Testosterone and Other Male Hormones: What You Need to Know

“It seems certain that testosterone is a hormone whose time has finally come.”
– Malcolm Carruthers, M.D.

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Interestingly, it was my wife Carlin that first got me thinking about the importance of male hormones. I had watched her progress over the years as she went through the menopause passage. I tried to be supportive and I think I was most of the time. What would really throw me off were her sudden physical and emotional changes that didn’t seem to have anything to do with what was going on in the “real world.”

She would turn red and break out into a sweat for no apparent reason. We’d be driving home late after a movie. I’d want to turn the heater on to warm up the car. She wanted to open the window to “get some air circulating.” One minute she’d be happily “normal,” the next minute she’d be withdrawn and sullen. Weeks would go by when I couldn’t do anything right around her. Everything I did seemed to annoy her. Nearly every day she’d tell me, with barely concealed anger, that I’d left the dishes out. Or I hadn’t put the food in the refrigerator. Or I had put the food away, but I hadn’t wrapped the potatoes properly.

Even though I new intellectually that there was “a real world” changing inside her, I still had a difficult time accepting that her moods and behavior could be so influenced by her hormones. She never used her hormones as an excuse for her behavior. I think she was sensitive to all the times when women have been labeled and excluded from social life because they were “hormonal.”

Carlin began her “change of life” in her early forties and didn’t come through completely until her mid to late fifties. During that time it was her mood swings, lack of sexual desire, and irritability that bothered me the most. The change took much longer than I had ever thought and was difficult on both of us. It never occurred to me that I might be going through something similar.

Carlin is five and half years older than I am and she came through menopause while I was still at the height of the andropause. While she was in the midst of “the change” it was easy for me to blame our marital ups and downs, fights, and unhappy sex life on her. But when the same problems remained after she no longer had a role to play I had to begin to look at myself.

Carlin forced me to look at myself. At first she was soft and gentle about it. “Hey, hon, maybe you’re going through some kind of hormonal change too.” Sometimes, I’d roll my eyes and shake my head, as if to say, “Give me a break. You’re the one who has hormonal fluctuations, always have and probably always will.” At other times, I’d smile sweetly and tell her “Maybe you’re right dear.” Then, I’d go up to my office and try and forget the whole thing. But our hormones have a way of not letting us forget that they are there. Remember adolescence? I know if you’re like me, that’s a time I’d as soon forget. Remember the erections that would seem to pop up unbidden, just at the worst time?

I’d get called on to recite something in front of the class and have to keep my notebook placed strategically in front of my lap in order maintain some semblance of dignity. When the bell would ring to move to my next class I’d often have to sit for what seemed like an eternity pretending to gather my things while thinking of iceboxes and dead bodies in the hopes that my arousal would subside enough to allow me to walk.
Then there were the constant reminders from older boys who seemed bent on tormenting me. When I’d be trying to stay cool and collected talking to Nancy, some guy would stroll by and whisper loud enough for everyone to hear, “Hey, Diamond, I’m wise to the rise in your Levis.” And God forbid that I would ever get caught with a hand in my pants pocket. “What ya doin’, playin’ pocket pool?”

Maybe it’s our reluctance to recall the pain and shame of adolescence that keeps us from wanting to recognize the hormonal changes that occur as we age. The truth is that hormones are a critical part of what makes us human. They are present throughout our lives and often come to our attention during transition periods like adolescence and andropause.

I often describe andropause as like adolescence in reverse. During adolescence hormones are increasing and during andropause they are decreasing. In many ways the two stages of life are similar. Both involve tremendous hormonal shifts. During adolescence the shift is very rapid and dramatic. During andropause the shift is slower, yet the changes that occur can be just as difficult to deal with and just as troublesome.

**What Are Hormones and Why Should We Care?**

We now know much more about hormones and the male body. But for most men, hormones are still a mystery. As a pre-adolescent trying to figure out sexuality and the mating dance I was asked by one of my buddies, “Do you know how to make a hormone?”

“No,” I answered, not sure whether this was a serious question or some kind of joke. “Don’t pay her!” He laughed and I looked bewildered. It took me awhile to get the dual meaning of hormone.

In my biology class, I learned that hormones were important, though exactly how I wasn’t sure. Whatever they were I was pretty sure that they had to do with females. Guys don’t have to know how to make a hormone, but we’ve all got them, they are important, and we need to know something about them if we are going to get the most out of life.

Hormones are one of the body’s great communication networks (the others are the nervous and immune systems). A hormone molecule, released by one of about a dozen glands, travels through the blood until it reaches a cell with a receptor that it fits. Then, like a key in a lock, the molecule attaches to the receptor and sends a signal inside the cell. The signal may tell the cell to produce a certain protein or to multiply.

The word “hormone” was introduced in 1905 by a British physiologist, Professor Ernest Starling. It was derived from the Greek verb hormao, meaning “to put into quick motion, to excite, to arouse.”

Hormones are involved in just about every biological process: immune function, reproduction, growth, even controlling other hormones. They can work at astonishingly small concentrations -- in parts per billion or trillion. Humans have about 50 different known hormones.
Some hormones are relatively well known such as testosterone, estrogen, and progesterone. Others are less well known such as human growth hormone, melatonin, DHEA and thyroid hormone. Still others are known only to a few, such as oxytocin, vasopressin, and pregnenolone. Yet all are vitally important to the functioning of the human body.

Many scientists now believe that it is the loss of hormones through the years that is the key to many of the unpleasant symptoms of aging. They also feel, as we will see later in this chapter, that replacing missing hormones is the key to staying sexy and healthy through the years.

