



# Overview of Current Prostate Cancer Diagnosis Methods: PSA Blood Tests

## Introduction

The two diagnosis methods most often employed today are **PSA blood testing** and **biopsies**. PSA testing is the main diagnostic tool, and it has been shown to save lives. However, a recent National Cancer Institute study has shown that PSA testing, when abnormal, results in numerous false alarms and unnecessary biopsies, while a normal PSA does not rule out prostate cancer in about 15% of men. Without accurate imaging tools, prostate cancer care – diagnosis and treatment – is virtually blind. Indeed, the prostate is the last organ in a human body where biopsies are done blindly, without imaging-based visualization and guidance.

## Detection & Diagnosis: PSA Test

- ▶ The most common test used for the detection of prostate cancer is the prostate specific antigen (PSA) test. PSA is a protein that is released by the prostate into the blood. The PSA test measures the amount of this protein in the blood, which has been shown to increase with the development of prostate cancer.
- ▶ If a patient has 4 nanograms of PSA per milliliter or if the yearly PSA increases by more than 0.75 nanograms per milliliter, a biopsy is usually performed.
- ▶ The American Cancer Society (ACS) recommends annual PSA testing for men beginning at age 50, and for African-American men and others at high risk for the disease at 45.<sup>1</sup>

## Problems with PSA Tests

- ▶ The National Cancer Institute calls the use of the PSA test to screen men for prostate cancer “controversial” because: (i) it is not known if the test actually saves lives; (ii) it is not clear if the benefits of PSA screening outweigh the risks of follow-up diagnostic tests, such as a prostate biopsy, and treatments, such as radiation therapy and radical surgery.<sup>2</sup>
- ▶ The PSA test results in false-positive alarms in up to 88% of men and false-negative reassurance in about 15% of men.
- ▶ Inaccurate false positive results place a psychological strain on patients and often lead patients to undergo expensive, invasive, and yet needless biopsies.<sup>3</sup>
  - Most men with elevated PSA levels turn out not to have prostate cancer (i.e. “false positives”):

<sup>1</sup> American Cancer Society, [http://www.cancer.org/docroot/NWS/content/NWS\\_1\\_1x\\_Yearly\\_PSA\\_Tests\\_for\\_Prostate\\_Cancer\\_May\\_Not\\_Be\\_Needed\\_by\\_Most\\_Men\\_a\\_New\\_Study\\_Shows.asp](http://www.cancer.org/docroot/NWS/content/NWS_1_1x_Yearly_PSA_Tests_for_Prostate_Cancer_May_Not_Be_Needed_by_Most_Men_a_New_Study_Shows.asp)

<sup>2</sup> National Cancer Institute. <http://www.cancer.gov/cancertopics/factsheet/Detection/PSA#1>



- ▶ According to the National Cancer Institute, 80 percent of men ages 50 and older with elevated PSA levels will undergo biopsies that will reveal no cancer.<sup>4</sup>
- ▶ An ongoing clinical study by the National Cancer Institute's Division of Cancer Prevention involving 38,000 men in 10 cities has revealed that 88 percent of men who had either a positive PSA test or a positive digital rectal exam were later found not to have cancer.<sup>5</sup>
- ▶ Men who experience false positives on a prostate cancer screening test are less likely to undergo additional screening tests in the future.<sup>6</sup>
  - Conversely, biopsies have found prostate cancer in as many as 15 percent of men with normal PSA levels ("false negatives").<sup>7</sup>
- ▶ The Centers for Disease Control and Prevention (CDC) does not recommend routine screening for prostate cancer because there is no scientific consensus on whether the potential benefits outweigh the potential harms.<sup>8</sup>

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<sup>4</sup> National Cancer Institute, <http://www.cancer.gov/cancertopics/understanding-prostate-cancer-treatment/page3>

<sup>5</sup> National Cancer Institute (<http://www.cancer.gov/newscenter/pressreleases/PLCOProstateFactSheet>)

<sup>6</sup> National Cancer Institute (<http://www.cancer.gov/newscenter/pressreleases/PLCOProstateFactSheet>)

<sup>7</sup> American Cancer Society ([http://www.cancer.org/docroot/CRI/content/CRI\\_2\\_4\\_3X\\_Can\\_prostate\\_cancer\\_be\\_found\\_early\\_36.asp?sitearea=](http://www.cancer.org/docroot/CRI/content/CRI_2_4_3X_Can_prostate_cancer_be_found_early_36.asp?sitearea=))

<sup>8</sup> Centers for Disease Control, <http://www.cdc.gov/cancer/prostate/about2004.htm>