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Testosterone Supplementation Options

The purpose of this handout is to explain your testosterone supplementation options. Please note that not all men choose or need testosterone supplementation. Also, remember that testosterone supplementation is the 8th step in achieving HormoneSynergy—these steps form the foundation for healthy aging. For a thorough explanation of the steps, please read my book, *HormoneSynergy: Optimal Aging & Hormone Balance*. Briefly, the steps are listed here:



The 8 Steps for Achieving HormoneSynergy:

1. Decrease stress
2. Eat a healthy diet & keep your blood sugar balanced
3. Exercise
4. Sleep well & enough
5. Avoid toxins and do a yearly detox
6. Maintain a healthy weight, including muscle and fat percentages
7. Take pharmaceutical-quality supplements: multi-vitamin & mineral, antioxidants including CoQ10, vitamin D, resveratrol, & fish oil
8. Replace lost hormones, including bioidentical testosterone (after weighing your individual risks & benefits)

About testosterone supplementation:

Humans are a unique species when it comes to the fact that we live much of our lives outside our reproductive years. Most animals in the wild do not live beyond their ability to reproduce—many don't even live beyond puberty. Our increased life expectancy is relatively recent—only men in the past few generations have had a life expectancy beyond 50 years. There is certainly much controversy about whether or not it's appropriate to restore testosterone to youthful levels as men age. Some men use testosterone for symptom management alone; some use testosterone to age optimally or lower the likelihood of developing chronic diseases such as dementia, heart disease, and diabetes.

Symptoms of Low or Suboptimal Testosterone Deficiency

The following symptoms and conditions may be associated with or caused by suboptimal or low testosterone levels:

- Rapid aging
- Fatigue or low energy
- Poor stamina
- Low motivation
- Decreased athletic or work performance
- Depression
- Memory problems

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- Poor focus or concentration
- Decreased mental clarity
- Irritability
- Weight gain, especially around the middle
- Decreased muscle mass and strength
- Low libido
- Erectile dysfunction
- Reduced intensity of orgasm
- Decreased sperm production
- Low volume of ejaculate
- Small or shrinking testicles
- Hot flashes, night sweats
- Loss of pubic or axillary hair
- Decreased beard growth
- Joint pain or stiffness
- Fibromyalgia
- Insulin resistance and diabetes
- Heart disease
- Congestive heart failure
- Alzheimer's disease
- Anemia
- Osteoporosis or low bone density

Testosterone Supplementation Options

Several testosterone delivery methods exist. Choosing a specific therapy depends on effectiveness, preference of a particular delivery system, side effects and cost. This handout will review pros and cons (seen in clinical trials and from my experience with patients), and approximate costs for different forms of testosterone supplementation. Testosterone options are separated into pharmaceutical medications (FDA-approved drugs, often covered by insurance companies), and compounded medications (individually prepared using FDA-approved testosterone, which may or may not be covered by insurance). Please note that costs are only approximate since pharmacies vary in what they charge.

Pharmaceuticals:

Injection. Testosterone injections given in a muscle every week or every two weeks have been shown to be safe and effective. Pros include excellent absorptions, inexpensive cost, and possible insurance coverage. Cons include fluctuations in symptom relief (a peak followed by a valley; note that this can usually be alleviated by performing injections weekly or twice per week, rather than 1-2 times per month), conversion to estrogen, and having to give yourself a shot (or see a nurse or doctor). Cost depends on dosage, and whether or not the injection is self-administered: approximately \$20 to \$50 per month.

Patch. The patch (Androderm[®]) contains testosterone in an alcohol matrix, and is applied each night to the back, abdomen, upper arm or thigh. Application site is rotated to maintain seven-day intervals between sites in order to lessen possibility of skin reactions. Pros are that the patch provides steady levels of testosterone for 24-hours and that many insurance companies cover the cost. Cons include probable skin irritation (seen in most men), low effectiveness (levels rarely reach the optimal range) and high cost without insurance coverage. Approximate cost is \$240-\$500 per month.

Gel. Testosterone gel (AndroGel[®], Testim[®]) is rubbed into the skin of upper arm or shoulder. Topical application of testosterone causes fewer skin reactions than patches. Showering or bathing must be avoided for several hours after application to ensure adequate absorption. Pros

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include less skin irritation than patches, more steady-state delivery than 1-2 times per month injections, providing testosterone that can reach optimal levels, and possible insurance coverage. Cons include possible transfer of testosterone to partners, other family members, or pets, possible decrease in effectiveness over time, lack of absorption in some men, and high cost without insurance coverage. Approximate cost is \$230 to \$500 per month.

Gum and cheek (buccal cavity). Striant[®], a tablet that softens into a gel-like substance, is placed above the top teeth, between the gum and upper lip. The testosterone in Striant is absorbed directly into the bloodstream, which is safer than oral (swallowed) testosterone. Pros include rapid absorption into the blood stream (bypassing the liver), steady delivery state (especially if used twice a day), and possible insurance coverage. Cons include gum irritation, bitter taste, possible swallowing of the tablet, and high cost if out-of-pocket. Approximate cost is \$250 per month.

Compounded Forms of Testosterone

Sublingual troches or lozenges. Troches are made by a compounding pharmacy and are dissolved between the cheek and gum, once or twice a day. Much of the testosterone in a troche is absorbed directly into the bloodstream; therefore, troches may not have the same risks to the liver as oral testosterone. Pros of sublingual troches include relatively rapid peak in testosterone and effectiveness at increasing testosterone levels to the optimal range. Cons include the fact that troches may not provide a steady level of testosterone (requiring twice per day use), increased conversion to estradiol similar to injections (because of the burst of testosterone that is delivered), and bitter taste (although most pharmacies can add flavor to mask the taste). Some of the testosterone in a troche will inevitably be swallowed so this mode of delivery is not recommended for men with liver problems. Cost is approximately \$50 to \$100 per month.

Oral. Oral testosterone supplementation is not recommended due to increased risk for cholesterol problems, blood clots, hepatitis, and liver cancer.

Topical gel or cream. Compounded testosterone is applied to the upper arm or shoulder once or twice per day. Pros include significantly lower cost than Androgel or Testim, less skin irritation than patches, and effectiveness for some men. Cons include possible transfer of testosterone to partners, other family members, or pets, poor absorption in some men, and possible decrease in effectiveness over time. Approximate cost is \$30 to \$100 per month.

Pellet implants. Testosterone pellets are implanted in the buttocks (occasionally in the lower abdomen) and last an average of 4-6 months. The procedure requires local anesthesia (an injection of lidocaine) and small (~5mm) incision. Pellets provide a steady delivery of testosterone and have been shown in clinical studies to be very effective at helping with symptoms. Pros include effectiveness, convenience, and no exposure to family members or pets. Cons include having to have a minor surgical procedure, bruising, possible extrusion (rare), and soreness for a few days to one week after insertion. Average monthly cost for testosterone pellets depends on the size and number of pellets used, and frequency of insertion, approximately \$40 to \$75 (not including cost of insertion).