

Life Extension Magazine June 2014

As We See It

## Misguided Medicine

By William Faloon

**Massachusetts General Hospital** consistently ranks as one of the world's top medical facilities. It conducts the *largest* hospital-based research program in the United States. Case reports from **Massachusetts General Hospital** are routinely published in the prestigious *New England Journal of Medicine*.



William Faloon

Doctors at **Massachusetts General Hospital** observed that prescription sales of **testosterone** increased by **500%** in the United States between years **1993** and **2000** and continue to surge.<sup>1</sup> This prompted these doctors to study the effects of **testosterone** and **estrogen** on body composition, strength, and sexual function in **men**.<sup>2</sup>

The results of this study published in the *New England Journal of Medicine* confirm *Life Extension's* long-standing position that restoring testosterone **blood levels** to youthful range reduces body **fat**,<sup>3</sup> increases lean **muscle**,<sup>4</sup> improves **strength**,<sup>5</sup> and enhances **sexual function**.<sup>6</sup>

This study also helped corroborate the **adverse impact** when **estrogen** levels are out of range in **men**.



What troubles us, however, is the *medieval* manner in which this study at **Massachusetts General Hospital** was designed, why the doctors overdosed study subjects on an *estrogen-suppressing drug*, and why the media treated certain findings as a *discovery* when they're not new.

The men in this study who were overdosed on the **estrogen-suppressing** drug had their **estrogen** drop to dangerously low levels. This led the study doctors to proclaim that **men need estrogen** and **testosterone**.

We fear this study will cause physicians to avoid appropriately prescribing *estrogen-suppressing* drugs, which will result in tragedies as **estrogen** overload is a serious condition in many aging men (as is estrogen deficit).

"*Authorities*" are often viewed as reliable sources of expert information. This editorial exposes *errors* committed by mainstream doctors who attempted to study the effects of aggressive **testosterone** and **estrogen** modulation in males. These medical "*authorities*" appear to have made little effort in identifying clinically validated methods of *optimizing* hormone status in aging men.

**Aging** is accompanied by an imbalance of **hormones** required to sustain life.

As a man's **testosterone** declines, his risk of dying greatly **increases**.<sup>7-9</sup>

**Heart disease**,<sup>10-13</sup> **osteoporosis**,<sup>14,15</sup> and **muscle wasting**<sup>16,17</sup> are strongly linked to **testosterone** deficiency, as are **chronic inflammatory**<sup>18-20</sup> and **neurodegenerative** disorders.<sup>21-25</sup> Doctors are often surprised to learn that men with low

testosterone show an increased incidence of **prostate cancer**.<sup>26-30</sup>

Long before life prematurely ends, testosterone **deficit** can manifest in the form of psychological disturbances such as **depression**,<sup>23,31,32</sup> reduced **sexual** desire,<sup>33-35</sup> and a loss of **sense of well-being**.<sup>32,36</sup>

**Life Extension**<sup>®</sup> has long urged male members to have their **blood tested** for **testosterone** and to restore levels to **youthful ranges** if they are low.

## Estrogen Balance Critical To Aging Men

When **Life Extension** started offering comprehensive **blood test panels** back in **1996**, men did not understand why we were checking their **estrogen** levels. Back in those days, estrogen was viewed as a hormone of importance only to women.

We tested **estrogen** blood levels in **men** based on published data indicating that when estrogen levels are unbalanced, the risk of degenerative disease in aging men skyrockets.<sup>37-40</sup> Of concern to us **18 years** ago were reports showing that excess **estrogen** contributes to the development of **atherosclerosis**.<sup>41,42</sup> Human clinical studies conducted more than a decade later confirmed our suspicions. Men with even slightly elevated estrogen levels doubled their risk of **stroke** and had far higher incidences of **coronary artery** disease.<sup>43-45</sup>



Our early observations also revealed that men presenting with **benign prostate enlargement** or **prostate cancer** had higher blood estrogen levels (and often low testosterone).<sup>46-48</sup> Subsequent clinical and laboratory studies helped confirm our early observations.<sup>49-53</sup>

Insufficient estrogen, on the other hand, predisposes men to ailments such as **osteoporosis** and **bone fracture**.<sup>54,55</sup>

The fact that **99%** of men today have no idea what their blood **estrogen** levels are helps explain the epidemic of **age-related disease** that is bankrupting this nation's medical system.

