Prostate Cancer Causes, Risk Factors, and Prevention

Learn about the risk factors for prostate cancer and what you might be able to do to help lower your risk.

Risk Factors

A risk factor is anything that increases your chances of getting a disease such as cancer. Learn more about the risk factors for prostate cancer.

- Prostate Cancer Risk Factors

Prostate Cancer Risk Factors

Any man, or person born with a prostate, is at risk for developing prostate cancer, but there are factors that can increase your risk. Understanding how these factors apply to you might help you make decisions about screening for prostate cancer.

What is a risk factor?

A risk factor is anything that raises your chances of getting a disease such as cancer.

Different cancers have different risk factors. Some risk factors, like smoking, can be changed. Others, like a person's age or family history, can't be changed.

But having a risk factor, or even several, does not mean that you will get the disease. Many people with one or more risk factors never get cancer, while others who get cancer may have had few or no known risk factors.

Researchers have found some factors that can affect prostate cancer risk.

Older age

Prostate cancer is rare in men younger than 40, but the chance of having prostate cancer rises rapidly after age 50. About 6 in 10 prostate cancers are found in men older than 65.

Race/ethnicity

Prostate cancer develops more often in African American men and in Caribbean men of

African ancestry than in men of other races. And when it does develop in these men, they tend to be younger.

Prostate cancer occurs less often in Asian American, Hispanic, and Latino men than in non-Hispanic White men. The reasons for these racial and ethnic differences are not clear.

Family history

Prostate cancer seems to run in some families, which suggests that in some cases there may be an inherited or genetic factor[1]. Still, most prostate cancers occur in men **without** a family history of it.

studied.

Men who consume a lot of **dairy products** may have a slightly higher chance of getting prostate cancer.

There is some evidence that **firefighters** can be exposed to chemicals that may increase their risk of prostate cancer. To learn more, see Firefighters and Cancer Risk[5].

A few studies have suggested a possible link between exposure to **Agent Orange**, a chemical used widely during the Vietnam War, and the risk of prostate cancer, although not all studies have found such a link. The National Academies of Science, Engineering, and Medicine considers there to be “limited/suggestive evidence” of a link between Agent Orange exposure and prostate cancer. To learn more, see Agent Orange and Cancer[6].

Inflammation of the prostate

Some studies have suggested that **prostatitis** (inflammation of the prostate gland) may be linked to an increased risk of prostate cancer, but other studies have not found such a link. Inflammation is often seen in samples of prostate tissue that also contain cancer. The link between the two is not yet clear, and this is an active area of research.

Sexually transmitted infections

Researchers have looked to see if sexually transmitted infections (like gonorrhea or chlamydia) might increase the risk of prostate cancer, because they can lead to inflammation of the prostate. So far, studies have had conflicting results, and no firm conclusions have been reached.

Vasectomy

Some studies have suggested that men who have a vasectomy (minor surgery to make men infertile) have a slightly increased risk for prostate cancer, but other studies have found no increase in risk. Research on this possible link is still underway.

Know Your Cancer Risk [7]
Take the ACS CancerRisk360™ assessment to learn more about what you can change to improve your health. By taking 5 minutes to answer a few questions, we will give you a personalized roadmap of actions with helpful resources you can use to lower your risk of cancer.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/genetics.html
2. www.cancer.org/cancer/risk-prevention/diet-physical-activity/body-weight-and-cancer-risk.html
3. www.cancer.org/cancer/risk-prevention/tobacco.html
4. www.cancer.org/cancer/risk-prevention/chemicals/arsenic.html
5. www.cancer.org/cancer/risk-prevention/chemicals/firefighting.html
6. www.cancer.org/cancer/risk-prevention/chemicals/agent-orange-and-cancer.html
7. acscancerrisk360.cancer.org/

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What Causes Prostate Cancer?

oncogenes. These genes can result in cells growing out of control.

- Genes that normally help keep cell division under control or cause cells to die at the right time are known as **tumor suppressor genes**. Changes that turn off these genes can result in cells growing out of control.