**Pheromones: The Essence of Male and Female Attraction**

Pheromones are substances that animals, including humans, give off into the air and are picked up by others of the same species. These olfactory essences are instrumental in bringing males and females together and influencing behaviors, including sexual attraction and readiness. Pheromones are very similar to hormones. Like hormones, pheromones are substances that are produced in the glands of the body. Like hormones, they travel some distance from their origins to act in the glands within the body. The difference between hormones and pheromones is this: Whereas hormones exert their effects within one body, pheromones exert their effects between two or more different bodies.

For some time now scientists have known that when women live in close proximity, such as in a college dormitories, their menstrual cycles become more similar as time goes on. Recently scientists have found that it is pheromones that bring about this synchronicity. It has been found that animals use pheromones to signal other animals of the opposite sex. For example, when a female dog is in heat, she emits pheromones as airborne chemicals that produce an odor that attracts male dogs to her for mating.

In 1986 Dr. Winnifred Cutler and her colleagues at the University of Pennsylvania, not only demonstrated that these essences were present in humans, but that they could be captured and preserved for use in the future. “My colleagues and I had demonstrated, said Cuttler, that it was possible to bottle the essences of men and women, freeze them for a year, then thaw them, apply them to the skin under the nose somewhat like perfume, and change the endocrine milieu of the women who received them.”

Men and women seem to have a natural essence that attracts us to each other. However, as we age our pheromones decrease along with our sensitivity to these vital substances. As we shall see later in this chapter, it is possible to replace our flagging pheromones as well as our decreasing hormones and keep our attractive juices flowing even as we age.

**Why Men Have “Female” Hormones and Women Have “Male” Hormones**

When we think of female hormones we often think of the estrogen and when we think of male hormones we often think of testosterone. But testosterone isn’t the only hormone that is of importance to men. Estrogen is also vital to male well being and happiness. We know that although men have more testosterone than women and women have more estrogen than men,
both hormones are present in males and females.

Estrogen in the male bloodstream may account for his desire, not just for sex, but for love and intimacy. Estrogen promotes receptivity and touching, qualities that both men and women value.

Many Americans remember the outpouring of response when Ann Landers asked whether women preferred hugging and cuddling “to the act itself.” Over twenty-thousand women responded. Most said they preferred loving touch to sexual intercourse.

It would have been interesting if Ann Landers could have gotten an honest response from men to the same question. Contrary to the myth that all men want is sex, most of us, particularly as we get older, want and need to touch and be touched. There are times we need sensual and emotional intimacy, even more than sexual connection.

When my wife, Carlin, was at the height of her menopause and we were the most distant, I greatly missed our sex lives. But even more than sex, I missed the loving touch that usually accompanied it.

**Action Option:**

Talk to a woman you know who is going through menopause. Ask her to tell you about the physical, emotional, and hormonal changes she has noticed. Talk about your own change of life. Each of you write out a few pages on your experiences and compare notes.

Just as women have considerably less testosterone than men through most of their lives, men have considerably less estrogen. Just as recent research has shown the importance of testosterone in the lives of women, we are beginning to recognize that estrogen (as well as other hormones) are important to the lives of men.

Women are beginning to discover that they not only lose estrogen as they age, but also experience decreasing levels of testosterone. Many women have been told that taking estrogen and progesterone will help them as they age. Until recently few were told about the value of testosterone.

Although the research on men and estrogen is much less extensive than the research on women and testosterone, it would not surprise me if we find that estrogen is an important hormone in the lives of men.

It makes little scientific sense to look at women as the ones who have hormonal shifts and for whom the decrease of estrogen at midlife is significant and to look at men as the ones who have psychological changes and for whom the decrease of testosterone at midlife is significant. In fact it doesn’t make much sense to call testosterone “the male hormone” and estrogen “the female hormone.” Men and women have both and need both.
Hormonal Shifts and Sexual Cycles: Men Have Them Too

Although most of us now accept that women and men have “male” and “female” hormones, it is more difficult to accept that men also have hormonal cycles. Yet, according to the endocrinologist Dr. Estelle Ramey, professor at Georgetown University Medical School, we most certainly do. “The evidence of them may be less dramatic,” says Dr. Ramey, “but the monthly changes are no less real.” But if men do have hormonal cycles, why don’t we recognize them or talk about them?

Dr. Ramey believes it is because men respond to their cycles in a way that is a function of their “culturally acquired self image. They deny them.” This denial is the main reason she feels the largely male scientific and medical communities have taken so long to study andropause. Men who are out of touch with our body rhythms, afraid that “cycles” are feminine and hence to be avoided at all costs, are unlikely to be aware of the subtle changes in our internal worlds. We tend to ignore the whisperings within until they get very loud.

Dr. Cutler is another modern researcher who has found a significant relationship between male sexuality and hormone changes. Like many women I have talked to, she began to recognize the hormonal patterns in men after studying shifts in women’s cycles. For over 30 years her research has addressed the nature of the reproductive system of men and women, the effects of male and female hormones, sexual and behavioral implications, and the changes in men and women as they age.

It has only been in recent years that of we have greatly expanded our understanding of the hormonal changes men experience throughout our lives and how they change as we age.

Like the rotation of the earth and ebb and flow of the tides, many of our hormones rise and fall within our bodies in cycles. A cycle might last a few minutes, a day, a week, a month, a season, a year, or a lifetime. There are also cycles within cycles.

We know for instance that a man’s testosterone will fluctuate four or five times an hour. There is also research that shows that men think about sex, on average, four or five times an hour. Is this a coincidence or hormonal fact of life? Some researchers believe that as we age our hormonal cycles change.

