

High levels of two hormones in the blood raise prostate cancer risk

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Micrograph showing prostatic acinar adenocarcinoma (the most common form of prostate cancer) Credit: Wikipedia, [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/)

Men with higher levels of 'free' testosterone and a growth hormone in their blood are more likely to be diagnosed with prostate cancer, according to research presented at the 2019 NCRI Cancer Conference.

Other factors such as older age, ethnicity and a family history of the disease are already known to increase a man's risk of developing prostate

[cancer](#).

However, the new study of more than 200,000 men is one of the first to show strong evidence of two factors that could possibly be modified to reduce prostate cancer risk.

The research was led by Dr. Ruth Travis, an Associate Professor, and Ellie Watts, a Research Fellow, both based at the Nuffield Department of Population Health, University of Oxford, UK. Dr. Travis said: "Prostate cancer is the second most commonly diagnosed cancer in men worldwide after lung cancer and a leading cause of cancer death. But there is no evidence-based advice that we can give to men to reduce their risk.

"We were interested in studying the levels of two hormones circulating in the blood because previous research suggests they could be linked with prostate cancer and because these are factors that could potentially be altered in an attempt to reduce prostate cancer risk."

The researchers studied 200,452 men who are part of the UK Biobank project. All were free of cancer when they joined the study and were not taking any hormone therapy.

The men gave [blood samples](#) that were tested for their levels of testosterone and a [growth hormone](#) called insulin-like growth factor-I (IGF-I). The researchers calculated levels of free testosterone—testosterone that is circulating in the blood and not bound to any other molecule and can therefore have an effect in the body. A subset of 9,000 of men gave a second blood sample at a later date, to help the researchers account for natural fluctuations in hormone levels.

The men were followed for an average of six to seven years to see if they went on to develop prostate cancer. Within the group, there were 5,412

cases and 296 deaths from the disease.

The researchers found that men with higher concentrations of the two hormones in their blood were more likely to be diagnosed with prostate cancer. For every increase of five nanomoles in the concentration of IGF-I per litre of blood (5 nmol/L), men were 9% more likely to develop prostate cancer. For every increase of 50 picomoles of 'free' testosterone per litre of blood (50 pmol/L), there was a 10% increase in [prostate cancer risk](#).

Looking at the population as a whole, the researchers say their findings correspond to a 25% greater risk in men who have the highest levels of IGF-I, compared to those with the lowest. Men with the highest 'free' testosterone levels face a 18% greater risk of prostate cancer, compared to those with the lowest levels.

The researchers say that because the [blood](#) tests were taken some years before the prostate cancer developed, it is likely that the [hormone](#) levels are leading to the increased risk of prostate cancer, as opposed to the cancers leading to higher levels of the hormones. Thanks to the large size of the study, the researchers were also able to take account of other factors that can influence cancer risk, including body size, socioeconomic status and diabetes.

Dr. Travis said: "This type of study can't tell us why these factors are linked, but we know that testosterone plays a role in the normal growth and function of the prostate and that IGF-I has a role in stimulating the growth of cells in our bodies."

"What this research does tell us is that these two hormones could be a mechanism that links things like diet, lifestyle and body size with the risk of prostate cancer. This takes us a step closer to strategies for preventing the disease."

Dr. Travis and Ms Watts will continue examining the data from this study to confirm their findings. In the future, they also plan to home in on risk factors for the most aggressive types of prostate cancer.

Professor Hashim Ahmed, chair of NCRI's [prostate](#) group and Professor of Urology at Imperial College London, who was not involved in the research said: "These results are important because they show that there are at least some factors that influence [prostate cancer](#) risk that can potentially be altered. In the longer term, it could mean that we can give men better advice on how to take steps to reduce their own risk.

"This study also shows the importance of carrying out very large studies, which are only possible thanks to the thousands of men who agreed to take part."

Provided by National Cancer Research Institute

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