PSA percentage values rise after treatment in most prostate cancer patients.

Correlation and Study Results

PSA screening continues to assist many life insurance companies in estimating applicant risk. Total PSAs are highest in applicants that have

prostate cancer, especially if there is a lower free fraction PSA. In addition, applicants with a PSA increase of more than 30% per year are more likely to have prostate cancer.

Recommended Testing Guidelines

Total PSA testing is often performed on all male applicants 50 years of age or older. It is also performed on males age 45 and older who would be considered at increased risk due to family history.

For accurate interpretation the following should be noted:

- Samples should be obtained before biopsy, prostatectomy or prostatic massage
- PSA levels may be altered due to hormonal therapy for prostate cancer. A low value after such therapy may not adequately reflect the presence of residual or recurrent disease
- A definitive clinical diagnosis should not be based on the results of a single test, but should be made only after all clinical and laboratory findings have been evaluated by a physician

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- Values obtained with different manufacturers' assays cannot be used interchangeably
- PSA levels also rise in chronic benign prostatic hypertrophy, with chronic prostatitis and advancing age
- Drugs such as Saw Palmetto (an herbal supplement) and Finasteride (Proscar) can lower PSA
- Following radical prostatectomy, PSA levels should remain at or near 0 ng/mL

References

- (1) American Cancer Society (2013)