

THE HORMONE HANDBOOK

*Optimizing Your Health Through
Bioidentical Hormones*

GREG BRANNON, M.D., FACOG

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DEDICATION

*First and foremost,
to my best friend and the biggest supporter of my life,
my wife, Jody.*

I also want to dedicate this book to future knowledge-seekers.

*Remember: **Knowledge is power!***

Don't be afraid to question everything.

*May this book cause you to study more deeply,
research more thoroughly, and push harder for the truth.*

Liberty always requires responsibility.

FOREWORD

BY CHARLES RIZZUTO, M.D.

As an anesthesiologist, I am an expert in human physiology and the pharmaceuticals available to modern medicine. I safely navigate patients through complex procedures, keeping their bodies in perfect homeostasis for the duration of the surgery. I care for patients with a wide range of medical conditions. Their health is affected by their lifestyle, genetics, environmental exposures, and the process of aging.

Dr. Greg Brannon is the Medical Director at Optimal Bio in Cary, North Carolina and has recently opened several other clinics in North Carolina, as well. As an expert in his field, Dr. Brannon maintains that many of the common changes we see as humans age are not normal. Those changes are mostly attributed to decreasing levels of hormones.

Dr. Brannon, a dear friend of mine for over thirty years, explains clearly how these changes occur in both men and women. As an OB-GYN for more than twenty-five years, he is an expert in the hormonal changes that occur throughout one's lifetime. Dr. Brannon graduated from the University of

Southern California in 1982. He went on to graduate from The University of Health and Science Chicago Medical School in 1988 and completed his residency in OB-GYN at the University of Southern California Women's Hospital in 1992. He served as a Clinical Assistant Professor at the University of North Carolina School of Medicine and has been in private practice in the Raleigh-Durham area since 1993. Dr. Brannon lives in North Carolina with his lovely wife, Jody, where they have raised seven children.

In the pages that follow, Dr. Brannon explores the common changes we experience with aging. He emphasizes that what is common is not necessarily normal. He describes how hormones work, and that as we age, the levels of important hormones decrease. He explains the various causes of those decreases. He describes what happens to the body as we correct the deficiencies with bioidentical hormone replacement therapy (BHRT). He explains how synthetic hormone replacement differs from BHRT. While acknowledging the controversies surrounding replacement therapy, he cites multiple research articles to support the superiority of this methodology. He explains the advantages of pellet placement therapy over other delivery methods, detailing how the procedure is performed, and why it is the preferred method of hormone administration for producing a smoother onset and longer steady state of blood level concentrations. His many success stories of patients whose lives have been greatly improved illustrate how Dr. Brannon puts his talent and vast knowledge to work. Finally, he concludes by explaining how one can easily get started with bioidentical hormone replacement.

Charles Rizzuto, M.D.
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INTRODUCTION

Knowledge is power.

When you know how your body works and how to get your life back, you have *power*.

How much do you know about how your body functions? How in-tune are you with what's going on inside of you? Do you know the basic principles of hormones and how they relate to your health?

You are about to discover some of the best research available about how to maintain maximum health and vitality as you age—through Bioidentical Hormone Replacement Therapy (BHRT).

BHRT is not new. It has been around a long time—since the 1930s. Those early researchers and proponents discovered something very profound: to reverse aging, you have to recreate the chemistry of youth inside the human body. That perfect chemistry is simply a matter of levels of hormones enough for the body to perform all its various functions with ease.

The goal of this book is to illustrate how balanced and abundant levels of hormones facilitate prime health optimization.

A wise man once said, “We do not become conscious of the three greatest blessings of life as such, namely health, youth,

and freedom, as long we possess them, but only after we have lost them.”¹

One thing many people have lost today is the blessing of good health. Our bodies have changed. Many are facing depression, low energy, poor focus, low libido, and a myriad of other symptoms and diseases. People are not aging gracefully anymore—and it’s not just those in their forties and older. I’m frequently seeing men and women in their twenties with hormone deficiencies.

In the pages that follow, I hope to make you aware of the overwhelming amount of research that illustrates the positive effects of BHRT. When our hormone levels return to normal—to where they *should be*—our bodies will be strengthened and have the best chance of aging gracefully and staying healthy and robust.

Everything I teach is backed up by medical research, white papers, scientific studies, and my experience. I will mention some of the extensively documented research periodically. However, I intend for this introductory book to be a quick and easy read for those seeking a brief overview of BHRT. For more detailed and extensive scientific evidence, I invite you to visit our website:

www.optimalbio.com

I understand there is a degree of controversy over hormone replacement therapy. There are opinions on each side, and it is up to you to do research and come to conclusions about what is best for you.

