Prostate Cancer Screening: Is There Really a Need?

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Prostate cancer (PCa) is the most common malignancy in Canadian men with an incidence of 20,700 and an estimated 4,200 deaths for 2006. The lifetime probability of developing PCa is one in seven and the lifetime probability of dying from this disease is one in 25.81. Although PCa screening has been adopted universally, there is no Level 1 evidence to support this practice. Nonetheless, there is growing evidence that PCa screening increases the chance of earlier detection and improved outcomes.

Rationale for PCa screening

A significant reduction in mortality is noted when localized PCa is treated, with five-year survival rates approaching 100%. Conversely, distant disease has a grim prognosis with 33.5% five-year survival rates.[2] As the incidence of PCa grows, the need for screening tools to detect and treat localized and curable disease is paramount.

Current screening protocols include routine use of digital rectal exam (DRE) and prostate specific antigen (PSA) testing. Patients diagnosed with PCa are usually asymptomatic.[3] PCa screening has been under much scrutiny as opponents argue that earlier detection of clinically insignificant cancer may lead to over-treatment of a disease that may not affect ones overall survival. This argument is supported by the fact that PCa is the most common malignancy in men, but only the seventh leading cause of potential years of life lost. In addition, some observational studies have demonstrated a lack of progression in 83% of patients with PCa during the first 10 years to 15 years after diagnosis. However, beyond 15 years, local tumour progression and metastatic disease has been observed in the same studies supporting the need for early radical treatment in patients with a life expectancy ≥ 10 years.[4] The Scandinavian Prostate Cancer Group (SPCG) study results support the use of screening. When comparing early radical prostatectomy with watchful waiting, the surgery arm of the study demonstrated reduced cancer-specific mortality, distant metastasis and local progression rates with an improvement in overall survival.[4] In addition to this finding, it was found that there are currently no curative treatments available once PCa metastasizes.

FAQ

How often should a Digital Rectal Exam (DRE) and Prostate Specific Antigen (PSA) testing be performed?

Men ≥ 50-years-of-age or ≥ 40-years-of-age for those who are African or have a family history of PCa should have an annual DRE and PSA performed for the detection of PCa.

FAQ

What else can cause an elevated PSA apart from PCa?

Non-cancerous causes of an elevated benign prostate hyperplasia include:

- Urinary tract infection
- Prostatitis
- Acute urinary retention
- Urethral manipulation (catheter insertion/cystoscopy)
- Benign prostate hyperplasia

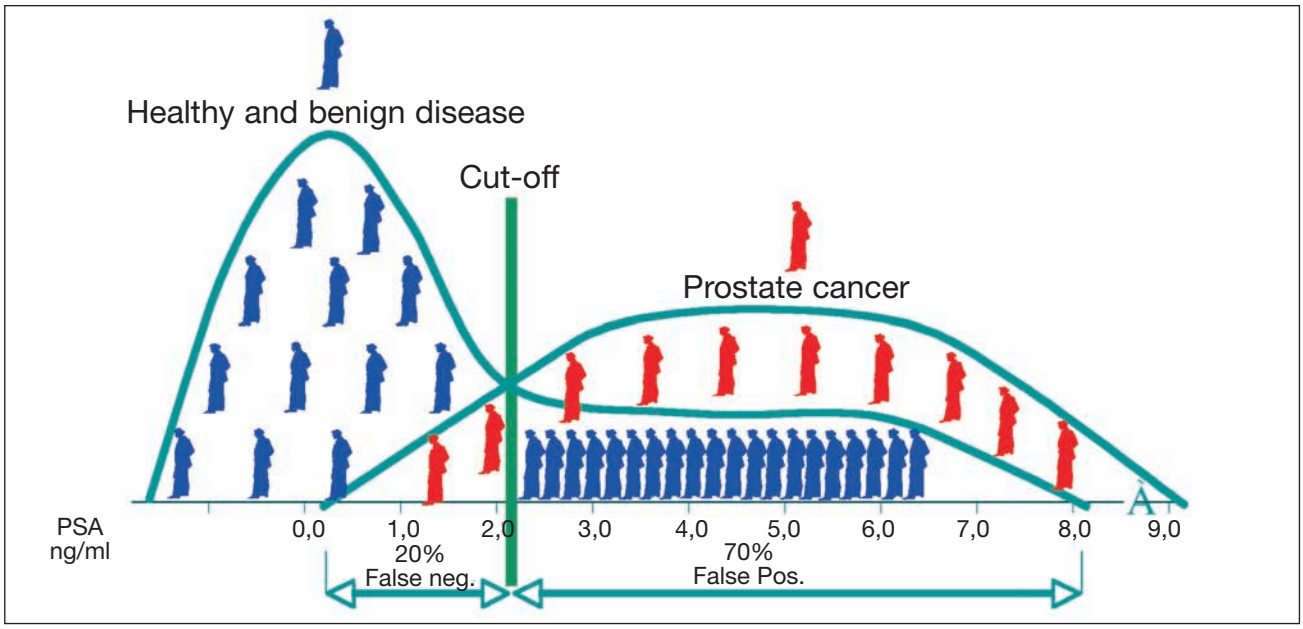

Figure 1. PSA as a screening tool.
* (Adapted with permission from British Columbia Cancer Agency)

