

# Low Testosterone & Testosterone Replacement Therapy for the Aging Male

## Testosterone & its Function as Men Age

- In the male body, testosterone is the most important sex hormone produced.<sup>1</sup> At puberty, it is the hormone that is primarily responsible for producing and maintaining the typical male attributes including:
  - Growth of facial and pubic hair
  - Deepening of the voice
  - Increase in muscle mass and strength
  - Growth in height<sup>1</sup>
- Testosterone helps maintain sex drive, fertility, male hair patterns, muscle mass and bone mass.<sup>1</sup>
- Testosterone production declines as men age.<sup>1</sup> Additionally, a protein called sex hormone binding globulin (SHBG) increases, which reduces the amount of bioavailable testosterone in the blood. Bioavailable testosterone is what is useful to tissues such as muscles.<sup>1</sup>

## Symptoms of Low Testosterone

- A decrease in testosterone production is sometimes referred to as andropause or “male menopause”<sup>2</sup> and is known medically as hypogonadism.
- Typical symptoms of low testosterone include:
  - Increased irritability or depression
  - Fatigue
  - Inability to concentrate
  - Reduced muscle mass and strength
  - Low sex drive and erectile dysfunction (ED)
  - Decreased bone density or osteoporosis<sup>2</sup>
  - Increased body fat<sup>3</sup>

## Getting Tested: Diagnosing Low Testosterone

- Low testosterone affects approximately 4 to 5 million American men. However, it is estimated that only 5 percent of affected men currently receive testosterone replacement therapy.<sup>4</sup>
- Studies have also shown that men who suffer from obesity, diabetes, or hypertension may be twice as likely to have low testosterone levels.<sup>5</sup>
- The normal range for total testosterone in men is generally 300 to 1,000 nanograms per deciliter (ng/dL), depending on the lab performing the test and the methodology used.<sup>1</sup>
- Testosterone levels vary from hour to hour, so the time at which blood is drawn to test for low testosterone can affect the results. The highest testosterone levels occur in the early morning hours.<sup>1</sup>
- The only accurate way to detect low testosterone is to have a test that measures the amount of testosterone in the blood.<sup>6</sup>

## Getting Treated: Testosterone Replacement Therapy (TRT)

- Sexual and mood problems are common complaints in men with low testosterone. Testosterone replacement therapy has been shown to improve these symptoms.<sup>1</sup>

- TRT is available in a variety of FDA-approved dosage forms including injections, gels and patches.<sup>1</sup> Oral forms of TRT are rarely prescribed because they can cause damage to the liver.<sup>7</sup> However, TRT can help provide the following benefits:
  - Improved mood
  - Increased muscle mass and strength
  - Increased sexual interest
  - Improved erectile function
  - Improved or sustained bone density<sup>1</sup>
  - Decreased body fat<sup>8</sup>
- Men with prostate or breast cancer should not use testosterone replacement therapy, and all men considering treatment should see their doctor for a prostate cancer exam.<sup>6</sup>

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<sup>1</sup> Cunningham, Glen; Matsumoto, Alvin; Swerdloff, Ronald. "A Patient's Guide to Low Testosterone 2003 Edition." The Hormone Foundation, The Endocrine Society. 2003. [http://www.hormone.org/pdf/patients\\_guide\\_low\\_testosterone.pdf](http://www.hormone.org/pdf/patients_guide_low_testosterone.pdf).

<sup>2</sup> "What Men Should Know About Low Testosterone." Time Out for Men's Health: A Program of the Men's Health Network. 2002. <http://www.menshealthnetwork.org/timeout/lowtestosterone.htm>.

<sup>3</sup> Dhindsa, S. "Frequent Occurrence of Hypogonadotropic Hypogonadism in Type 2 Diabetes." The Journal of Clinical Endocrinology & Metabolism (Nov. 2004): vol 89: pp 5462 – 5468.

<sup>4</sup> "Updates: Skin Patch Replaces Testosterone." FDA Consumer Magazine. Jan. – Feb. 1996. The Food & Drug Administration. [http://www.fda.gov/fdac/departs/196\\_upd.html](http://www.fda.gov/fdac/departs/196_upd.html).

<sup>5</sup> "Normal Hormone Balance." The Urology Channel. 15 June 2005. <http://www.urologychannel.com/testosteronedeficiency/index.shtml>.

<sup>6</sup> WebMD Medical Reference in collaboration with the Cleveland Clinic. "Testosterone Replacement Therapy." 2004. [http://www.webmd.com/content/article/57/66248.htm?z=1818\\_00000\\_0000\\_rl\\_08](http://www.webmd.com/content/article/57/66248.htm?z=1818_00000_0000_rl_08).

<sup>7</sup> "Aging Male Syndrome." U.S. Department of Health and Human Services. June 2005. <http://www.4woman.gov/mens/men.cfm?page=426&mtitle=Aging%20Male%20Syndrome>.

<sup>8</sup> "Long-Term Effects of Testim® 1% Testosterone Gel in Hypogonadal Men." Reviews in Urology. Vol 6 Suppl. 6, 2004.