

Low testosterone levels linked to reduced risk of prostate cancer

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Micrograph showing prostatic acinar adenocarcinoma (the most common form of prostate cancer) Credit: Wikipedia, [CC BY-SA 3.0](#)

Men with unusually low amounts of testosterone in their blood are around 20% less likely to develop prostate cancer, according to new research presented at the National Cancer Research Institute (NCRI) Cancer Conference in Liverpool.

Scientists from the University of Oxford conducted the largest analysis

of hormones and prostate [cancer](#) risk to date. The study – funded by Cancer Research UK – looked at blood samples from around 19,000 men aged 34-76 years, collected between 1959 and 2004. Of these men 6,900 went on to develop prostate cancer.

The researchers divided the 19,000 men into ten groups – ranging from men with the lowest amount of testosterone in their blood to those with the highest, and compared their prostate cancer risk.

They found that men in the group with the lowest levels of testosterone were significantly less likely to develop prostate cancer compared to all other men. Yet interestingly, when men in this group do get prostate cancer, they are 65% more likely to develop an aggressive form of the disease compared to all other men. For the men in the remaining nine groups, testosterone was not associated with prostate cancer risk.

This is the first study to look at whether unusually low [testosterone levels](#) influence the risk of developing prostate cancer. The findings are important because scientists know very little about the risk factors for developing the disease, including the role a man's biology might play.

Prostate cancer needs testosterone to grow. Nearly all prostate cancers that spread have overactive testosterone receptors. Hormone therapy – the standard care for treatment of prostate cancer – blocks or lowers the amount of testosterone in the body.

This is the first population study to support the hypothesis that testosterone receptors on [prostate cells](#) quickly become saturated. It appears that once that level has been reached, further increases in testosterone do not increase cancer growth. This could explain why only men with the lowest amount of the hormone, which falls below the saturation point, have a reduced risk compared to men in every other group.

Professor Tim Key, co-author of the study from the University of Oxford, said: "This is an interesting biological finding that could help us understand how prostate cancer develops and progresses. Until now, we didn't have a clear idea of the role [testosterone](#) played in [prostate cancer risk](#). This is the first population study to support the theory that risk is lowered below a certain threshold of the hormone."

Professor Matt Seymour, the NCRI's clinical research director, said: "Hormones play a fundamental role in prostate function and cancer's development and progression. We know very little about the risk factors for prostate cancer, so this research raises some interesting questions for further research.

"In future, these results could be important in helping to devise an approach to reducing men's risk of developing the disease."

Professor Malcom Mason, Cancer Research UK's prostate cancer expert, said: "Testosterone's role in prostate cancer's development has been a hotly debated area of research, so it's great to see some strong evidence. This puts another piece of the jigsaw into place in terms of understanding the biology of what causes [prostate](#) cancer.

"In future, it's possible that this could help unravel ways to diagnose and treat fatal [prostate cancers](#) before they can do any harm, but that's very far down the line."

More information: Low circulating free testosterone is associated with reduced incidence of prostate cancer: A pooled analysis of individual participant data from 20 prospective studies.
abstracts.ncri.org.uk/abstract ... prospective-studies/

Provided by Cancer Research UK

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