Action Option:

Find a quiet spot where you will not be disturbed. Write down the memories you have of your sexual desires during adolescence. Pay particular attention to surges of sexual desire that would occur during each hour, day, and month. Now write down your memories of your sexual ups and downs in your middle years, between 40 and 55. Compare the two times of life and notice how you feel about the changes you are experiencing now.

If a young man, for instance, has blood taken from his arm six times a day starting in the early morning and continuing every four hours thereafter, lab results will tend to show a rhythmic rise.
and fall of testosterone reflecting the time of the day.

When he goes to sleep, his hormone levels will start rising hour by hour until, by the time he wakes, his testosterone levels will be at their highest. By the early and late morning his levels are likely to level off and begin to decline. By late afternoon his testosterone will usually be at it’s lowest ebb.

Men’s hormones also cycle throughout the year. In studies conducted in the U.S., France, and Australia it was found that men secrete their highest levels of sex hormones in October and their lowest levels in April. There was a 16 percent increase in testosterone levels from April to October and a 22 percent decline from October to the next April. Interestingly, though Australia is in its springtime when France and the U.S. are in their autumn, men in all three parts of the world showed a similar pattern of peaks in October and valleys in April.

Men also have monthly hormonal cycles, though there are some interesting differences and similarities between women’s and men’s cycles. Women’s monthly cycles are more predictable and synchronous. Women, for instance, who live in close proximity find that their monthly cycles begin to align. Men’s cycles, seem to be more unpredictable and individual.

A study of twenty young men showed that the majority had a discernible cycle of testosterone with regularly repeating rises and falls, but each man who did show a cycle had a cycle unique to himself and different from the others.

Premenstrual syndrome (PMS), long associated with women, may be a fact of life for men as well. “One of the most misleading consequences of the popular focus on Premenstrual Syndrome,” says psychologist Carol Tavris, “is that it omits men as a comparison group.”

In one study, when men were given the same checklists of symptoms from a typical PMS questionnaire—omitting the female-specific symptoms, such as breast tenderness—men report having as many symptoms as women. We report having such symptoms as a decrease or increase of energy, irritability and other negative moods, back pain, sleeplessness, headaches, and confusion. We also report noticing these changes at certain times of the month. Psychologist Jessica McFarlane and her associates, who conducted the study, concludes that “women are not ‘moodier’ than the men; their moods were not less stable within a day or from day-to-day. Evidence of weekday mood cycles in both sexes suggests that treating emotional fluctuations as unhealthy symptoms, and assuming that only women usually manifest them, is misleading.”

**Action Option:**

If you have a partner or friend you live with, talk to them about what they observe about your feelings and behavior. See if they notice changes in mood, sexuality, or energy at different times of the month. Write down their observations. Write down what you notice about changes in yourself.
The final hormonal cycle that men must deal with, and one which is influenced by all the other shifts, involves the drop in hormone levels that occurs in mid-life. As we saw in another White Paper, this cycle is associated with the andropause. We are learning more and more about the way in which our changing hormone levels affect us physically, emotionally, and sexually.

After examining the research, interviewing hundreds of men, and observing my own changes hourly, daily, monthly, yearly, and at midlife, I am convinced that men experience significant hormonal changes throughout our lives. It is also clear to me that these changes greatly influence our health and well being.

Perhaps the proverbial battle of the sexes would produce fewer casualties if men and women recognized how similar they were and how much our physical and emotional health is influenced by our hormones.

**Hormone Replacement For Men?**

There are an increasing number of health care professionals that believe that humans are on the brink of finding the key to the “fountain of youth.” Many believe that we may soon be able to extend our healthy years beyond anything many of us have ever dreamed of achieving.

Welcome to what William Regelson, M.D., one of it’s major proponents, calls “The Superhormone Revolution.” “When taken in combinations tailored to your particular needs, the superhormones are the juggernaut against the aging process.” So what are these superhormones? Regelson believes there are eight of them: DHEA, Pregnenolone, Thyroid hormone, Human growth hormone, Melatonin, Estrogen, Progesterone, and Testosterone.

Proponents of this anti-aging medicine approach to health believe that aging itself is a disease that can be overcome. They believe that youthful resilience can be maintained throughout life and that hormone replacement therapy is the key to keeping our youthful appearance, abilities, and resiliency.

The desire to stay young forever is one that humans have sought for a long time. It seems now to be driven by the 76 million baby boomers and new technologies to offer the hope of eternal youth. I have found that it is us men who are particularly intrigued by notion of keeping our youthful vitality and sexuality as we age.

One of us was pictured on the September 16, 1996 cover of Newsweek magazine with a title: “Super-Hormone” Therapy: Can It Keep Men Young? Inside we see a picture of the young man we once were (or wish we were) at 25, with wavy blond hair, strong muscles, rock hard abs, and a sexy confident look in his eyes. We also see a middle-age balding guy with flabby arms and a bulging gut. He has a worried look on his face and stares longingly at the young man from his youth.

If the picture leaves any doubt about our decline, there is a “helpful” chart that details our loss of brain function, hair, vision, heart response, hearing, aerobic endurance and lung power, our lean...
bodies, muscle and bone strength, and of course erections and frequency of sex. Finally, there are lab-coated doctors who promise to make us more like the taught youth on the right and vanish the overweight blob on the right. There is a picture of Dr. Regelson standing in front of a tapestry of a huge transformative serpent. He has one hand on his hip, the other hand reaching up, a calm look in his eye, as if to say, “Well, buddy, it’s up to you. Which guy do you want to be?”