## Higher Mortality In Men With Unbalanced Estrogen

Conventional doctors tend to ignore hard science even after it appears in their own medical journals.

A study published in the *Journal of the American Medical Association (JAMA)* measured blood **estradiol** (a dominant estrogen) in **501** men with chronic heart failure. Compared to men in the balanced estrogen quintile, men in the lowest estradiol quintile were **317%** more likely to die during a three-year follow-up, while men in the highest estradiol quintile were **133%** more likely to die.<sup>56</sup>

The men in the balanced quintile-with the fewest deaths-had serum **estradiol** levels between **21.80** and **30.11 pg/mL**. This is virtually the ideal range that **Life Extension**<sup>®</sup> has long recommended aging men strive for.

The men in the highest quintile who suffered **133%** increased death rates had serum estradiol levels above **37.39 pg/mL**. The lowest estradiol group that suffered a **317%** increased death rate had serum estradiol levels under **12.90 pg/mL**.

The dramatic increase in mortality in men with unbalanced estrogen (estradiol levels either too high or too low) is nothing short of astounding. It uncovered a gaping hole in conventional medical practice that is easily correctable.

## Massachusetts General Hospital Doctors Overlooked These Studies

The study I just described revealing the dangers of estrogen imbalance was published in the **May 13, 2009**, issue of the *Journal of the American Medical Association*. This *JAMA* study corroborated previous studies validating the critical importance for aging men to maintain their **estradiol** blood levels in *optimal* ranges.

Yet doctors at **Massachusetts General Hospital** seemed oblivious to this *JAMA* study when they **overdosed** their study subjects on the estrogen-suppressing drug "*anastrozole*." The brand name of this drug is **Arimidex**®.

Recall that when **estradiol** levels drop below **12.90 pg/mL**, death rates increased **317%** in heart-failure patients. Also recall that optimal **estradiol** blood levels are between **20-30 pg/mL**.

By overdosing the study subjects on the estrogen-suppressing drug, doctors at **Massachusetts General Hospital** caused **estradiol** blood levels to plummet to a frighteningly low range of **1.0 to 2.8 pg/mL**. This is **10 times** lower than the optimal **estradiol** threshold.

When the arm of the study that was **overdosed** on the estrogen-suppressing drug developed adverse effects, the doctors at **Massachusetts General Hospital** proclaimed that men indeed require **estrogen**, as if this were a surprising discovery.

The media picked up on this misinterpreted data and undermined the value of estrogen-suppressing drugs when *properly* prescribed to men suffering estrogen overload.

## How Much Of An Overdose?



There is no question that men require a certain amount of **estrogen**, as they do **testosterone**, to sustain life. Most estrogen in men is produced through the aromatization (conversion) of testosterone to estrogen in the body. This transformation occurs in response to the enzyme *aromatase*.

When men have high levels of *aromatase*, they convert too much testosterone into estrogen, which can cause them to be low on testosterone and high on estrogen. These men need a drug like **anastrozole** to inhibit the *aromatase enzyme*. The typical dose an aging man needs of anastrozole is **0.5 mg** twice per week. In some cases, a man may need **1.0 mg** of anastrozole twice a week.

In contrast, doctors at **Massachusetts General Hospital** gave men in the estrogen-suppressing group an outlandish dose of **7.0 mg** per week of anastrozole. This anastrozole dose is **seven times higher** than what has been shown to safely reduce elevated estradiol to optimal ranges in most aging men.

We at *Life Extension* have no idea why such a **high dose** of anastrozole would ever be given to men. Perhaps since it's sold in **1 mg** tablets, the physicians who designed the study thought the men should take one per day. This dose of **1 mg/day** is what female breast cancer patients sometimes take to suppress estrogen production in their bodies. It is an egregiously excessive dose for men to take, as evidenced by the suppression of estradiol in these study subjects to virtually non-existent levels (**1.0 to 2.8 pg/mL** of blood).

