

## Effects of low testosterone in young type 2 diabetics to be studied

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(PhysOrg.com) -- An endocrinologist in the University at Buffalo's School of Medicine and Biomedical Sciences has received a three-year \$400,000 Junior Faculty Award from the American Diabetes Society to study the effects of low testosterone levels in young men with type 2 diabetes.

Sandeep Dhindsa, MD, assistant professor in the UB Department of Medicine, coauthored a paper published in [Diabetes Care](#) in 2008 showing that more than 50 percent of men between 18 and 35 years old with type 2 diabetes had lower than normal [testosterone](#) levels, which could interfere with their ability to father children.

Expanding on these findings, Dhindsa will study further the effects of low testosterone in this age group and conduct a clinical trial on the effects of testosterone replacement or clomiphene treatment.

"Our proposed study will be the first prospective, randomized trial to comprehensively evaluate the effect of low testosterone on insulin sensitivity, body composition, inflammation and sperm production in young men with diabetes," says Dhindsa.

"Low testosterone levels can lead to low muscle mass, more fat mass, [insulin resistance](#), low sperm count and increased inflammation, which increases the risk of heart disease. This project will study these consequences in detail and investigate the possibility of reversing these symptoms with treatment.

"Information from this project will be useful in planning future studies that will evaluate the effect of treatment of low testosterone on mortality, heart disease and stroke," Dhindsa says.

The study will be conducted in 80 men with low testosterone and 40 men who have normal testosterone, all with type 2 diabetes. It will involve two different approaches. In one treatment arm, participants will receive testosterone injections for six months. Researchers will evaluate the effect of testosterone replacement on insulin sensitivity, [body composition](#), inflammation and diabetes control in these men after the treatment.

Because sperm production relies on natural testosterone production in the testis, and testosterone replacement can decrease spermatogenesis, participants in a second treatment arm, will receive an oral drug called clomiphene for six months, which can increase the body's own testosterone production and thus increases sperm production.

"Clomiphene can serve as a simple oral alternative treatment to testosterone replacement, especially for men who are interested in fertility," says Dhindsa.

Specifically, the study will assess the effects of low testosterone on [insulin sensitivity](#), the ability of the body to handle glucose, fat and muscle mass at specific areas of the body, expression of mediators of inflammation in the blood and semen quality

"We hope that this project will help us understand the state of low testosterone in young type 2 diabetic men who are in their peak fertility years, and give us insights into treatment of this condition," says Dhindsa. "With the rising prevalence of [type 2 diabetes](#) in the young, this project may have implications for public health."

Provided by University at Buffalo

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