



SexHealthMatters.org is brought to you by the Sexual Medicine Society of North America, Inc.

Testosterone and Immunity

Men with higher levels of testosterone might have weakened immune systems, at least in terms of the flu vaccine, according to researchers from the Stanford School of Medicine.

It's possible that testosterone could interfere with the immune response of a certain set of genes.

The research team worked with 53 women and 34 men of various ages who were participating in an ongoing research project. Every year since 2008, the group has given blood samples before and after having an annual flu vaccine. Scientists then analyze the blood samples.

For this particular study, researchers looked at the participants' antibody responses to the flu vaccine.

Antibodies are proteins that circulate in the blood. They work protect the body from infections caused by harmful substances, such as bacteria and viruses.

Flu vaccines are made up of inactive flu viruses. These viruses are dead, so they can't give someone the flu. However, the body still considers them harmful and builds up antibodies after vaccination.

Previous research has shown that women tend to have stronger antibody responses to bacterial, viral, fungal, and parasitic infections than men. Also, women's immune systems typically respond better to certain vaccines, including the flu vaccine.

In this study, the women generally had strong antibody responses to the flu vaccine. The men with lower testosterone levels had similar responses. However, the men with higher testosterone levels had weaker responses.

Why? The researchers suggested that high levels of testosterone can interact with a group of genes called Module 42. When this happens, the immune response can be weakened.

"This is the first study to show an explicit correlation between testosterone levels, gene expression and immune responsiveness in humans," said senior author Mark Davis, PhD. in a statement. Dr. Davis is a professor of microbiology and immunology at Stanford.

Visit [SexHealthMatters.org](http://www.sexhealthmatters.org) today!

Provide Sexual Health Education

Give your patients access by linking to [SexHealthMatters.org](http://www.sexhealthmatters.org) from your practice website: <http://www.sexhealthmatters.org/page/link-to-us>

Fan: [Facebook.com/SexHlthMatters](https://www.facebook.com/SexHlthMatters)

Follow: [Twitter.com/SexHlthMatters](https://twitter.com/SexHlthMatters)

Subscribe: [YouTube.com/SexHlthMatters](https://www.youtube.com/SexHlthMatters)

“It could be food for thought to all the testosterone-supplement takers out there,” he added.

The study was published online in December in the Proceedings of the National Academy of Sciences.

Resources

Centers for Disease Control and Prevention

“Key Facts About Seasonal Flu Vaccine”

(Page last updated: November 7, 2013)

<http://www.cdc.gov/flu/protect/keyfacts.htm>

MedlinePlus

“Antibody”

(Page last updated: February 3, 2014)

<http://www.nlm.nih.gov/medlineplus/ency/article/002223.htm>

“Influenza vaccine”

(Updated October 2, 2013)

<http://www.nlm.nih.gov/medlineplus/ency/article/002025.htm>

Proceedings of the National Academy of Sciences

Furman, David, et al.

“Systems analysis of sex differences reveals an immunosuppressive role for testosterone in the response to influenza vaccination”

(Full-text. January 14, 2014)

<http://www.pnas.org/content/111/2/869.full.pdf+html?sid=a8c5d88b-95cb-4718-a464-f1497b6837d6>

Scope (Stanford Medicine)

Goldman, Bruce

“In men, a high testosterone count can mean a low immune response”

(December 23, 2013)

<http://scopeblog.stanford.edu/2013/12/23/in-men-a-high-testosterone-count-can-mean-a-low-immune-response/>

SFGate.com

Lee, Stephanie M.

“High testosterone levels linked to reduced immunity”

(December 24, 2013)

<http://www.sfgate.com/default/article/High-testosterone-levels-linked-to-reduced-5091708.php>

Stanford School of Medicine

Goldman, Bruce

“In men, high testosterone can mean weakened immune response, study finds”

(News release. December 23, 2013)

<http://med.stanford.edu/ism/2013/december/testosterone.html>

U.S. News and World Report

Bidwell, Allie

“Weaker Immune Systems Make Men More Vulnerable to the Flu”

(December 23, 2013)

<http://www.usnews.com/news/articles/2013/12/23/weaker-immune-systems-make-men-more-vulnerable-to-the-flu>