What the caption under his picture actually says is: “Time in a bottle: With the right chemical cocktail of super-hormones no one has to get old at all. It is possible to slow and even reverse the aging process.” Who in his right mind wouldn’t be interested in that? The truth is that if the super-hormones delivered on all their promises, we would all sign up to receive our youth-producing cocktail. Although proponents offer a wonderful view of the future of hormone therapy they rarely talk about the current state of the art or the possible downside of hormone treatments.

For instance, DHEA is untested in long-term clinical trials and strength and purity are not regulated. Melatonin is unregulated and largely untested. Grogginess or mild depression are reported. Both these powerful hormones can be gotten in most health food stores. I even found them being sold at my corner gas station. I don’t know about you, but I’m more than a little suspicious when I hear about the latest wonder drug that can do miraculous things for my body. I’m even more suspicious when I can purchase some from the clerk at my local fill-em-up-and-go gas station.

On the cover of a book called Grow Young with HGH by Dr. Ronald Klatz, President of the American Academy of Anti-Aging Medicine, we are told that HGH (Human Growth Hormone) will help us, “lose fat, build muscle, reverse the effects of aging, strengthen the immune system, lower our blood pressure and cholesterol, and improve sexual performance.” We are not told that there have not been long-term studies that demonstrate it’s value. Nor are we told that there are dangers including possible diabetes and enlarging bones and internal organs.

Although hormones do offer a promise for a positive future, I don’t believe that many of them have yet proven their efficacy. Though some of the recent findings on their value are provocative, I’m not convinced that taking these super-hormones will solve all our problems. We’d all like to be handsome, strong, vital and sexy in our twenties and keep it up into our 50s, 60s, 70s and beyond.

As I’ve already told you, hormonal health is only part of what we need. We need to focus as well on our physical, nutritional, mental, interpersonal, social, and spiritual aspects of health. Yet hormones are important. There is one hormone that is vital to men’s health that I believe has a long enough history of use to have proven it’s value. This hormone is testosterone.

I Want Testosterone

Henry is a 56 year-old man, recently married for the third time. He came to our clinic because he felt something was wrong and he was concerned he wouldn’t be able to keep up with his younger
wife. He was overweight, out of shape, drank too much and was depressed. He had recently retired from a high stress job and felt at loose ends. He had no idea what he wanted to do with the rest of his life. At first he didn’t want to talk about anything except testosterone. “I think it would help,” he said expectantly. “I’ve read good things about what it can do and I’d like to give it a try.”

I told him we weren’t a testosterone clinic, but a health clinic and would need to learn about the whole man so that we could work with him to come up with the right treatment for him. He was reluctant at first, but finally agreed to allow us to do our complete work-up.

We had Henry give us a full health history. We particularly looked for factors that might have caused early damage to his testes or caused them to function improperly. We asked about inflammations, undescended testes, and whether he had mumps. We also asked about vasectomy and other local traumas. Research has shown that these occurrences can cause later problems with healthy testosterone levels.

We then do a lifestyle and stress assessment study and talked with Henry about his depression and alcohol consumption and the stress he was feeling trying to keep up with a young wife. Next we did a complete physical exam with special attention on the heart and arteries, testicles and penis. When we asked Henry to lie on his side on the examination table so we could do the digital rectal examination he seemed surprised. “I’ve had that done many times and I always had to pull down my pants and bend over the table,” Henry told the doctor. “It was always uncomfortable and sometimes painful.” We explained that we felt that being examined on the table, lying on his side, was generally a better method for most men. It is usually more comfortable and less painful, though some men say they prefer it the other way. After the exam Henry was amazed and delighted. “Hey, Doc, that wasn’t bad at all. A heck of a lot more men would get examined if they knew they could do it like this. It really was painless and wasn’t even very uncomfortable.”

There were no abnormalities apparent from the digital exam and we did a PSA blood to confirm that there wasn’t any sign of cancer.

Finally, we did a detailed fasting blood profile which included a hormone profile, full biochemistry panels to check on liver and kidney functions. We checked for blood fats and sugar, as well as hematological measurements of the red and white blood cells. Everything looked fine including the total testosterone level, but his bio-available, or free testosterone, levels were low.

I told him I’d like to learn more about his eating patterns, what he was doing for exercise, and his drinking habits since they all had an effect on his overall health as well as what might be causing his symptoms. He seemed disappointed. “I know you’ll probably want me to change my lifestyle, but couldn’t I get started on the testosterone?”

Henry is like a lot of men who will deny for years that anything is changing in their lives or that they are having any problems and when they finally do wake up, they want the quick fix with the least need for any real change. Fortunately for Henry he was willing to explore
other areas than just his hormones.

Over time he changed his eating habits dramatically, cut down on his meat consumption and added more fruits and vegetables. He began walking every day and started a program of workouts at the gym. We found that there was a good deal of hidden conflict in his relationship, which finally came out as we talked about how things were going sexually. Although the couple had enough money, both were rather bored with life. We helped them explore their interests and Henry got involved in volunteer activities at the local high school.

We also began Henry on a regimen of testosterone replacement therapy. The total package of help seemed to do the trick. “I thought testosterone was all I needed,” Henry told me after our six-month check up. “But it was clear that there were other things that helped a lot. Changing my hormone levels seemed like a way to get things going fast, but it’s clear to me now that exercise, diet, counseling, and finding new interests and direction for my life were equally important. I feel like a new man.”

Although testosterone replacement therapy is not the only answer for of us who want to stay vigorous and healthy as we age, it can be an important piece of the puzzle. For too long we have thought of hormone replacement therapy as something that only women need consider. We know now that hormones are also important part of a man’s life.

Testosterone treatments are now, and will become, an increasingly significant part of a wellness program for many men as we age. It is important, therefore, that we learn more about this hormone that has gotten so much attention good and bad publicity over the years.

