

## Men With Low Testosterone Have More Depression!

Shores MM, Sloan KL, Matsumoto AM, Mocerri VM, Felker B, Kivlahan DR. ***Increased incidence of diagnosed depressive illness in hypogonadal older men.*** Arch Gen Psychiatry. 2004 Feb;61(2):162-7.

.CONTEXT: Age-associated hypogonadism (testosterone deficit) occurs in 30% of men after the age of 55; it is associated with decreased muscle mass, bone mineral density, and libido, and with anorexia, fatigue, and irritability. Although some of these symptoms overlap with those of depression, the association between the 2 disorders is unclear.

OBJECTIVE: To determine if hypogonadal men have an increased incidence of depressive illness compared with eugonadal men.

DESIGN: Historical cohort study using computerized medical records, followed by a manual medical record review.

SETTING: Veterans Affairs Puget Sound Health Care System.

PARTICIPANTS: Two hundred seventy-eight men 45 years and older, without prior diagnosed depressive illness and with consistently normal or low testosterone levels (total testosterone level  $\leq 200$  ng/dL [ $\leq 6.94$  nmol/L]; or free testosterone level  $\leq 0.9$  ng/dL [ $\leq 0.03$  nmol/L]) at baseline and during a 2-year follow-up period.

MAIN OUTCOME MEASURES: Incidence of, and time to, a depression diagnosis.

RESULTS: The 2-year incidence of diagnosed depressive illness was 21.7% in hypogonadal men vs 7.1% in others ( $\chi^2(1) = 6.0, P = .01$ ). A Kaplan-Meier survival analysis showed a significant difference between hypogonadal and eugonadal men in time to diagnosed depression (log-rank test  $\chi^2(1) = 6.9, P = .008$ ). We used Cox proportional hazards regression models to examine the association of hypogonadism and time to depression diagnosis, adjusting for age, race, number of clinic visits, alcohol use disorders, prostate cancer, and overall medical comorbidity. The unadjusted hazard ratio for depression with hypogonadism was 3.5 (95% confidence interval, 1.3-9.4) ( $P = .01$ ). Controlling for all covariates, hypogonadism remained significantly associated with depression (adjusted hazard ratio, 4.2; 95% confidence interval, 1.5-12.0) ( $P = .008$ ).

CONCLUSIONS: Hypogonadal men showed an increased incidence of depressive illness and a shorter time to diagnosis of depression. Further prospective studies are needed to confirm these preliminary findings and to clarify the role of testosterone in the treatment of depressive illness in older men.