The Surveillance Epidemiology and End Results (SEER) database analysis suggests that early screening has resulted in decreased PCa-specific mortality.[5] Several smaller studies have shown that screening and early detection decrease mortality rates.[6,7] Ultimately, the debate on PCa screening will not be resolved until the results from two large, multi-institutional, randomized screening studies, nearing completion in the US (the Prostate, Lung, Colorectal and Ovary [PLCO] Cancer Screening Trial) and in Europe (European Randomized Screening for Prostate Cancer [ERSPC]), are available. With a population approaching 200,000 participants, these studies aim to determine the effect of screening on PCa mortality. A sub-analysis has already demonstrated the beneficial effects of screening on reducing the incidence of metastatic PCa.[8]

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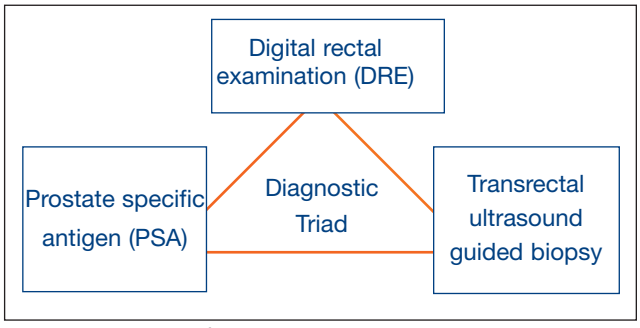

Figure 2. Diagnostic triad for PCa.

FAQ

Will Digital Rectal Exams affect PSA values?

Mild elevations of PSA are noted after a DRE; however it is not clinically significant. Therefore, PSA can be drawn before or after DREs.

FAQ

When should we not screen for PCa?

Men who have a < 10 year life expectancy would not benefit from PCa screening. PCa specific mortality in this patient population is very low.

Take-home message

1. Prostate Cancer (PCa) is a potentially curable disease if diagnosed and treated at an early stage
2. PCa screening is appropriate in males at:
   - ≥ 50-years-of-age with at least a 10 year life expectancy
   - ≥40 years if African-American or if there is a positive family history of prostate cancer
3. PCa Screening is achieved with the combination of prostate specific antigen (PSA) testing and digital rectal examination (DRE)
4. Abnormal PSA and/or DRE results should prompt referral to a urologist

How to screen for PCa

In 1987, the discovery of PSA revolutionized our ability to manage PCa.[9] PSA is a serine protease involved in the liquefaction of coagulated semen. It is found almost exclusively in the epithelial cells of the prostate and is easily measured in the blood. PSA increases proportionally with advanced PCa and is now used adjunctively with DRE for PCa detection.

PCa screening is initiated in men at age 50 years or 10 years earlier if they are of African descent or have a family history of PCa. Age-specific reference ranges for PSA have been developed to improve our ability to detect PCa. Absolute levels must be taken with caution as an elevated PSA can be due to both benign and malignant disease (Figure 1). Other parameters such as per cent-free PSA, PSA velocity and PSA doubling-time aid in the sensitivity and specificity of PSA. If a patient has a palpable nodule and/or an elevated PSA, referral to a urologist for additional evaluation is recommended. Transrectal ultrasound guided biopsies allow for the sampling of prostate tissue from patients with suspected cancer, thereby completing the diagnostic triad (Figure 2).

Position of medical organizations on PCa Screening

Thus far, screening has demonstrated an increase in organ-confined cancers that are curable with aggressive therapy. Whether screening has changed the natural history of PCa will ultimately be demonstrated in 2008 when the PLCO and ERSPC trials are complete. Until then, several medical organizations have made recommendations regarding PCa screening. The position of the Canadian Cancer Society and the National Cancer Institute of Canada state that "…all men should have the opportunity to undergo a PSA test if, after assessing the benefits and risks of PSA testing, they choose to have it. We therefore recommend that men should be made aware of the benefits and risks of early detection testing using PSA and DREs so they can make informed decisions." Several other health-care organizations have made recommendations either discouraging or promoting physicians or patients from PCa screening.

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