

Prostate-Specific Antigen and Prostate Cancer





What is the role of PSA testing in prostate cancer?

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Prostate Cancer in Canada

- 4th** Prostate Cancer is the fourth most common cancer diagnosed in Canada with about 23,300 men having been diagnosed in 2020.^{1,2}
- 11%** 1 in 9 men will develop prostate cancer over the course of their lifetime.^{1,2}
- 93%** 93% of men will survive 5 years or more after their diagnosis.^{1,2}

What is a PSA blood test and how is it used in prostate cancer?

-  Prostate-specific antigen (PSA) is a protein produced by the prostate gland. PSA's physiological function is to reduce semen viscosity after ejaculation. Its blood level is also used to determine the likelihood that prostate cancer is present and to what extent.³
-  When treating cancer, a rising PSA level indicates that the cancer is growing or metastasizing i.e. spreading to other areas of the body like the prostate's surrounding lymph nodes, bones or other organs.
-  A decreasing PSA value commonly indicates that the cancer is receding and that the treatment undergone has been effective.
-  Another application of PSA testing is in screening. If PSA levels can allow clinicians to detect prostate cancer earlier, then theoretically, adverse outcomes due to worsening disease can be avoided.

Does earlier screening (using PSA testing) result in better outcomes and survival?

Guidelines from the United States Preventive Services Task Force (USPSTF) and the Canadian Task Force on Preventive Health Care (CTFPHC) on the effect of widespread PSA screening on prostate cancer outcomes have evolved significantly over the past three decades. A history of organizational recommendations are summarized below:

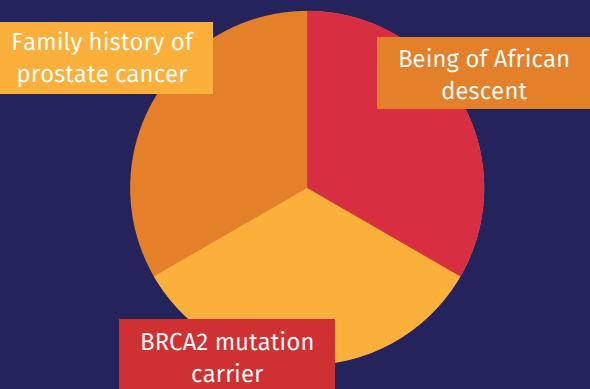
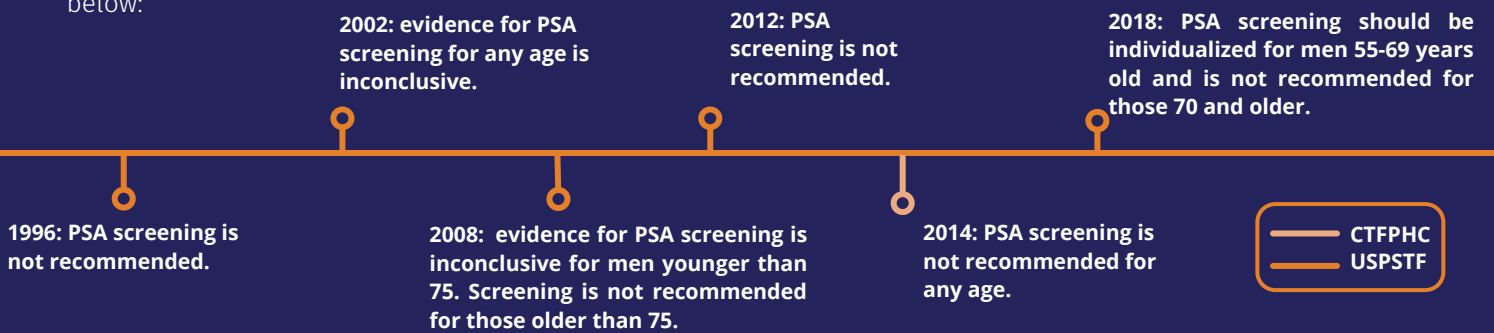


Figure 1. Risk factors for a more aggressive form of prostate cancer.¹⁰

These guidelines reflect findings from randomized controlled trials and observational studies (in Canada and abroad) that show that widespread screening for prostate cancer using PSA testing does not reduce the risk of either dying from prostate cancer or having a more aggressive form of it. Prostate cancer, although one of the most common forms of cancer, is a slow growing disease and even when men have it, they are likely to die of other causes.