The 2000 Year Search For the Essence of Manhood: The Testosterone Story

“From the beginning of human record, priests, saints, medicine men, farmers and sultans had been demonstrating how clear-cut, sure and simple it was to take the vigor of animals and men away by removing their testicles,” wrote American journalist Paul de Kruif in 1945. Two thousand years ago, the Greek physician Pliny recommended eating animal testicles in order to promote sexual drive and interest. This practice is still popular in many countries including Spain where cooked bulls’ testicles are served as the delicacy known as cojones. Not coincidentally this is also the Spanish word for courage. Unfortunately, though testosterone is produced in the testes it is quickly sent throughout the body in the bloodstream and little is in the organ at any one time.

A German chemist, Professor Adolf Butenandt believed there must be a better way and kept working until he found it. He was able to devise a much easier and commercially more viable way of getting testosterone. It is essentially the same process that is used today.

Butenandt worked out the chemical structure of testosterone. He then produced it, as does the body, from cholesterol, it’s natural precursor. He sent his paper on the process and the structure to a noted German science journal on August 24, 1935.
Just one week later, a Swiss chemical journal received a paper from Leopold Ruzicka, a Yugoslavian chemist working for the Ciba pharmaceutical company in Zurich, announcing a patent on the method of production of testosterone from cholesterol. For this work, he and Butenandt received the Nobel Prize in 1939.

With these discoveries on testosterone the scientific world (or at least the male majority) were overjoyed. Various types of preparations and methods of administration were devised and thousands of men reported having improved health. Research on testosterone has had it’s ups and downs over the years, but now seems to be coming into it’s own.

**Recent Research on Testosterone**

“We think of testosterone as being the hormone of sexuality, but it is much more,” says John E. Morley, M.D., professor of Gerontology and Director of the Division of Geriatric Medicine at St. Louis University and an expert in treating testosterone deficiency.

Morley says that as a junior tennis player back in the 1960s, he was able to beat the number one women’s player in the world, Brazil’s Maria Bueno. “It’s not just a man’s bulk that makes the difference in sports,” he says. “It’s his coordinated bulk. It’s the thought processes that keep the body organized and in control. That’s very visual-spacial, and it’s very testosterone dependent.” Morley believes that it is this aspect of testosterone’s action that allows men to out perform women even in sports that don’t rely solely on strength.

Another researcher James Dabbs of Georgia State University describes the unexpected serenity he noticed in men with high testosterone levels. When in competitive situations or under pressure these men didn’t get shaken and seemed to thrive. Think of St. Louis Rams quarterback Kurt Warner or Joe Montana in his heyday for San Francisco 49ers calmly eluding tacklers in throwing the game-winning touchdown with seconds left in the contest. Picture Michael Jordan, with three men all over him, finding a crease in the defense, switching the ball from his right hand to his left, and putting in the winning shot. “Testosterone insulates these guys from distractions,” says Dabbs.

After my doctor prescribed testosterone for me, I noticed improvements in a number of areas of my life. My sexual interest and stamina increased, much to the delight of myself and my wife. I worried that the price I might have to pay was increased restlessness or irritability. Instead I found that I was more relaxed and serene, at the same time I had more energy and excitement for life.

**Testosterone and Andropause**

Although treatment for andropause or male menopause has gotten much more attention in recent years in Europe it is still not accepted in the U.S. Yet one of the first major studies on andropause, or the male climacteric as it was called, appeared in the prestigious Journal of the American Medical Association in 1944. Called, “The Male climacteric: it’s symptomology, diagnosis and treatment,’ it was written by two well-known American doctors, Carl G. Heller, M.D. and Gordon B. Myers, M.D.
Testosterone and Other Male Hormones

The symptoms which the authors attributed to the male climacteric were the same ones I described in Chapter 3: Fatigue, impaired memory and concentration, nervousness, depression, hot flushes, loss of libido and potency. Further, there was a significant improvement in symptoms when the men were given injections of testosterone. “Definite improvement in the symptomatology was noted by the end of the second week in all of the twenty cases treated,” Heller and Meyers reported. They also found that testosterone helped restore potency as well as libido.

Although doctors in the U.S. did not follow up on the initial work of Heller and Meyers, testosterone replacement therapy did not die out.

Beginning in the 1950s a Danish doctor, Jens Moller, began treating older men with testosterone. Not only did it help with emotional and sexual problems, it also helped with severe circulatory problems. Though often in conflict with the conservative medical establishment in Denmark, he treated patients until his death in 1989. Dr. Moller’s work is being continued by Dr. Michael Hansen.

It was Dr. Moller who first interested Dr. Malcolm Carruthers in doing studies on testosterone treatment in England. “From 1977 onwards I made many visits to his clinic in Copenhagen and saw for myself the dramatic benefits of testosterone treatment to the circulation,” Dr. Carruthers recalls. “I came to realize how testosterone had it’s effects and helped Dr. Moller to edit the books he was writing.”

At the present time Dr. Carruthers is one of the world’s leading experts on treating aging men with testosterone. Unlike many of the anti-aging gurus, Dr. Carruthers doesn’t think hormones are the answer to everything. “Testosterone Replacement Therapy is but one of a broad range of methods for preventing and treating the andropause. Often, however, it proves the key to the door to recovery and puts men in a more positive frame of mind to undertake the other necessary steps, such as managing stress, drinking less, losing weight and exercising.”

Treating the Andropause (Male Menopause) With Testosterone

Since Dr. Carruthers’ work in England has been well-documented and his findings easily verifiable, I would like to tell you more about the man and his work. I had corresponded with Dr. Carruthers for many years before I met him in Geneva at the World Congress on the Aging Male. Gray-haired, distinguished looking, and out-going, he seemed like a poster-boy for the health benefits of using testosterone to age well. But his scientific background is also distinguished.