My Motivation

My firm belief that bioidentical hormones are the key to vibrant health comes from personal experience. Not only did I devote myself to many years of clinical practice, study, and reading research papers, but I am also currently receiving BHRT, and I have experienced a profound physiological transformation. I

want others to have the opportunity to feel as good as I do—physically and mentally. My beautiful wife, Jody, who is the love of my life and the mother of my seven children, is also currently receiving BHRT, which should tell you how much I trust and believe in the safety and efficacy of the treatments.

Those who know me well know I have always followed a path of questioning everything. During my residency at USC Women's Hospital, I was trained in the Socratic method, which ingrained in me a lifelong habit of asking penetrating questions. Instead of merely researching which drugs are prescribed for patients who are sick, I want first to know, *Why are we so sick, as a population? Why are there more chronic diseases than ever? Why is there such a lengthy list of health complications today that we have not seen in the past?*

After asking those questions, I research deeply and thoroughly for the answers so I can find the real *cause*. In finding the *cause* of what ails us, we will find the best *cure*. As a practicing OB/GYN for the last twenty-seven years, I have had personal relationships with many of my patients. I know them well and have delivered their babies, in most cases. I care deeply about their long-term health, well-being, happiness, and the lives of their families. I'm looking for answers to help the individual in everything I do, and I'm on a quest to help all my patients according to their health-related needs and wants. I believe everyone should be the final authority over his or her health care.

Let's Begin the Conversation

I want everyone reading this book to feel as though they are having a frank and informative one-on-one conversation with me. Imagine coming into my office and sitting down. You have my undivided attention. You've come prepared with a list of questions about BHRT. This book contains my honest, straightforward answers to the most-often-asked questions on the subject.

In the following pages, I will explore, explain, and detail the following:

- Why the problem of decreasing hormone levels is affecting the general population physically
- How the body is better protected against aging, disease, injuries, and fatigue when hormone levels are optimized
- How hormones work
- Six causes for lower hormone levels among men and women today
- Some of the medical studies and literature that reveal the benefits of proper hormone treatment
- The difference between synthetic hormone treatments and their dangers and BHRTs and their benefits
- How BHRT restores deficient hormones, repairs the body on a cellular level, improves overall health, and ultimately revitalizes the well-being of the individual

Finally, I will discuss the process of receiving BHRT and talk about how simple it is to get started.

In Chapter 17, I have also included a short reading list of five foundational books I believe you will find helpful as you do your investigation.

For practical reasons, I intend that this small handbook will serve as a pared-down, factual guide to beginning BHRT at Optimal Bio.

How Optimal Bio Began

Optimal Bio was established in Cary, North Carolina, in March of 2012. To date, we have treated thousands of patients, both men and women. I have patients as young as eighteen, and at this point, the oldest is eighty-six. We have four locations in North Carolina—with more locations on the way.

I am so excited about BHRT and to tell you about this life-changing treatment. My discovery of bioidentical hormones is what has caused me to enter a second career, medically speaking. I have been an OB/GYN doctor for the last twenty-seven years. Earlier in my career, I prescribed synthetic hormones for women entering menopause; I didn't know any better. It's what I

had been taught in medical school, residency, and post-residency training. I was taught there was no difference between the way synthetic hormones and bioidentical hormones work in our bodies. I have since come to understand that while what I learned was scientifically accepted and practiced at the time, research and medical advances have proven just how wrong that information was.

About ten years ago, I was introduced to BHRT through a friend who had started the treatment himself. My first reaction was to say, “Hey buddy, you’re going to kill yourself. That stuff causes prostate cancer!”

It was my arrogance and ignorance that caused me to be closed-minded on this subject. I had not educated myself on the differences between bioidenticals and synthetics.

Fortunately, I’ve always been a science nerd. I’ve read and studied inquisitively. The changes in my friend’s life intrigued me, so I began doing research and studying. I not only concluded that BHRT was effective but that it is *essential* for healthy aging. So, I became a patient, as well. I know first-hand the results of this treatment. I believe in it with all my heart, and I’m going to share it with you.

Health Freedom

As Americans, we have a right to liberty and freedom—political, religious, and medical freedom. Some would like to restrict your access to safe, natural, alternative therapies such as bioidentical hormones. The more people know the truth about what options are available to them, the more likely it will be that these therapies will remain accessible to the general public.