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- ***RNASEL* (formerly *HPC1*):** The normal function of this tumor suppressor gene is to help cells die when something goes wrong inside them. Inherited mutations in this gene might let abnormal cells live longer than they should, which can lead to an increased risk of prostate cancer.
- ***HOXB13*:** This gene is important in the development of the prostate gland. Mutations in this gene have been linked to early-onset prostate cancer (prostate cancer diagnosed at a young age) that runs in some families. This mutation is rare.

Other inherited gene mutations may account for some hereditary prostate cancers, and research is being done to find these genes.

If you have prostate cancer, testing the cancer cells[2] for these types of gene changes might be important, for a couple of reasons:

- The results of testing might affect your treatment options. Some medicines used to treat prostate cancer (such as certain targeted drugs[3]) are only likely to be helpful if your cancer cells have one of these gene changes.
- If testing finds a gene change, your doctor might suggest genetic counseling and testing. If the tumor cells have a gene mutation, testing some of your other cells (such as from a blood sample) for the same mutation can show if you inherited it (and therefore if it's in all of your cells). This might help you learn more about your risk of other cancers, and possibly the risks among other members of your family. To learn more, see Genetic Counseling and Testing for Prostate Cancer Risk.

Acquired gene mutations

Some genes can change during a person's lifetime. This type of mutation is not passed on to children, and it's found only in cells that come from the original mutated cell. These are called **acquired** mutations. Most gene mutations linked to prostate cancer develop during a man's life, rather than having been inherited.

Every time a cell prepares to divide into 2 cells, it needs to make a copy of its DNA for the new cell. This process isn't perfect, and sometimes errors occur, leaving defective DNA in the new cell. It's not clear how often these DNA changes might be random events, and how often they are influenced by other factors (such as diet, hormone levels, etc.).

In general, the more quickly prostate cells grow and divide, the more chances there are

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Genetic Counseling and Testing for Prostate Cancer Risk

Some people inherit changes (mutations) in certain genes that increase their risk of prostate cancer (and possibly other cancers).

Genetic testing can look for mutations in some of these genes. Genetic testing can be helpful in some situations. But not everyone needs to be tested, and it's important to understand what genetic testing can and can't tell you before these tests are done.

lessen your anxiety about your prostate cancer risk (as well as that of your family members). At the same time, it's important to know that genetic testing has limits. For example, not all tests look for the same gene changes. Tests often look for the most common gene mutations, but they don't look for every gene change that might affect your risk. This means it's possible you might still have an inherited gene mutation even if testing doesn't find one.

And of course, not having an inherited gene mutation doesn't mean your prostate cancer risk is zero. It means you have about the same risk as most other men, and you can decide what steps you want to take based on this information.

The results of genetic testing aren't always straightforward. This is why genetic counseling is an important part of the genetic testing process. Before testing, a health care provider trained in genetic counseling can explain what the tests can tell you, which can help you decide if testing is right for you. Then, if testing is done, they can help you understand the results and what could they mean for you.

Who might be advised to get genetic testing?

Not all men need genetic testing for prostate cancer risk. Genetic counseling and testing is more likely to be recommended if there's reason to think you could have an inherited gene change that raises your risk of prostate cancer.

Some expert groups have developed guidelines for who should consider genetic counseling and testing for prostate cancer risk. These guidelines can be complex, and they vary slightly between groups, but in general they include two main groups of people:

If you've never had prostate cancer, genetic counseling and testing might be recommended if, for example:

- There is a known gene change (such as in one of the *BRCA* genes) that runs in your family.
- You have a strong family history of prostate cancer (or certain other cancers) that suggests one of these gene changes might run in your family. For example, if many family members (related by blood) have had cancer, if there have been unusual cancers in your family (such as breast cancer in a man), or if cancers have appeared at a younger age than usual.

