

# Sub-Cutaneous Hormone Pellet Therapy - The Comprehensive Treatment to Optimize and Balance Hormones Using the BioTE® Method

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The BioTE® method of hormone replacement is a time tested method of hormone optimization that was created from the hundreds of studies performed on hundreds of thousands of patients worldwide to successfully optimize the hormone levels of women as they meander through the "seasons" of peri menopause and menopause and men as they traverse the "season" of andropause.

After monitoring outcomes for tens of thousands of men and women who have benefitted from this therapy, we have found results have been better than expected with more than 96% of patients satisfied and with side effects much less than that quoted in literature.

Hormone replacement therapy (HRT) is used to treat menopausal symptoms in women and andropause symptoms in males. Most women who take HRT for menopausal reasons are given an estrogen/progesterone/testosterone combination, except those who have had a hysterectomy, as they may not need progesterone. HRT has shown to reduce fatigue, improve sleep, improve libido in women and sexual performance in men, decrease muscle loss and reduce body fat (Staland 78, Thom 81, Brincat 84, and Davis 95). It also has been shown to reduce irritability, anxiety and depression. The symptoms of osteoarthritis and rheumatoid arthritis are significantly reduced. Long term, men and women will have reduced incidence of Alzheimer's disease, heart disease, and osteoporosis (Studd 90, Sands 97, Worboys 00). There are multiple studies showing the long term reduction in breast cancer in women using pellet therapy

(Notelovitz 04, Glaser 2013) 02) rather than the increase in the incidence of breast cancer that has been associated with oral, synthetic methyl-testosterone (Tamimi 06). Even after over 20 years of therapy with hormone implants, the risk of breast cancer is not increased (Gambrell 06).

Hormone replacement therapy by pellet implantation has been used with great success in the United States, Europe and Australia since 1938, and has been found to be superior to other methods of hormone delivery (Greenblatt 49, Mishnell 41, Stanczyk 88). It is not experimental. Pellets deliver consistent physiologic levels of hormones and avoid the fluctuations of hormone levels seen with other methods of delivery like pills, creams, gels and synthetic injections (Greenblatt 49, Thom 81, Stanczyk 88). Pellets are superior to oral and topical hormone therapy with respect to relief of menopausal symptoms (Staland 78, Cardoza 84).

Hormones delivered by the subcutaneous implants bypass the liver, do not affect clotting factors and do not increase the risk of thrombosis (Notelovitz 87).

Testosterone and estradiol delivered by pellet implantation, does not adversely affect blood pressure, glucose or liver functions (Burger 84, Barlow 86, Notelovitz 84, Stanczyk 88, Davis 95, Sands 97, Seed 00,

Cravioto 01). In fact, testosterone and estradiol improved lipid profiles by reducing cholesterol, reducing triglycerides, and increasing HDL cholesterol (Davis 05). This has positive benefits on the cardiovascular system.

Hormone replacement therapy with estradiol and testosterone implants is superior to oral and topical (both the patch and gel) hormone replacement therapy for bone density (Savvas 88, 92, Davis 95, Anderson 97). The pellets not only prevent bone loss but also actually increase bone density (Savvas 88, Studd 90, Garnett 91, Savvas 92, Naessen 93, Holland 94, Studd 94, Davis 95, and Anderson 97).

Testosterone replacement therapy in men with subcutaneous implants (pellets) has been shown to be extremely effective, convenient and safe (Handelsman 90, 92, 97, Kelleher 01, 04, Conway 88, Jockenhovall 96, Zacharin 03, Schubert 03, Dunning 04). The continuation rate continues to be 93% or above. This is excellent for long term compliance and exceeds the continuation seen with all other treatments for andropause.

The routine doses of testosterone delivered by pellet implantation in recent studies are between 1000 and 2400 mg in men. The pharmacokinetics and pharmacodynamics are well established showing that these doses deliver reproducible physiologic levels of testosterone for 4-6 months. A 6-9 mg daily production of testosterone is a 'physiologic' level produced by the testicle. Peak serum testosterone levels with the implants are usually seen at month one. Therapeutic testosterone levels at month one, are expected at the upper limits of normal for healthy young males (900-1100 ng/dL). These levels are necessary to protect the brain from Alzheimer's disease, diabetes, heart disease, prostate cancer, osteoporosis and all-cause mortality (Zitzman M. J Clin Endocrinology 2006). By month 4 to 5 testosterone levels drop to below 500-600 ng/dL at which time symptoms return and the pellets are reinserted. Each individual has their own reproducible levels where symptoms return.