If people let the government decide what foods they eat and what medicines they take, their bodies will soon be in as sorry a state as are the souls of those who live under tyranny.

~ Thomas Jefferson²

Join me on this journey and let me convince you why bioidentical hormones are for you. Let me take you back to the basics of hormonal balance, drawing on thousands of research papers and studies that demonstrate that bioidentical hormones are safe, proven, and effective.

CHAPTER ONE

VITALITY ISN'T JUST FOR THE YOUNG

As far back as we can remember in human history, man has hoped and searched for the elusive Fountain of Youth. There are myths and stories about the quest for eternal youth. Books, poems, and countless songs have been written on the subject. Every new diet, weight loss aid, beauty product, or surgical procedure promises to make us look and feel younger.

Our culture certainly is obsessed with looking, feeling, and staying young—and with good reason! The health, energy, vitality, and beauty we enjoy in our youth is something we don't fully appreciate until we begin to lose it. We all want to feel as good as we did when we were in our twenties and thirties. What many people do not realize is that the invincible way we felt during that decade of life was due to an abundance of magical chemical messengers inside our bodies called hormones. Merely restoring that abundance can restore our youth to a surprising extent.

Now, a certain degree of aging is inevitable. We cannot expect to have a babyface, boundless energy, and a child's spirit forever. We can, however, hold onto a younger, fresher appearance, an active lifestyle, and many of the cherished qualities and sensations of being young longer than we ever thought possible.

After seven years of administering bioidentical hormones to thousands of surprised and happy patients, I can honestly say that BHRT is *the closest thing to the Fountain of Youth* available to us right here and now in the twenty-first century.

Aging Early Has Become Acceptable

The medical community and today's society are perpetuating a myth that the following are acceptable occurrences due to aging:

- Decreased libido as we age
- Loss of interest in sex, vaginal dryness, and unexplained mood swings
- PMS, hot flashes, and night sweats
- Ever-increasing numbers of people being diagnosed with dementia, Alzheimer's, and diabetes
- Significant weight gain and difficulty losing that weight, regardless of how much you diet or exercise
- Absence of nighttime erections and difficulty maintaining a strong erection during intercourse
- Loss of muscle mass, muscle tone, and weight gain, especially around the waist
- Decreased sexual intimacy in young couples (twenty-five to thirty-five years of age)
- Increased prescribing of multiple anti-depressant medications

These things have become acceptable, and it's a shame that we, as a society, do not question these occurrences. They may be familiar, but they are certainly not normal.

Common is not necessarily synonymous with normal.

The good news is that all these problems can be addressed and remedied.

Over the last five decades, our society has seen an alarming increase in the onslaught and intensity of diseases we have

accepted as normal. We have a generation of adults suffering in high numbers from illnesses the previous generation experienced in small quantities. Fifty years ago, conditions such as diabetes, dementia, and Alzheimer's were far less prevalent.³ Cardiovascular disease has also skyrocketed.⁴ Again, just because the current situation is common, that does not mean that it's normal.

What is normal for the human body is a perfect state of health, not a state of disease. Just because so many people in our society are ill doesn't mean we were designed to live in a perpetual state of sickness.

Have you ever stopped to consider that getting older does not have to mean falling apart?

We Are Losing Hormones as We Age

Every one of us longs for health and vitality. We're aware, in this mega-information era, that it's common for men and women to experience decreasing hormone levels as they age, resulting in diminished energy and focus, among other things.

When scientists were seeking to harness nuclear energy, they realized if they fired a neutron of uranium against other uranium atoms, they could create an unbelievably powerful atomic reaction; that was the method used to develop the nuclear bomb. The neutrons released when the atoms split would, in turn, strike and split other atoms. Think about that. Scientists discovered and harnessed a revolutionary power source (sometimes used for good, sometimes for evil).

The same type of reaction happens in your body and mine. Testosterone starts a chain reaction in our bodies. It replenishes our cells, which, in turn, strengthens our organs and systems. Through BHRT, *science has identified an effective and safe way to replenish the power source in our bodies.*

Did you get that?

No longer must we be resigned to living with the debilitating effects of low hormone levels. No longer do we have to suffer from diseases without having the natural resources and power

to fight those diseases. It is a revolutionary concept that has changed the lives of thousands of people—and it can change yours. It can help you get your youth back.

Now, let me be clear: BHRT is not a panacea. It is not a magic wand that can be waved over your body so you will never be sick again. But when your hormone levels return to their ideal levels—to where they *should* be—your body will be strengthened, and you will have the absolute best chance of aging gracefully and staying healthy and strong.