The estrogen-suppressing drug (anastrozole) was given to **every** man in the estrogen-suppressing arm of the study, regardless of what the man's estradiol **blood level** was. This meant many of these men were taking this potent drug when they did not even need it.

### HOW MEN NATURALLY MAKE ESTROGEN

Women synthesize most of their estrogen in their **ovaries** and other reproductive tissues.

Since men lack this female anatomy, they need to produce estrogen through a process involving the enzyme *aromatase*

that transforms **testosterone** into **estradiol**.

More than **80%** of circulating **estradiol** in men is derived from the *aromatization* of **testosterone**.<sup>77-79</sup> As serum **testosterone** levels decline, there can be a corresponding decline in serum **estradiol** levels.<sup>80,81</sup>

Aging men sometimes have too much *aromatase* activity, which causes their testosterone to convert to excess estradiol.<sup>82,83</sup> This results in *depletion* of vital testosterone while *spiking* estradiol to unsafe ranges.

Some men lack *aromatase* and suffer an estrogen deficit.<sup>84</sup> Other men produce so little endogenous testosterone that there is not enough to convert into estrogen, which causes low levels of both **free testosterone** and **estradiol**.<sup>2</sup>

Fortunately, no matter what the underlying cause, aging men can easily achieve *optimal* **testosterone** and **estradiol** serum levels using inexpensive **blood tests**.



## Unethical Use Of Testosterone-Suppressing Drug And Excess Radiation Exposure

The study conducted at **Massachusetts General Hospital** was performed in a way that raises medical ethical issues. The doctors took a group of healthy men aged **20-50** years with normal testosterone levels and initially gave them a powerful drug (**Zoladex**<sup>®</sup>) that drastically suppressed their testosterone.

We at *Life Extension* have long been aware of the negative impact this kind of hormone depletion creates. Prostate cancer patients who undergo "androgen deprivation" suffer rapid bone loss,<sup>57-60</sup> muscle atrophy,<sup>61-63</sup> abdominal fat gain,<sup>64,65</sup> and a host of other adverse changes that are not always reversible.

The long-term effect of testosterone deprivation was demonstrated later in this study at **Massachusetts General Hospital** when men whose testosterone was restored to the higher ranges did not fully recover **sexual function** lost by this intentional suppression of testosterone.

Instead of taking healthy men and depleting them of their life-sustaining hormones, the doctors could have chosen to study men over age 50 whose testosterone levels had already plummeted to ultra-low ranges. By studying younger men who were not testosterone deficient, the researchers lost an opportunity to directly apply the study outcomes to aging men who are most in need of testosterone restoration.

Another issue we have with this study was the continuous repeated use of **DXA** and **CT** body composition scans. While these scans enable precise **body fat** measurements,<sup>66</sup> they emit huge amounts of **radiation** that could create **cancers** later in life.<sup>67</sup>

The men in this study who were initially deprived of testosterone (and estrogen) may have suffered **bone loss** and **endothelial dysfunction**.<sup>68</sup> The tragic impact would be an increased risk of fracture and vascular disease later in life.

The pathological effects of even short-term androgen deprivation are variable, unpredictable, and can result in barbaric consequences. Repeated exposure to radiation emitting CT and DXA scans is not something that young healthy men should undergo when it is not medically necessary.

This is why I allege at the beginning of this article that this study at **Massachusetts General Hospital** was designed in a "



medieval" manner.

## Low Estradiol And Testosterone Predict Mortality In Aging Men

To further substantiate the lethal impact of hormone deficiency, another study published in **2009** evaluated **3,014** men aged **69-80** years. Serum levels of **testosterone** and **estradiol** were measured during a mean follow-up of **4.5** years.

