

# Are You at Higher Genetic Risk of Prostate Cancer?

**Are you worried about getting prostate cancer because of your family history?**

That's a pretty good reason to be concerned: **not to panic, but to be watchful** – so if prostate cancer does develop, you can catch it early, while it is most curable.

Your family history is important because certain cancers, including prostate cancer, can be caused by changes (mutations) in specific genes. Some genetic changes happen over time and are related to diet, lifestyle, or other environmental factors. But some mutations that lead to cancer can be inherited; these are called germline mutations.

**What if you don't have a family history of prostate cancer, but your aunt had breast cancer, or your grandmother had pancreatic cancer, or your dad died at a young age of colon cancer?** “Having any of those cancers, including ovarian cancer, in the family does increase the likelihood that a man is going to develop prostate cancer at some point in his life,” says Todd Morgan, M.D., Chief of Urologic Oncology at the University of Michigan.

Morgan, a PCF Young Investigator, helped establish the Prostate Cancer Risk Clinic at the University of Michigan for patients at higher genetic risk of developing prostate cancer, with the hope of catching the disease early in these men – who are more likely to develop aggressive cancer, and to get it at a younger age. “Despite the rapidly growing understanding of germline (inherited) variants in driving aggressive prostate cancer an

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increased availability of genetic testing,” he says, “there is little evidence on how best to screen these men.”

Morgan recently led a study ([https://www.goldjournal.net/article/S0090-4295\(21\)00647-6/fulltext](https://www.goldjournal.net/article/S0090-4295(21)00647-6/fulltext)), published in *Urology*, reporting on the clinic’s first 41 patients. Most of these men, average age 58, had undergone genetic testing and discovered inherited mutations in genes that increase their odds of getting prostate cancer (for a list of these genes, see below). The rest of the men had a strong family history of prostate cancer or other cancers that significantly increased their risk of developing prostate cancer. The men underwent a physical exam, [PSA test](#), and Select MDx urine test, and filled out a lifestyle survey. Twelve men who had suspicious findings on the exam, or a PSA above the age threshold, or an abnormal urine test underwent a prostate [biopsy](#), and four of these men were diagnosed with prostate cancer. Morgan and colleagues agreed that these findings “support the feasibility of a dedicated clinic” for men at high genetic risk of prostate cancer.

**Who’s eligible to enroll in a genetic risk clinic?** Men who have not been diagnosed with prostate cancer, but who have a strong family history of it or of other cancer, and men who have undergone genetic testing and learned they have a cancer-related mutation or syndrome. At the University of Michigan’s clinic, these include:

- Mutations in BRCA1 or BRCA2 genes;
- Lynch Syndrome (the most common cause of hereditary colon cancer, this genetic condition can cause other cancers, including prostate cancer);
- Li-Fraumeni syndrome (a mutated [p53 gene](#), linked to aggressive prostate cancer);

and

- mutations in other genes, including ATM, PALB2, CHEK2, RAD51D, ATR, NBN, GEN1 RAD51C, MRE11A, BRIP1, and FAM175A.

Those are the best-known genetic “red flags,” but they are undoubtedly not all the genetic risks out there, notes Morgan, and these criteria will surely expand. For example, scientists are also learning about other tiny changes – not in the genes themselves, but in stretches of DNA called SNPs (pronounced “snips”) – that can predispose a man to developing prostate cancer and that, taken together, raise his “genetic risk score.” These are not routinely tested for now, but one day, they might be.

“We’re learning,” says Morgan. “For most of the men who are willing, we’re collecting data, learning as much as we can to figure out what is the optimal way to perform early detector for men at high risk.”

**I don’t have prostate cancer, but my mom has breast cancer. Should I get genetic testing?** Morgan says there’s a more helpful course of action: “Your mother with breast cancer or your father with prostate cancer – those are the people who should be initially tested, if possible, because their genes carry information for the whole family. If they’re negative, it potentially saves a lot of downstream testing (for other family members). Also, when someone who doesn’t have cancer is tested, the odds of finding a mutation are lower.”