A prize-winning anatomist at medical school, he found few of the answers in studying the structure of man alone. After several years’ clinical work in hospitals, general practice, and training as a specialist in Chemical Pathology, he became interested in the effects of stress in causing heart disease and other mind made disorders. He became known as an international authority in this field, lectured in many countries around the world and published over 100 scientific papers, presenting his ideas in several books including The Western Way of Death: Stress, Tension and Heart Disease; Real Health: The Ill Effects of Stress and their Prevention.
He is now a Consultant Andrologist, a specialist in men’s health, in his own clinic in London’s Harley Street. He is finding further evidence proving the reality of the andropause, and developing new ways of restoring vitality and virility to men experiencing these problems.

He has now completed a study of 2,000 men going through the andropause. He presented his findings in his book Maximising Manhood: Beating The Male Menopause. His research findings need to be understood by men and women going through this change of life, as well as the medical profession who must become partners in treating them.

Dr. Carruthers reports that he has found all the men in his study to have improved after taking testosterone. “Andropausal symptom scores all fell statistically significantly and total sexual activity, which includes both intercourse and masturbation, increased.”

It isn’t surprising that physicians are beginning to offer testosterone for men as they have for women. “Testosterone decline is at the core of Male Menopause (and a key element in female Menopause as well),” says Eugene R. Shippen, M.D., author of The Testosterone Syndrome. “Testosterone therapy has every prospect of becoming for men what estrogen therapy is now for millions of women.”

“Various studies on men with low testosterone levels have confirmed that testosterone replacement restores sex drive, erection, orgasm, ejaculation, and nocturnal erections,” Dr. Theresa Crenshaw reports. “The biggest effect is on sexual desire, as expressed by sexual thoughts and fantasies. Interestingly, studies also report a general improvement in mood.”

Aubrey Hill, M.D., author of The Testosterone Solution asks, “Is testosterone a ‘fountain of youth’? He answers his own question. “For many men, the answer is an emphatic yes. Testosterone replacement treatment can restore a man’s testosterone level, and with it his sexuality and sense of masculinity, to that of a much younger man.”

“Sexual dysfunction as well as virtually all the other symptoms of Male Menopause can be traced, at least in part, to an age-related decline in testosterone,” say Jonathan V. Wright, M.D., and Lane Lenard, Ph.D. authors of Maximize Your Vitality & Potency. “One of the brightest lights in the treatment of Male Menopause today is the use of testosterone replacement therapy.”

“Low testosterone is associated with decreased libido and erectile dysfunction,” says Dr. John Morley. “Low testosterone with aging is also responsible for a decline in cognition, strength, and bone density. Replacing testosterone can help reverse these symptoms.” Morley also notes that “testosterone replacement may have positive effects on cardiovascular disease in older males.”

“Testosterone supplementation for normal, healthy older men might some day rival that of estrogen for women,” says Adrian Dobs, M.D., Associate Professor of Medicine and Director of the Endocrinology and Metabolism Clinical Studies unit at Johns Hopkins.

**Is Testosterone Therapy Safe?**

There is great concern among researchers, clinicians, as well as men (and women) who may consider taking testosterone about safety concerns. Dr. Carruthers, who has probably treated more men than any other doctor in the world believes that testosterone is safe when properly administered and under the direction of a physician trained in this area of medicine.
This is a key point. As I said in the last chapter, too many people think that if hormones are natural they must be safe and therefore professional supervision is unnecessary. I’m continually asked by men who know I specialize in treating men with testosterone if they can get it “over the counter.” I tell them, unlike DHEA and melatonin, testosterone cannot be obtained without a doctor’s prescription. But even if it could, why would you want to take a powerful hormone without supervision from a professional who knows about the benefits as well as the drawbacks. In treating thousands of men Dr. Carruthers concluded, “Unpleasant side-effects were minimal, and limited to mild gastric irritation in a few patients. “On the safety side, blood pressures were unchanged or even fell slightly in the treatment group after six months,” Dr. Carruthers concluded. “There were no adverse changes in blood fat patterns, glucose, liver function tests or any part of the detailed blood profile.”

**Doesn’t Testosterone Cause Prostate Enlargement or Even Cancer?**

Though there are concerns from some doctors that testosterone may cause an increase in prostate cancer, this did not seem to be the case in Dr. Carruthers findings and those by many other physicians world-wide. Though it has been shown that testosterone will cause an existing cancer to grow more rapidly, there does not seem to be evidence to support the concern that testosterone will cause a cancer. “The early warning sign for prostate cancer, the prostate specific antigen (PSA), did not change at repeated tests up to five years,” Dr. Carruthers found. “There were no signs of enlargement of the prostate clinically or on ultrasound scanning and no tumors developed.”

In addition to his own studies Dr. Carruthers has drawn on world-wide research to conclude that testosterone is safe. “Testosterone treatment has been used in a multitude of studies right round the world, often in much higher doses then those used to treat the Andropause without any convincing evidence of it causing either benign enlargement or cancer as established from a literature search,” says Dr. Carruthers.

Studies carried out in Amsterdam with one oral preparation of testosterone, Andriol, have not shown any adverse effects in serial tests in patients treated for over 20 years. The WHO multicenter trials of testosterone in young fit men for a year or two have not shown any problems.

Dr. Jens Moller, the Danish physician I mentioned earlier, gave very high doses of testosterone to over 3,000 men with circulatory disease over a thirty year period, without prostate problems developing. Research on testosterone replacement therapy continues around the world. Most believe there is great potential for good, but all want to be sure that we know as much as we can about potential risks. At present, the major researchers I have met believe that testosterone replacement therapy along with other life-style supports is helpful to many men as they age.