If you have prostate cancer, genetic counseling and testing might be recommended if,

for example:

- Either of the conditions above are true.
- You’ve also had another type of cancer (especially breast cancer).
  You are of Ashkenazi Jewish descent (and therefore at higher risk for a

How genetic testing is done

Genetic testing can be done on samples of blood or saliva, or from a swab of the inside of a cheek. The samples are sent to a lab for testing.

There are many different mutations in genes known to be related to prostate cancer risk. Testing can be done to look for one (or a few) specific mutation(s), or more

The results of genetic testing can sometimes be complex or confusing, which is why it's important to go over them with a genetic counselor or another health care professional trained in genetic counseling. They can explain what the results might mean for you (and possibly other family members).

To learn more about the process of genetic testing and the different types of test results, see What Happens During Genetic Testing for Cancer Risk?[6]

Hyperlinks

1. www.cancer.org/cancer/types/prostate-cancer/treating/targeted-therapy.html
2. www.cancer.org/cancer/types/prostate-cancer/detection-diagnosis-staging/risk-groups.html
3. www.cancer.org/cancer/diagnosis-staging/tests/biopsy-and-cytology-tests/understanding-your-pathology-report/prostate-pathology/high-grade-prostatic-intraepithelial-neoplasia.html
4. www.cancer.org/cancer/risk-prevention/genetics/genetic-testing-for-cancer-risk.html
5. www.cancer.org/cancer/types/breast-cancer/risk-and-prevention/can-i-lower-my-risk.html
6. www.cancer.org/cancer/risk-prevention/genetics/genetic-testing-for-cancer-risk/what-happens-during-genetic-testing-for-cancer.html

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Can Prostate Cancer Be Prevented?

the diet. (This does not mean that men who are being **treated for** prostate cancer should not take calcium supplements if their doctor recommends them.)

To learn more, see the American Cancer Society Guideline for Diet and Physical Activity for Cancer Prevention[1].

Vitamin, mineral, and other supplements

Vitamin E and selenium: Some early studies suggested that taking vitamin E or selenium supplements might lower prostate cancer risk.

But a large study known as the Selenium and Vitamin E Cancer Prevention Trial (SELECT) found that **neither vitamin E nor selenium supplements lowered prostate cancer risk**. In fact, men in the study taking the vitamin E supplements were found to have a slightly higher risk of prostate cancer.

Soy and isoflavones: Some early research has suggested possible benefits from soy proteins (called isoflavones) in lowering prostate cancer risk. Several studies are now looking more closely at the possible effects of these proteins.

Taking any supplement could have both risks and benefits. Before starting vitamins or other supplements, talk with your doctor.

Medicines

Some drugs might help reduce the risk of prostate cancer.

5-alpha reductase inhibitors

low-grade prostate cancers, but they had about the same risk of higher-grade prostate cancers, which are more likely to grow and spread. It's not clear if these drugs can lower the risk of dying from prostate cancer, as men in these studies had similar survival rates whether or not they took one of these drugs.

These drugs can cause sexual side effects such as lowered sexual desire and erectile dysfunction (impotence), as well as the growth of breast tissue in some men. But they can help with urinary problems from BPH, such as trouble urinating and leaking urine (incontinence).

These drugs aren't approved by the FDA specifically to help lower prostate cancer risk, although doctors can prescribe them "off label[2]" for this use. Men who want to know more about these drugs should discuss them with their doctors.

Aspirin

Some research suggests that men who take a daily aspirin might have a lower risk of getting and dying from prostate cancer. But more research is needed to show if the possible benefits outweigh the risks. Long-term aspirin use can have side effects, including an increased risk of bleeding in the digestive tract. While aspirin can also have other health benefits, at this time most doctors don't recommend taking it just to try to lower prostate cancer risk.

Other drugs

Other drugs and dietary supplements that might help lower prostate cancer risk are now being studied. But so far, no drug or supplement has been found to be helpful in studies large enough for experts to recommend them.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/diet-physical-activity/acs-guidelines-nutrition-physical-activity-cancer-prevention.html
2. www.cancer.org/cancer/managing-cancer/treatment-types/off-label-drug-use.html

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