This study showed that men with low **testosterone** had **65%** greater all-cause mortality, while men with low **estradiol** suffered **54%** more deaths.<sup>69</sup> Men low in **estradiol** and **testosterone** were almost twice as likely to die (a **96%** increase in mortality) compared to men in the optimal ranges.<sup>69</sup>

This large study of aged men corroborates prior published reports linking imbalances of **testosterone** and/or **estradiol** with greater incidences of degenerative disease and death.<sup>10,12,38-40,46,70-76</sup>

Why the authorities at **Massachusetts General Hospital** suppressed **estradiol** to dangerously low levels (**1.0** to **2.8 pg/mL**) in their study subjects is beyond our comprehension. It undermined the clinical value of the data they acquired.

### CRITICAL NEED FOR MEN TO ASSESS HORMONE STATUS

Despite the shortcomings of the study conducted at **Massachusetts General Hospital**, we are gratified that the doctors suggest a benefit in measuring *estradiol* blood levels in **men**. Here is a quote from their concluding statement:

*"Our finding that estrogens have a fundamental role in the regulation of body fat and sexual function, coupled with evidence from prior studies of the crucial role of estrogen in bone metabolism, indicates that estrogen deficiency is largely responsible for some of the key consequences of male hypogonadism and suggest that measuring estradiol might be helpful in assessing the risk of sexual dysfunction, bone loss, or fat accumulation in men with hypogonadism."*<sup>85</sup>

While *Life Extension* male members have had their estradiol **blood levels** checked since **1996**, it's refreshing that there is now an endorsement for more widespread use of this blood test published in the *New England Journal of Medicine*.



## Encouraging Findings From Massachusetts General Hospital Study

In the study conducted at **Massachusetts General Hospital**, groups of men were first given varying doses of the testosterone-suppressing drug (**Zoladex**<sup>®</sup>) for 12 weeks. They were then given various doses of topical **testosterone cream** for 16 weeks. One group received **testosterone cream** only, while the other group received **testosterone cream** plus the *estrogen-suppressing* drug (**anastrozole**).

The doctors used some sophisticated techniques to measure parameters such as **belly fat**, **strength**, **lean muscle**, and **sexual function**. As mentioned earlier, **DXA** and **CT scans** were performed to determine **lean mass** as well as subcutaneous **belly fat** and **visceral fat**. Validated methods were used to determine sexual function, physical function, vitality, strength, and overall health status of the men enrolled in the study.

In men given the proper dose of **testosterone cream**, significant **anti-aging** effects were clearly evident.

In the group of men whose blood levels of **total testosterone** increased to **805 ng/dL** and whose **estradiol** levels rose

nearest the optimal ranges (**20-30 pg/mL**), there were significant reductions in **belly fat** with improvements in **lean muscle**, **strength**, and **sexual function**. The **total testosterone** blood level (**805 ng/dL**) in men who attained these benefits falls squarely within the *optimal* range that *Life Extension* has advocated since **1996**.

These benefits did not occur in the group of men given **testosterone** plus **7 mg/week** of **anastrozole**. These men in fact suffered a decrease in **lean muscle** and increased **belly fat**. Compared to the men who achieved optimal testosterone and estradiol blood levels, the study subjects who were overdosed on **anastrozole** experienced decreased sexual function and strength.

Another important finding from this study was that the *only* group that achieved a significant **decrease in body fat** was men who achieved **total testosterone** blood levels averaging **805 ng/dL**. In fact, men who received a placebo or low-dose testosterone showed a substantial increase in subcutaneous **belly fat** compared to those who achieved *optimal* serum **total testosterone** levels.

*Life Extension* has long recommended that aging men maintain **total testosterone** at an optimal range of **700-900 ng/mL**. This **Massachusetts General Hospital** study helps confirm that the greatest benefits occur when **total testosterone** and **estradiol** levels are in ranges that can easily be achieved and monitored utilizing comprehensive **blood tests**.

#### SYMPTOMS OF LOW TESTOSTERONE

Substantial **quality-of-life improvements** occur in most men who properly restore their testosterone to youthful ranges. Common symptoms in men with low testosterone are:

- **Sexual problems such as decreased desire, erectile dysfunction, difficulty achieving orgasm, and reduced intensity of orgasm**
- **Low energy and increased fatigue**
- **Loss of motivation**
- **Depressed mood**
- **Loss of sense of well-being and vigor**



When low testosterone is corrected, men report improvements in some or all of the above symptoms. It is interesting to note that these symptoms of low testosterone are analogous to what one would expect with **normal aging**.