For Men Considering Testosterone Replacement Therapy: What You Need to Know

I noted some of the main symptoms of andropause in chapter 3. Some of those signs overlap with the signs of testosterone deficiency.
Here is a clinical questionnaire developed by Dr. Carruthers.

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Slight</th>
<th>Medium</th>
<th>Severe</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fatigue, tiredness, loss of energy</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
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<td>2</td>
<td>Depression, low or negative mood</td>
<td>_____</td>
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<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>3</td>
<td>Irritability, anger, or bad temper</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>4</td>
<td>Anxiety or nervousness</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
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<td>5</td>
<td>Loss of memory or concentration</td>
<td>_____</td>
<td>_____</td>
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<tr>
<td>6</td>
<td>Relationship problems with partner</td>
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<td>_____</td>
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<tr>
<td>7</td>
<td>Loss of sex drive or libido</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>8</td>
<td>Erection or potency problems</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>9</td>
<td>Dry skin on face or hands</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
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<td>10</td>
<td>Excessive sweating day or night</td>
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<td>11</td>
<td>Backache, joint pains or stiffness</td>
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<td>_____</td>
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<td>_____</td>
</tr>
<tr>
<td>12</td>
<td>Heavy drinking, past or present</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>13</td>
<td>Loss of fitness</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>14</td>
<td>Feeling over-stressed</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>15</td>
<td>The age you feel</td>
<td>30s</td>
<td>40s</td>
<td>50s</td>
<td>60s</td>
</tr>
</tbody>
</table>

Total checks
Multiply checks in each column by 0 1 2 3 4

If there have been adult mumps, orchitis or other testicular problems, a prostate operation or inflammation, persistent urinary infection or vasectomy, each adds four points to the total scores.

Total Score ______

Testosterone deficiency rating:
0-9 unlikely, 10-19 possible, 20-29 probable, 30-39 definite, 40+ advanced

There is more information about interpreting the results of Dr. Carruthers’ questionnaire on his web site. You can get the address by looking up The E-Medicine Andro Screen Center in the resource section at the end of the book.

1. Is your free or bio-available testosterone level low?

It would be nice if there was a simple way to measure low testosterone levels. For years many doctors have gotten lab results that showed total testosterone was within normal limits and concluded that symptoms could not be the result of low testosterone. Now we know that we need more sensitive measures.

One of the main reasons that andropause has often gone undiagnosed is that unlike female menopause, where there is a clear and easily measurable precipitous drop in estrogen levels, it is difficult to show a similar drop in men who may have all the symptoms of testosterone deficiency.
To understand why a more sophisticated measure is needed, we need to delve a bit more deeply into the mechanisms of testosterone effects in the male body. The small, but vital amounts of testosterone produced in the testes is quickly swept away in the blood stream and carried to all parts of the body. That’s why early attempts to get measurable quantities of testosterone by harvesting the testicles of animals yielded such meager results.

Most of the testosterone that circulates in the blood stream is bound to a special carrier protein called sex hormone binding globulin (SHBG). The more SHBG there is, the less free, active, “bio-available” testosterone is able to get out of the blood into the cells to do it’s job. As we age, testosterone drops and SHBG increases. Although total testosterone may drop only slightly up to age 70, free testosterone drops more rapidly. In Dr. Carruther’s study he found that only 13% of the men showing symptoms of andropause had abnormally low levels of total testosterone, but 75% showed low levels of free testosterone.

It’s crucial for men to know if their free testosterone level is low. This can be measured directly by some labs. It can also be gotten by taking the total testosterone and dividing by the SHBG level and multiplying by 100. This is called by Dr. Carruthers the “free androgen index.” “It is usually between 70 and 100%,” says Dr. Carruthers. “It is when the free androgen index falls below 50% that symptoms usually appear.”

To complicate the picture even more, there is a wide variation of normal testosterone levels between different men. Its way we recommend that men have their free testosterone levels checked on a regular basis beginning at age 40 or earlier if symptoms are present. If symptoms develop we can then look at how their testosterone levels have changed over time, not just a single reading.

2. Are there other possible causes for your symptoms?

As I said in previous chapters, the andropause is not just the result of hormonal changes. There are physical, dietary, psychological, interpersonal, social, and spiritual aspects. We explore all these areas before deciding where it is most appropriate to intervene.

For instance a number of the symptoms associated with low testosterone such as loss of libido, decrease in energy, worry and anxiety are also indicators of a period of spiritual questioning. This is a time to examine our lives, to come to peace with the past and to ask ourselves what we have yet to do in the future. It is a time where we are moving away from reliance on our physicality and learning more about our spirituality.

At our clinic all men are given a complete medical work-up including a full health history. We check on other diseases a person may have including heart disease and diabetes as well as medications that a man may be taking. We know, for instance, that many diseases as well as the medications to treat them, can contribute to erectile dysfunctions.

We do a complete examination for possible depression. Depression as well as the medications to treat it, are also implicated in erectile dysfunction.
**Testosterone and Other Male Hormones**

We do a complete prostate examination including blood tests to measure prostate specific antigen and a digital rectal examination of the prostate to rule out serious prostate enlargement or prostate cancer. Finally, we do a lifestyle and stress assessment test.

Even if a man has low testosterone it may be less intrusive, less expensive, and more effective to deal with other causes of his symptoms first. For instance, we often see men who come to the clinic with many of the symptoms listed above. After a complete evaluation we might find that the man was suffering from depression. It might make more sense to get him stabilized on an anti-depressant before giving him testosterone.