While there are some home-testing options out there, Morgan notes that “it is important to be educated about the pros and cons of genetic testing before proceeding with a test. This

usually means meeting in person or virtually with a genetic counselor or other medical professional trained in cancer genetics.” Although 23 and Me offers a direct-to-consumer genetic test, “they do not really offer the most comprehensive genetic testing, even though they do test for a few key BRCA mutations.” The risk with tests that are not clinical-grade is that they could give a false sense of security – a result that is “negative,” when really, the test just didn’t cover very many genes. There are many clinical-grade genetic tests that you can do from home with just a sample of your saliva. “Most of these require an order from a medical provider, and some form of education and counseling is crucial prior to proceeding with any of these tests.”

I took a home genetic test and it says I have a BRCA mutation. What do I do now? “First, you need to talk to a genetic counselor,” says Morgan, “make sure the right test was sent, and maybe get a confirmatory test if a non-clinical-grade test such as 23 and Me was used,” to rule out a false positive. Then, if you do have a genetic mutation, “let’s figure out what to do about your risk as well as your family’s risk. If you have a BRCA1 mutation, for example, are you at a greater risk of developing prostate cancer? The answer is clearly yes.”

A genetic counselor can help you find an early detection program, and can also talk about some lifestyle changes you can make to lower your risk. For example: If you smoke (<https://www.pcf.org/c/the-connection-between-smoking-and-prostate-cancer/>), there is no better time to quit. Quitting instantly lowers your risk of dying of prostate cancer. If you are overweight, now’s the time to work on that; ask your doctor or a genetic counselor for a referral to a nutritionist if you need extra help.

Changing your diet – moving away from inflammatory (<https://www.pcf.org/c/why-did->

**i-get-prostate-cancer-it-begins-with-inflammation/)** foods, and from foods that increase insulin resistance (<https://www.pcf.org/c/whats-good-for-your-prostate-is-good-for-all-of-you/>) – can also help. “Exercise (<https://www.pcf.org/c/exercise-is-the-turbo-boost-to-a-healthy-prostate/>) is really important for your overall health, and there’s a pretty strong body of literature suggesting that it reduces the risk of prostate cancer and possibly reduces the risk of aggressive prostate cancer.” Putting it all together, a recent study (<https://www.pcf.org/blog/benefits-of-a-healthy-lifestyle-in-men-at-high-risk-of-prostate-cancer/>) showed that among men at high genetic risk for prostate cancer, those with a healthy lifestyle lowered their risk of dying of prostate cancer by 46 percent, compared to men with the least healthy lifestyle. The healthy lifestyle score was based on six factors: not smoking; having a body mass index (BMI) lower than 30; exercising; having a high intake of tomatoes and fatty fish; and having a low intake of processed meat.

**I don’t have a high-risk clinic near me. What should I do?** “For people who can’t travel or who don’t have access to a high-risk clinic, ask your primary care doctor to refer you to a urological oncologist or urologist to guide early detection.” Another option may be telemedicine, a video meeting or phone call with a genetic counselor or specialist at a high-risk clinic. Clinic locations include the **Seattle Cancer Care Alliance** (<https://www.seattlecca.org/prevention/prostate-cancer-genetics>), **Jefferson Health** (<https://hospitals.jefferson.edu/departments-and-services/clinical-cancer-genetics-service.html>) in Philadelphia, and the National Cancer Institute, which is running a clinical trial (<https://clinicaltrials.gov/ct2/show/NCT03805919>) for men at higher genetic risk for prostate cancer.

I'm 58 and was diagnosed with Gleason 8 prostate cancer. I'm worried about my kids in their 20s. What can they do? If you developed prostate cancer at a younger age your sons and grandsons are at higher risk of developing it. "I would advise starting prostate screening for your sons between ages 40 and 45," says Morgan. "Because you are the one with cancer, I would recommend that you undergo genetic testing. If it's negative, that can be reassuring – but early detection is still recommended for your sons," as well as the lifestyle measures discussed above.