Throughout this book, I am going to be pragmatic. I want to answer the questions most people, and probably you, are asking. I will delve into the science behind bioidenticals only to the extent that it helps answer the questions you may have. To learn more, visit our website to find extensive resources and scientific research papers.

At any time, you may go to **www.optimalbio.com** to find hundreds of articles and details about becoming a patient at Optimal Bio.

CHAPTER TWO

THE IMPORTANCE OF HORMONES

Our bodies are unique and wonderfully designed. They have been created to function in perfect hormonal balance. When our bodies experience that divine equilibrium, the result is health and fitness. But when our hormones are out of whack, the results can be disastrous.

Hormones are chemical messengers created by the body to transfer information from one set of cells to another. As hormones are released into the bloodstream, they coordinate and control the various functions of the body to maintain health and stability.

The endocrine system in your body is made up of glands that produce and secrete hormones to regulate the activity of cells or organs. Hormones regulate the body's growth, metabolism, sexual development, and function. When our hormone levels drop, becoming unbalanced, our health is affected.

Testosterone is the chemical that enables every single cell in your body make to protein. This DNA cell replication is called transcription. What makes up your body? Cells and cellular structures. When your cells are weak, your organs and systems are vulnerable, and *you* become weak.

Hormones are designed to strengthen our bodies at the cellular level. Therefore, we must get to the root causes of hormonal disruption to find out what goes wrong when hormone levels drop.

Let's talk a little science for a moment.

Epigenetics

Epigenetics is the study of changes in organisms caused by modification of gene expression rather than an alteration of the genetic code itself. Gene expression (also known as DNA expression) is the process by which information from a gene is used in the body's functions.

In the last ten years, we've discovered that how we live, what we eat, how much stress we deal with, and various other factors influence our DNA expression throughout our lifetimes. In other words, your DNA is not something static you inherit from your parents, and then you're stuck with it. It is continuously changing—either for the better or worse—according to how you live. Your very DNA structure is affected by environmental factors, diet, viruses, and even vaccines. You can, to a considerable extent, control the expression of your genes. You are not necessarily doomed to get cancer, Parkinson's, or any other hereditary illness that may run in your family. If you take care of yourself, you can literally change your own biological destiny.⁵

EDCs

In 2007, a study was published in *The Journal of Endocrinology and Metabolism*, which concluded that American men are experiencing a substantial population-wide decrease in testosterone serum levels, due to compromised health and environmental factors.⁶ The findings prove that male testosterone levels have decreased every decade for the last sixty years. Why is this? The number one cause is Endocrine-Disrupting Chemicals (EDCs), also known as estrogen mimickers. The endocrine

system is made up of glands that produce and secrete hormones, chemical substances produced in the body that regulate the activity of cells or organs. These hormones regulate the body's growth, metabolism (the physical and chemical processes of the body), and sexual development and function in our bodies. Please note: The purpose of sex hormones in your body is by no means limited to sexual activity. Sex hormones control most bodily functions—everything from your appetite, your energy level, your emotions, and your ability to heal—as the result of a properly functioning endocrine system. Hormonal balance creates a solid foundation for your health, in the same manner that a brick house is solid because it's made of bricks. A backbone of the twenty-seven-carbon structure in your body is cholesterol. From that cholesterol, your cortisol, your testosterone, your estrogen, your progesterone, and all the precursors to those hormones are formed.

Unfortunately, endocrine-disrupting chemicals are found *everywhere*—in plastics, pesticides, heavy metals, food additives, cleaning products, cash register receipts, and personal care products, to name a few. When these EDCs enter our bloodstreams, either orally or transdermally (absorbed through the skin), our very structures are compromised. Why? These estrogen mimickers hide in various places in our bodies. They affect your overall physiology—the hypothalamus, the pituitary gland, the testes, the ovaries, and the adrenal glands. EDCs are associated with altered reproductive function in both genders, abnormal growth phenomena, and neurocognitive problems in children, breast cancer, and compromised immune systems.⁷

What does this mean?

Let's go back to our brick house analogy. The smallest structure in your body is a cell. Cells group together to make up your internal organs. Those organs group together to make up systems in your body. A brick house is made of bricks, but you need something to hold the blocks together. If you stack the bricks together to form a wall, it will be a very unstable wall. Bricks need mortar to hold them together. The bricks are strong, only to the extent that they can stay together. *What*

mortar does for bricks, hormones do for the cells. It strengthens them and helps them function efficiently and effectively as a group.