We also talk with a man about issues of purpose and meaning. We want to acknowledge that he is not just a physical being, but also a spiritual being. We explore the ways in which the physical, emotional, and spiritual aspects of life are related.

3. Are there reasons you should not use testosterone?

It may be determined that your symptoms are being caused by testosterone deficiency, but it may not be wise to prescribe testosterone. Some men have low testosterone as a result of problems in the hypothalamus or pituitary glands. If this is the case these brain problems should be treated first. If a man has a mild cases of enlarged prostate, testosterone can still be prescribed. But if there are advanced obstructive symptoms, it should not.

If there is any indication of possible prostate cancer, it should not be prescribed. Nor should it be prescribed for men who have breast cancer. If a man has sleep apnea, this condition should be treated before testosterone therapy is considered.

4. Who should decide if testosterone replacement therapy is right for you?

Ultimately each man must decide for himself after weighing the benefits and risks and talking things over with a competent doctor trained in this area of health care. No one should take testosterone or any other medication or supplement without consulting a professional trained in the field. Don’t assume that if it’s available, it must be safe. Don’t assume if it’s safe for someone else, it will be safe for you. Nor should you simply rely on the professional to give you what they think you need. This is your body and your life. You need to find health professionals who will work together with you.

5. If testosterone is recommended what type should you use?

Testosterone can be given in the form of injections, pills, pellets, and through the skin in the form of patches, creams, and gels. Different preparations have different advantages and drawbacks. Shots, for instance can last a week or two, but may be painful and give a high dose at first, then a drop at the end. Patches give a sustained dose, but may irritate the skin. The new gel, which has recently been released by Unimed pharmaceuticals, goes right into the skin, but needs to be taken each day.
Testosterone and Other Male Hormones

There is also disagreement about the benefits of using “natural” testosterone versus a synthetic preparation. (This same controversy is present in the use of female hormone replacement therapies.) Contrary to what some people are told, testosterone does not come from Spanish bulls’ testicles extracted at the height of the mating season. All testosterone now used everywhere in the world is made from cholesterol, the same raw material the body uses to produce it.

Natural testosterone is made to be the exact chemical structure as testosterone in the body. The synthetic testosterone esters (testosterone enanthate, testosterone propionate, and testosterone cypionate), are modified to make them more active or longer-lasting. Since natural testosterone can not be patented, changing the structures also allows pharmaceutical companies to patent the new product.

“For restoring sexuality and the diverse aspects of men’s health known to deteriorate with age,” says Jonathan Wright, M.D, “natural testosterone, (and other natural androgens), as well as specific vitamins, amino acids, and herbal and botanical products are demonstrably more effective and safer in the human body than any synthetic ‘hormones’ and pharmaceutical drugs.”

6. Once a therapeutic program has been decided upon how often should you follow-up?

After three months there should be an assessment to check the therapeutic response to the program. A complete prostate exam should be repeated and if there are any abnormal signs testosterone should be discontinued.

After nine months therapeutic response and prostate exam should be repeated and blood work should be done again.

If all indications are positive you should come back every 6 months for evaluations to be sure no problems arise and to add more supports to the program as needed. You need to understand that taking testosterone is a long-term commitment. Once you begin you may need to continue for the rest of your life to keep receiving the positive effects.

Testosterone Replacement Therapy (TRT) Pros

For men with a known testosterone deficiency, TRT may

- Improve energy and strength
- Increase bone density
- Enhance lean body mass
- Decrease body fat
- Improve mood
- Protect heart
- Revive interest in sex
- Fight Depression
Testosterone Replacement Therapy (TRT) Cons

- Condition and treatment are not fully understood
- Most general practitioners are not familiar with use
- Data on long-term effects is sparse and not widely available
- Treatment may lower good (HDL) and bad (LDL) cholesterol, so patients with heart disease should be monitored closely
- Can increase fluid retention
- Can increase tumor growth in patients with breast or prostate cancer

What We Know TRT Can Do

Testosterone is not the fountain of youth as some claim. It won’t prevent or smooth out wrinkles, or keep your hair from falling out or turning gray, or turn an angry withdrawn man into a loving partner.

However there is solid evidence that TRT can:

- Stabilize or increase bone density
- Improve energy and mood
- Enhance body composition by increasing muscle strength and reducing fat tissue
- Maintain or restore sexual desire and performance.

What We Still Need to Learn

Good research of testosterone replacement therapy is still being conducted and results are still coming in. We are about where research on women and hormone replacement was 30 years ago. “We’re a lot further along than we were five years ago when we weren’t even sure if testosterone levels decreased with age,” says Lisa Tennover, M.D. one of the world’s foremost researchers on TRT. “However, we need a lot more data before we really understand the benefits and risks of testosterone replacement therapy.

While short-term data are encouraging and the few long-term experiences of clinicians have produced positive results, we still need large-scale, multi-center clinical trials to give us the data we need. With world-wide interest in men and aging and with a number of large pharmaceutical companies moving into the field, these kind of trials are likely to occur in the near future. However, results take time to come in. What is a man to do in the mean time?

What Men Can Do Now

- Know your testosterone level. The sooner you check it out, the sooner you can establish your healthy baseline level
- Maintain a healthy lifestyle. TRT is not a magic cure for years of unhealthy living.
• If you suspect you have low testosterone levels, check it out with your doctor. You may have to educate your doctor or find a specialist, such as an endocrinologist, that can work with you.

Whether or not you decide to take testosterone or any other hormones staying physically fit will serve you well. There is increasing evidence that staying physically active and keeping your weight within normal limits can actually help keep your testosterone levels from falling so rapidly as we age.