

# Normalization of testosterone level after testosterone replacement therapy

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Patients with low testosterone levels who have then gone on to have testosterone replacement therapy (TRT) could be at lower risk of cardiovascular events such as heart attack or stroke, according to research published today in the *European Heart Journal*.

In the study, researchers from Kansas City VA Medical Centre in Kansas City, USA, examined the effect of TRT on [cardiovascular outcomes](#) by comparing incidences of [heart attack](#), stroke, and all-cause mortality among different sub-populations of treated and untreated patients. The study used the largest cohort of patients and the longest follow-up for TRT to date.

Data from 83,010 male veterans, all without history of [myocardial infarction](#) (MI) or stroke, who were treated between December 1999 and May 2014 was used to establish that only 63% of patients achieved normal testosterone levels after TRT. More importantly, the group who had normalized testosterone levels after TRT had significantly fewer deaths and [cardiovascular events](#) than those who did not. Dr Rajat S. Barua, the corresponding author of the paper and a cardiologist, said: "With such widespread and ever increasing use of TRT, there has been growing concern regarding its effect on mortality, as well as conflicting results. Our aim was to address the knowledge gap."

Dr Barua went on to say: "In this study of men, without previous history MI or stroke, with [low testosterone levels](#), normalization of testosterone levels using TRT is associated with lower mortality, fewer MIs, and

strokes. This is the first study to demonstrate that significant benefit is observed only if the dose is adequate to normalize the testosterone levels."

The paper stresses that more research, especially randomized controlled trials with long-term follow-up, would be needed to reach a definite conclusion on the risk of TRT on cardiovascular outcomes. Dr Barua added "Until then, there is a need for guideline-directed TRT with continuous active surveillance to maximize the benefits of TRT and to mitigate potential risks."

**More information:** 'Normalization of testosterone level is associate with reduced incidence of myocardial infarction and mortality in men' Rishi Sharma, Olurinde A. Oni, Kamal Gupta, Guoqing Chen, Mukut Sharma, Buddhadeb Dawn, Ram Sharma, Deepak Parashara, Virginia J. Savin, John A. Ambrose<sup>6</sup>, and Rajat S. Barua, *European Heart Journal*, DOI: [10.1093/eurheartj/ehv346](https://doi.org/10.1093/eurheartj/ehv346)

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