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## Misinterpretation Of The Massachusetts General Hospital Study

The doctors who conducted the study at **Massachusetts General Hospital** extolled their findings about the adverse effects seen in men prescribed the absurdly high dose of **anastrozole**.

They noted the increased percentage of **abdominal fat** as well as decreased **sexual desire** and **erectile function** seen in

their **estrogen-deficient** study subjects. These doctors extrapolated that since abdominal fat mass is associated with diabetes and metabolic syndrome, that the marked increase in **visceral fat** seen in men prescribed high-dose *anastrozole* could portend increases in cardiovascular disease.

The problem is that *estradiol* was artificially suppressed down to levels not seen in the real world. It thus is not surprising that these men with virtually no estrogen suffered unwanted side effects.

The doctors who performed this study concluded that men need sufficient levels of **estrogen**, as well as **testosterone**, to stay healthy. The media made it appear as if a major *discovery* had occurred, i.e. a newly found role for **estrogen** in males. This is not a new finding!

Scientists long ago identified men's biological requirements for estrogen, and published studies of aging men clearly demonstrate the **lethal impact** when **estradiol** levels are too **high** or too **low**.<sup>43,69</sup>

The implication from this study's findings was that doctors should use caution when prescribing *estrogen-suppressing* drugs to their male patients. Nowhere do they mention that the study subjects were grossly overdosed on **anastrozole** to the point that **estradiol** levels dropped to virtually **nonexistent levels**.

In today's sound bite environment, practicing physicians will be even less likely to prescribe the proper dose of **anastrozole** (**1 mg** a week) to men whose estradiol levels are over **30 pg/mL**. At *Life Extension*, we sometimes see aging men with estradiol levels over **60 pg/mL**. These men are in urgent need of *aromatase-inhibition* using the proper dose of **anastrozole**, yet their doctors might erroneously refuse to prescribe it because they will recall the misinterpretation of this study emanating from esteemed **Massachusetts General Hospital**.

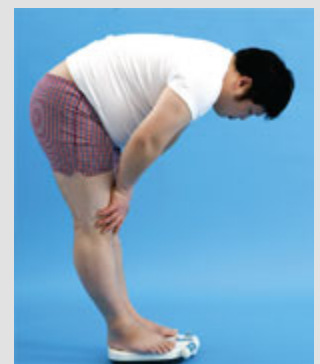
On a positive note, doctors at **Massachusetts General Hospital** stated in their concluding remarks that some of the deleterious effects of aging may be related to changes in **testosterone** and **estrogen** levels that "*may be preventable with appropriate replacement.*"

At least the medical authorities are recognizing that aging men do indeed require testosterone and estrogen.

#### SIGNS OF LOW TESTOSTERONE

"Symptoms" are something a person experiences, whereas "signs" are something that can be measured, like weight or blood pressure. Common signs of low testosterone include:

- **Loss of muscle mass and strength**
- **Accumulation of belly fat**
- **Low bone density**
- **Anemia**
- **Increased incidence of type II diabetes**



These signs of low testosterone are common characteristics of normal aging. Most men demonstrate improvements in these pathologic signs when testosterone levels are restored.

## Our Early Battles With Medical "Authorities"

When *Life Extension* first recommended that aging men restore their testosterone to youthful levels, a firestorm of criticism erupted.

The medical establishment proclaimed that by interfering with the natural decline in testosterone secretion, men risked all kinds of terrible fates. When *Life Extension* members asked their doctors for testosterone prescriptions, they ran into objections such as, "*I don't prescribe steroids,*" "*testosterone causes heart attacks,*" and "*testosterone causes prostate cancer.*"

We countered these criticisms with hundreds of scientific citations showing that testosterone deficiency is an underlying cause of many age-related diseases. We also demonstrated that none of the paranoid fears about **natural testosterone** had ever been substantiated.

## Low Testosterone Increases Prostate Cancer Risk

Fear of **prostate cancer** was the leading reason why aging men historically shied away from restoring their **testosterone**.