Testosterone implants have been used in women in 5 continents for decades. Doses used in studies are as low as 50 mg and up to 225 mg (Glaser and Dimitrakakis Maturitas: 2004). Normal testosterone levels are not established in females (Fertility and Sterility 2002). Symptoms return when testosterone levels reach the upper end of endogenous ranges (Burger 85). End organ response to testosterone remains optimal (i.e., relief of depression, increase in bone density, relief from insomnia, relief from aches and pains, lessened anxiety, improved memory and concentration, increased energy, etc.) when testosterone levels at 4-6 weeks after pellet insertion are 150-250 ng/dL. Steady state is subsequently achieved at approximately half of these levels equaling 80-120 ng/dL, which is in the physiologic to slightly supra-physiologic range. It is of primary importance to titrate the dose to achieve symptom relief and minimize side effects, not to achieve some phantom blood level. As women age, testosterone

receptors become less responsive and more often than not, higher levels of testosterone are required to achieve the clinical outcome desired of symptom relief and long-term protection to the brain, breast, heart and bones. Some women require upwards of 300 ng/dl to achieve these results. Side effects from testosterone therapy in women are more of a nuisance and are reversible; there are no known long-term adverse effects in women, even at supra-physiologic levels.

Patient compliance becomes a non-issue using the pellet modality.

The method of sub-cutaneous hormone replacement therapy has been consistent throughout the literature. What was needed was a refinement of the pellets themselves. BioTE® Medical has established the "gold standard" in pellet preparation. We standardized the process and then used independent labs to assure proper density, purity, potency, sterility, dissolution rate, solubility and temperature tolerance; all of which significantly affect how well a patient responds to the therapy. This extensive safeguard allows us to supply pellets with only 3% tolerance for potency (i.e. our pellets when prescribed will nearly match that requested). This is in contrast to prescribed pills and creams which may have 10-30% tolerance. We use no fillers in our compounded pellets and as such purity testing is superior. No pellets are dispensed until sterility is certified and assured.

The literature is substantial supporting sub-cutaneous hormone pellet therapy as the superior method of hormone replacement in men and women. By using the BioTE® dosing site (which is based on 30 years of clinical experience), by using the highest quality pellets made in the United States, and by continuing to educate, supervise and monitor all BioTE® practitioners, we at BioTE® have made pellet therapy the superior method now scalable to practitioners and patients across the country. This has established the new standard of care for HRT.

BioTE® has created innovative and industry leading protocols and processes in properly balancing hormones using not only Estradiol, Testosterone, and Progesterone, but also natural support supplements like Vitamins A, D, &K, Iodine and DIM. The BioTE® Method also aggressively treats thyroid conditions, as those contribute greatly to overall hormone balance and the well-being of the patient. All serum levels are tracked pre and post insertion as well as annually.

BioTE® tracks and monitors nearly 100,000 procedures performed annually by our network of Certified Practitioners throughout the United States and Puerto Rico. Any and all complications that may arise are also tracked and include conditions such as breast cancer, stroke, heart attacks, DVTs, endometrial cancer and prostate cancer.

Finally, BioTE® recognizes there are many medical practitioners that are "experimenting with pellet therapy," and they have had varied (sometimes even disastrous) results. After all, the only thing between medicine and poison is the dose (Aspirin can be bad if taken improperly). However, BioTE® provides all of our practitioners extensive clinical and didactic training, as well as 24/7 dosing support thus ensuring the highest safety and efficacy and results for our patients.

For more info on BioTE® Medical please contact [info@biotemedical.com](mailto:info@biotemedical.com) or visit [www.biotemedical.com](http://www.biotemedical.com)

### Articles on Pellet Hormone Delivery System

1. Sub-Cutaneous Hormone Implants Have Been Used in Europe and Australia Since 1938
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  - i. Greenblatt: AJOG. 1949
3. All estrogen and estrogen/synthetic progestin Increase risk of Breast Cancer
  - a. Million Women Study
    - i. Lancet.2003
4. Estrogen and Testosterone does not increase risk of Breast Cancer
  - a. Nurses' Health Study
    - i. Colditz:NEJM.1995
5. Non Oral (Pellets) testosterone prevents stimulation of breast tissue and lowers risk of Breast Cancer
  - i. Colditz: Archives of Int Med.1996
6. Osteoporosis: Pellets increase bone density by 8.3 % per year vs. oral estrogen 1-2%increase per year
  - i. Studd: AJOG.1990
7. Improved Lipid Parameters: Decreased Cholesterol, Decrease TG, Increased HDL
  - i. Susan Davis: Menopause Vol 7
8. No increase in thrombotic activity
  - i. Smith: Br. Med Journal. 1993
9. Cardiovascular Benefits: Decrease death Rate by increasing testosterone
  - i. Circulation.2007
10. No increase in Prostate Cancer
  - i. J of Urology Dec 2003
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  - iii. Journal of National Cancer Institute Feb. 2008
11. More Reproducible estrogen blood levels than patch
  - i. Stancyk: AJOG.Vol 159
12. Hormones Ease Pain of Osteoarthritis
  - i. Arthritis and Rheumatism. 2010
13. Sustainability of symptom relief for 5 months
  - i. Cravioto: Menopause.2001