

New study findings help physicians and patients determine prostate cancer risk

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A discovery by researchers at Huntsman Cancer Institute shows that looking at whether a man's uncles and great-grandparents, among other second- and third-degree relatives, had prostate cancer could be as important as looking at whether his father had prostate cancer. A more complete family history would give physicians a new tool to decide whether or not a PSA test was appropriate.

"Family history is a substantial risk factor for prostate cancer," said Lisa Cannon-Albright, PhD, U of U professor of genetic epidemiology and an HCI investigator. "But typically, a clinician will ask a patient whether there are any people in the family with prostate cancer, possibly identifying whether they are first-degree relatives. And that's about as far as it goes."

Cannon-Albright's team used data from the Utah Population Database, which correlates genealogic and medical information for more than 7.3 million individuals, to create individualized risk estimates for men based on prostate cancer history in their first-, second-, and third-degree relatives. [See sidebar]

They calculated individualized relative risks for men with prostate cancer family histories, based on the number, degree, and age at diagnosis of their affected relatives for many different "constellations," or combinations of these factors. To condense their findings for clinical use, the team identified constellations that conferred greater than two-fold and three-fold risk. Patients and clinicians can refer to this data to

help them determine an appropriate individual plan for [prostate cancer screening](#).

According to the study, two-thirds of Utah men have some increased risk of developing prostate cancer based on their family history of the disease, but only a minority have substantially increased risk—10% have three times the risk, and 26% have double the risk, compared to men from families with no history of prostate cancer. Because this population is genetically similar to most white men of Caucasian and northern European descent, the findings can be extrapolated to these populations as well. Researchers from Huntsman Cancer Institute (HCI) at the University of Utah (U of U) recently published these findings in the journal *Prostate*.

"The clinical application of our findings is especially relevant because there is no consensus on prostate cancer screening," said co-author Robert A. Stephenson, MD, professor of urologic oncology at the U of U and an HCI investigator. "Knowing prostate cancer risk estimates associated with a man's detailed family history can help pinpoint the men who will benefit from targeted screening."

The team found that even though the advent of the prostate-specific antigen (PSA) screening test increased the overall number of prostate cancer diagnoses, the proportion of cases with associated family history remained the same before and after PSA screening became widely used. Also, the study showed family history of prostate cancer among a man's maternal relatives contributes to elevated risk equally with history among paternal relatives.

"There may be a synergistic effect if a man has both maternal and paternal family history," said Cannon-Albright. "We want to investigate this further, along with bringing other factors such as race, socioeconomic status, and previous diagnosis with another type of cancer

into the risk calculations. This will broaden the populations to which the risk estimates apply."

In addition, the team is currently working on similar family history risk assessments for breast and lung cancers.

"What I do for my 'full-time job' is study high-risk pedigrees and look for cancer genes," said Cannon-Albright. "They are very helpful to a small portion of cancer cases and families. But in fact I feel a responsibility to everybody, and those gene identification projects won't help everybody. If we can identify subsets of people at greatest risk and target screening for those people, that will make a difference in many people's lives.

"Even after we find the genetic mutations responsible for some prostate cancers, [family history](#) data will be an economically sustainable, viable, powerful, and effective way to accurately estimate [prostate cancer](#) risk," she said.

Provided by University of Utah Health Sciences

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