To dispel this concern, *Life Extension* analyzed every published study in the **1990s** and found there was no basis for asserting that testosterone causes prostate cancer.<sup>86-91</sup>

Our observations from the thousands of blood tests we perform each year for members corroborate this. What we found is that men with low testosterone appear to be more likely to contract prostate cancer.

In the book *Testosterone for Life*, authored by Harvard researcher Abraham Morgentaler, MD, the misleading notion about testosterone causing prostate cancer was exposed in meticulous detail.

Dr. Morgentaler dropped a bombshell on the medical establishment in **2008** showing that men with low testosterone levels have an increased percentage of prostate cancer-positive biopsies.<sup>92</sup> This and other findings have led to the record number of aging men being prescribed natural **testosterone** today.



## Critical Importance Of Blood Testing

Today's conventional physicians prescribe **blood tests** to check glucose, cholesterol, and triglycerides, but rarely check their male patients' **testosterone** and **estradiol** levels.

When looking at the higher **mortality** rates associated with **imbalances** of these critical hormones, it becomes strikingly apparent that a significant number of heart attacks, strokes, bone fractures, and other degenerative diseases are easily preventable.

One reason these hormone **blood tests** are not normally prescribed is their high retail cost, and the fact that insurance companies may not routinely pay for them.

As a member of the *Life Extension Foundation*<sup>®</sup>, you don't have to be victimized by conventional medical ignorance, high prices, or insurance company indifference.

### MALE AND FEMALE BLOOD TEST PANELS

Unlike commercial blood tests that evaluate only a few disease risk factors, Life Extension's **Male and Female Blood Test Panels** measure a wide range of blood markers that predispose people to age-related diseases. Just look at the **huge** number of parameters included in the **Male and Female Blood Test Panels**:



**MALE PANEL****Lipid Profile****Total Cholesterol****LDL** (low-density lipoprotein)**HDL** (high-density lipoprotein)**Triglycerides****Cardiac Markers****C-Reactive Protein** (high sensitivity)**Homocysteine****Hormones****Free and Total Testosterone****DHEA-S****Estradiol** (an estrogen)**TSH** (thyroid function)**Vitamin D (25-hydroxyvitamin D)****Metabolic Profile****Glucose****Kidney function tests:** creatinine, BUN, uric acid, BUN/creatinine ratio**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio**Hemoglobin A1c****Complete Blood Count (CBC)****Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW**White Blood Cell count including:** lymphocytes, monocytes, eosinophils, neutrophils, basophils**Platelet count****Cancer Marker****PSA (Prostate Specific Antigen)****FEMALE PANEL****Lipid Profile****Total Cholesterol****LDL** (low-density lipoprotein)**HDL** (high-density lipoprotein)**Triglycerides****Cardiac Markers****C-Reactive Protein** (high sensitivity)**Homocysteine****Hormones****Progesterone****DHEA-S****Free and Total Testosterone****Estradiol** (an estrogen)**TSH** (thyroid function)**Vitamin D (25-hydroxyvitamin D)****Metabolic Profile****Glucose****Kidney function tests:** creatinine, BUN, uric acid, BUN/creatinine ratio**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio**Hemoglobin A1c****Complete Blood Count (CBC)****Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW**White Blood Cell count including:** lymphocytes, monocytes, eosinophils, neutrophils, basophils**Platelet count**

## Blood Test Super Sale — March 31st through June 2, 2014.

To obtain these comprehensive **Male** or **Female Panels** at these **low prices**,  
call **1-800-208-3444** to order your requisition forms.

Then—at your convenience—you can visit one of the blood-drawing facilities provided by LabCorp in your area.  
(Restrictions apply in NY, NJ, RI, MA, MD, PA)

## Take Charge Of Your Health

An all-inclusive blood test panel that includes **total testosterone**, **free testosterone**, **estradiol**, and **PSA** can be very expensive at commercial labs. *Life Extension* members obtain these tests at a **huge discount**.

If your blood test result reveals imbalanced **testosterone** and/or **estradiol**, you are in a position to initiate immediate corrective action. Not only can restoring youthful hormone balance save your life, but men (and women) often experience an enhancement in their *quality of life* after their hormones are adjusted to optimal ranges.