Because of this, guidelines are favoring a more personalized approach. The decision to get screened using a PSA blood test should be done with a physician (usually, a family doctor or urologist) and take into account a patient's values, preferences and certain risk factors (Figure 1) that predispose them to a more aggressive form of cancer.

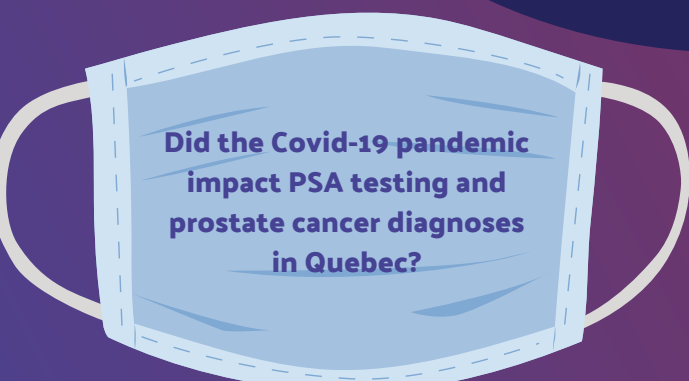
Are there any harms to getting screened?

For those considering testing, either because of personal preferences and/or identifiable risk factors, one must weigh the potential benefits with the associated harms that could accompany getting screened for prostate cancer using PSA testing. As mentioned, studies have shown that there is a small absolute gain in survival and disease regression obtained because of PSA testing. In addition, several harms associated with screening have been identified and are summarized below.⁹

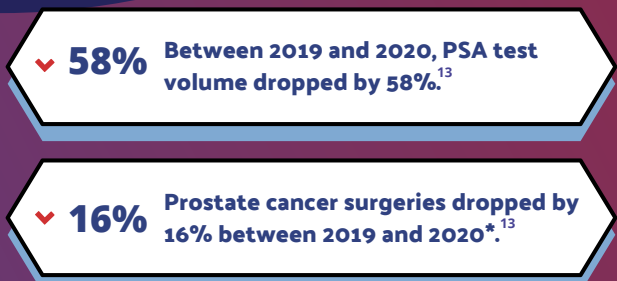
- False positives** Although a higher PSA is generally indicative of cancer, this is not always the case. Having a certain PSA level does not guarantee the presence of cancer: a man may present with a higher PSA result but not have cancer. Depending on the PSA threshold used to determine positivity, this could lead to unnecessary anxiety and further testing of an otherwise normal prostate or a cancerous prostate that would have not caused any symptoms had they been unaware of the cancer.¹²
- Harms from biopsy** A higher PSA value may result in invitation to further testing, one of which could be a prostate biopsy. A prostate biopsy involves taking a collection of samples of the prostate tissue usually through an ultra sound-guided needle via the rectum. Complications that could arise from this include infection, blood in urine and hospitalization.⁹ Thirty one percent (31%) of men undergoing a biopsy have been shown to have blood in urine up to 30 days after the procedure.⁹
- Over diagnosis** PSA testing and additional procedures may result in a correct diagnosis of prostate cancer. However, receiving a diagnosis of a cancer that would not cause symptoms or death may bring very little benefit. In fact, knowing that a man does have a cancer may lead to unnecessary treatments that could significantly reduce his quality of life by, for example, causing erectile dysfunction or urinary incontinence (uncontrolled urination).⁹

KEY POINTS

- Widespread PSA screening for men not presenting symptoms does not result in better outcomes. Its usefulness in prostate cancer screening has been widely debated for over three decades. Men of any age getting screened for prostate cancer using a PSA blood test are unlikely to reduce their risk of either dying or their cancer spreading.
- PSA is a measure mainly used by clinicians to evaluate the growth of prostate cancer after diagnosis. Its upward or downward trends are used to evaluate the effectiveness of treatment and conversely, the growth and spread of cancer.
- Having certain factors puts you at a higher risk of getting a more aggressive form of cancer. Being of African descent, carrying BRCA2 mutations and having a family history of prostate cancer predispose you to a more aggressive type of prostate cancer. Depending on your personal preferences and advice from a physician, you may want to consider getting tested.



Did the Covid-19 pandemic impact PSA testing and prostate cancer diagnoses in Quebec?



*Annual prostate cancer diagnoses in Quebec are unavailable since 2013. In 2013, 5 888 prostate cancers were diagnosed in the province.¹⁴

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