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### Testosterone supplementation and monitoring practices in HIV-infected men in a large multi-center US cohort: Results from CNICS

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**Background:** Testosterone supplementation in US men is increasing, often without proper indications and monitoring. HIV predisposes to hypogonadism, yet testosterone supplementation practices in HIV-infected (HIV<sup>+</sup>) men are largely unknown.

**Methods:** We conducted a cohort study of adult HIV<sup>+</sup> men engaged in care at 7 sites within the Centers for AIDS Research Network of Integrated Clinical Systems (CNICS) from 1996-2011, excluding men on testosterone at cohort entry. We used total and free testosterone data. We calculated testosterone supplementation incidence as number of events per follow-up time (person-years, py) from entry to initial supplementation, loss to follow-up, or death. We assessed factors associated with testosterone supplementation using chi-square and Cox regression.

**Results:** We studied 14,454 men with 75,173 py of follow-up. Mean age was 38y ( $\pm 9.4$ ), 50% were White, 69% were men who have sex with men (MSM), and 4% ever had AIDS wasting. 70% were on antiretroviral therapy (ART), with mean viral load of 4392 copies/ml and nadir CD4<sup>+</sup> T-lymphocyte cell count (CD4) of 286 cells/ $\mu$ l at entry. 1482 (10%) initiated testosterone supplementation at mean age of 45y ( $\pm 9.0$ ) and rate of 20/1,000 py. In bi variable comparisons, testosterone supplementation was significantly associated with age  $\geq 50$ y, MSM, AIDS wasting, nadir CD4 $<200$  cells/ $\mu$ l, ART, and White race (all  $p < 0.01$ ). In multivariable analyses, testosterone supplementation was independently associated with age (per decade; HR 1.29, 95% CL 1.21-1.38;  $p < 0.01$ ), AIDS wasting (HR 2.13, 95% CL 1.69-2.67;  $p < 0.01$ ), nadir CD4 (per 100 cells/ $\mu$ l; HR 0.96, 95% CL 0.94-0.99;  $p < 0.01$ ), ART (HR 1.21, 95% CL 1.05-1.40;  $p < 0.01$ ), and White race (HR 1.69, 95% CL 1.48-1.92;  $p < 0.01$ ). Pre-supplementation serum testosterone level was measured in 67% (992/1482), and there was deficiency (total testosterone  $\leq 300$  ng/dl) in 36% (360/992). Testosterone levels were measured within 6 months of initiating supplementation in 25% (377/1482). Of men over 40 y who initiated testosterone, 33% had a pre-supplementation prostate specific antigen (PSA) test, and 12% had a PSA test 6 months after initiation.

**Conclusions:** In a large, geographically diverse cohort of HIV<sup>+</sup> men, we observed a higher testosterone supplementation rate than that reported in a 2011 general US male population (7.57/1,000py). Pre-supplementation testosterone deficiency and post-supplementation monitoring occurred in only 36% and 25%, respectively, suggesting providers do not commonly follow Endocrine Society Clinical Practice Guidelines in HIV<sup>+</sup> men.

#### Biography

Adam B Murphy is an assistant professor in the Department of Urology at Northwestern University Feinberg School of Medicine. He is an academic urologist with a clinical and research focus on health disparities in prostate cancer. He also investigates the effect of HIV on prostate cancer risk and treatment disparities.

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