A description of the **Male** and **Female Blood Test Panels** can be found above. As you'll readily see, these panels contain many important tests (such as **25-hydroxyvitamin D**, **homocysteine**, **C-reactive protein**, and **DHEA**) that mainstream doctors seldom check for.

When you order these tests, a requisition form is sent listing blood drawing stations in your local area. Appointments are usually not necessary, meaning you can have your blood drawn at your convenience. Results are mailed (or emailed) to you usually within five days.

### HOW TO SAFELY RESTORE YOUTHFUL TESTOSTERONE BALANCE

*Since most doctors still don't know how to properly prescribe testosterone, the following recipe makes it simple:*

1. Have your blood tested for **free testosterone**, **total testosterone**, **estradiol**, and **prostate-specific antigen (PSA)**, along with complete blood counts and blood chemistries. These blood tests are all included in the comprehensive **Male Panel Blood Test** that most members have performed annually.
2. If your blood test results reveal **free testosterone** below **20-25 pg/mL** (or **total testosterone** below **700 ng/mL**), find a doctor with experience in prescribing natural testosterone cream. *Life Extension* maintains lists of doctors who have knowledge about male hormone restoration. To locate a doctor in your area, log on to **lef.org/doctors**
3. To obtain **natural testosterone cream** at the lowest price, ask your doctor to write a prescription for **compounded natural testosterone cream**. An example of how a doctor can write a prescription for a two-month supply of natural testosterone cream appears above. The exact dose you need is based on your blood test results, body mass, and later may be based on your rate of absorption and internal metabolism. Your doctor will determine what dose of testosterone cream is most appropriate for you.
4. If your **estradiol** level is over **30 pg/mL**, your doctor may also prescribe a very low-dose aromatase-inhibiting drug such as **0.5 mg** of **Arimidex<sup>®</sup>** twice per week. This will usually bring estradiol into the optimal range of **20-30 pg/mL**.
5. Within 45 days, have your blood re-tested to verify proper testosterone dosing and rule out prostate cancer. These

Your Doctor's Name _____	DEA# _____
Your Doctor's Address _____	
Your Doctor's Phone Number _____	
Patient's Name _____	
Address _____	
<b>TESTOSTERONE 100 mg/mL pump</b> <i>Apply 1 mL (100 mg) daily or as directed</i> <i>FILL # 2-month supply (60 mL)</i>	
Refill _____	times _____
(Signature) _____	

blood tests also enable you to guard against excess red blood cell production and excess conversion of testosterone to estradiol, as well as to ensure that liver enzymes are in normal ranges.

**Life Extension** members have the advantage of requesting their blood to be drawn ahead of time so their doctor can properly prescribe them testosterone during their first visit. To order the Male Panel that includes all these blood tests and a lot more at a new lower price, call **1-800-208-3444**.

Compounded testosterone cream can be obtained for as little as \$40 for a 60-day supply. There are also non-prescription methods that restore free testosterone to youthful ranges in some men. To inquire about these, call a **Life Extension** Health Advisor at **1-800-226-2370**.

## Annual Blood Test Super Sale

**High prices** charged by commercial labs for **comprehensive blood testing** preclude most people from having them done. The tragic result is that aging humans needlessly suffer the ill effects of hormone imbalances.

**Life Extension** breaks down these price barriers by offering **Male** or **Female Blood Test Panels** at the lowest prices anywhere. Once a year, we discount the popular Male and Female Blood Test Panels to only **\$199**-far less than what commercial labs charge.

The **Blood Test Super Sale** ends **June 2, 2014**, so please order your requisition kit to take advantage of these extra discounted prices. You can have your blood drawn any time after receiving your requisition kit.

The results of your blood tests are rapidly sent directly to you. If you have any questions, you are welcome to call our health advisor helpline.

Annual **blood testing** is the single most effective method of detecting abnormalities before they lead to serious illness or death. A call to **1-800-208-3444** is all you have to do to order these comprehensive tests at **extra discounted prices**.

For longer life,



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