



Prevention of Prostate Cancer



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Prostate cancer autopsy studies have found histologic evidence of prostate cancer in young men.¹⁻² Therefore, any true primary preventive strategy would be targeting males aged < 30 years. Given the fact that such a prevention strategy would be difficult to study and the fact that poor compliance would be an issue in that age group, most preventive strategies have been studied in the patient population most at-risk for developing clinically significant prostate cancer.

The current prevalence of prostate cancer is 0.8% of the male population (*i.e.*, 127,200 prevalent cases). In Canadian men, prostate cancer will continue in 2008 as the most common cancer, with an estimated 24,700 new cases forecast. Prostate cancer is the third most common cause of cancer mortality, with 4,300 deaths estimated for 2008. The incidence of prostate cancer continues to rise. During their lifetime, one in seven Canadian men will be diagnosed with prostate cancer.³

► What are the dietary factors?

Green tea

The flavonoids present in green tea have strong antioxidant properties, which has led to small trials investigating its use in prostate cancer prevention. So far, results have been mixed, although one promising randomized pilot study has been published.⁴ Large scale studies are needed to investigate this widely consumed beverage further.

Tomatoes

Lycopene, the primary antioxidant found in tomatoes, was noted in the Health Professionals Follow-Up Study (HPFS) to lower the risk of prostate cancer; however, this effect was more pronounced with tomato sauce. Despite these promising findings, there are currently no large scale studies in progress to investigate the use of lycopene in the prevention of prostate cancer.⁵

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Dietary fat intake

There is strong epidemiological evidence linking increased dietary fat intake with an increased risk of prostate cancer.⁶ Moreover, there are numerous health benefits with maintaining a normal BMI. However, this hypothesis will be difficult to study in a large scale Phase III trial due to the complexity of dietary fat interventions.

Soy

Soy products have received interest for prostate cancer prevention due to the observation that the incidence of prostate cancer is lower in Asia when compared to the West. Pilot studies have been promising and currently there is a Phase III randomized study under way which is funded by the National Cancer Institute of Canada.⁷

► *What are some medications?*

Finasteride

The Prostate Cancer Prevention Trial (PCPT) was a large (18,882 men), well-conducted, randomized study which tested the hypothesis that a 5- α -reductase inhibitor (finasteride) could prevent prostate cancer through the basic mechanism of lowering intraprostatic levels of testosterone. On an absolute level, there was a reduction in the prevalence of prostate cancer (relative risk reduction 24.8%). However, there was an increased prevalence of high grade cancers within the finasteride arm.⁸ Most would now agree that this was likely a sampling artifact due to shrinkage of the gland caused by finasteride. Nevertheless, finasteride chemoprevention has not been widely adopted.

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Dutasteride

Dutasteride is another 5- α -reductase inhibitor which is under consideration for prostate cancer chemoprevention. The Reduction by Dutasteride of Prostate Cancer Events (REDUCE) trial has randomized approximately 8,000 men and results are expected in the near future.

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Vitamin E (α -tocopherol) and selenium

The Selenium and Vitamin E Cancer Prevention Trial (SELECT) is another large, randomized study which has completed accrual for which results are awaited. This trial, which has randomized 32,400 men, is based on epidemiological evidence from other randomized studies in which a reduction in prostate cancer prevalence was noted incidentally. In the case of selenium, a subset analysis in a skin cancer prevention trial showed a 49% reduction in the incidence of prostate cancer,⁹ whilst for vitamin E a 32% reduction in prostate cancer was noted in a lung cancer prevention trial.¹⁰

Vitamin D

The prevalence of prostate cancer has been noted to be higher in people living in more northerly latitudes, in whom a deficiency of sunlight leads to lower levels of vitamin D.

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Trials are underway to study the effect of vitamin D on prostate cancer prevention.

NSAIDs

This class of drugs was being studied; however, due to toxicity concerns, a Phase III randomized study with rofecoxib was closed. It is unlikely that this area will be pursued.

► What is the recommended strategy?

Maintaining a nutritionally sound healthy heart diet, which is low in saturated fats, along with the recommended daily intakes of selenium, vitamin E and vitamin D is supported by the current evidence, along with maintenance of a normal BMI. Ongoing studies will determine if further dietary or pharmacological supplementation will help to lower the risk of prostate cancer.



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