Human Physiology 101

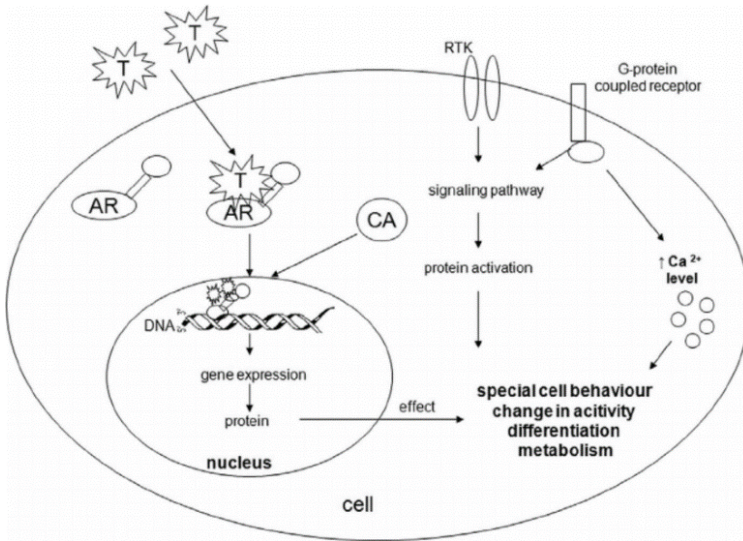
It is necessary to understand some basic facts about human physiology and how hormones work to comprehend the implications of low hormone levels.

Testosterone

Your DNA is the blueprint that makes cellular structures. Proteins are created from DNA. Before a double-stranded DNA helix is turned into a protein, it first goes through a process called translation, and then one called transcription.

Testosterone bypasses the cellular membrane and goes into the nucleus membrane, spreads throughout the membrane, and bonds to the DNA to turn on the DNA groups that form proteins. In short, testosterone is the gasoline that fuels your body's engine. Testosterone converts into both estradiol (an estrogen anabolic steroid hormone that makes things grow and the major female sex hormone) and into DHT (Di-Hydro Testosterone, an androgen sex steroid and hormone which is ten times more potent than testosterone). All three of these hormones enter the blood system and are distributed throughout our bodies.

The diagram below shows how hormones enter the bloodstream and travel throughout your system. These chemical messengers coordinate complex processes like growth, metabolism, and fertility. The critical point to understand is that hormones affect every cell in our bodies.



Progesterone

Many people think of progesterone as the pregnancy hormone and believe it only exists in females. But did you know that men produce progesterone, too? Progesterone is a precursor to testosterone, and it helps keep estrogen levels in check in the male body.

In the female body, progesterone is equally important, if not more so. Research shows that progesterone is vital for breast health, cardiovascular health, nervous system health, and proper brain function.⁸ In women, this hormone is highest post-ovulation. Women tend to feel their best during the second half of their monthly cycle because that's when their progesterone level is at its highest. My goal as a physician is always to make sure that my patients have neither too much nor too little of this hormone. Progesterone levels can vary between 0-30 ng/ml (this measurement is an abbreviation for nanograms per deciliter; a deciliter measures fluid volume that is 1/10 of a liter). I want to find the optimal levels for each woman.

FSH

Both men and women produce a chemical called Follicle Stimulating Hormone (FSH), in the pituitary gland. In women, this hormone stimulates the growth of ovarian follicles in the ovaries and increases estradiol production. In men, FSH stimulates sperm production in the testes. For menopausal women, it's vital to monitor FSH levels and to replace estrogen. What I look for specifically with my patients is making sure FSH levels do not go above 20 mIU/ml. The higher that number goes, the more women will experience menopausal symptoms, like hot flashes, vaginal dryness, and sudden perspiration. So, as I monitor the blood labs, I can watch for those symptoms.

BHRT Replaces, Repairs, Restores, and Revitalizes!

Hormone Replacement Therapy begins with *Replacing* deficient levels of hormones and bringing you back to normalcy. When your testosterone levels are replenished, you restore vitality to each cell. It continues with *Repairing*. Once those hormones are in your system and operating correctly, they will bring health on the cellular level, then to the organs of your body, and then to the various systems of your body. A replenished testosterone level can defend against harmful elements, viruses, and toxins. Then, the much-needed hormones *Restore* health and vitality to your entire body. When hormone levels are restored to optimal levels, health spreads. Finally, after only a few months on BHRT, you will feel *Revitalized!*

CHAPTER THREE

CAUSES OF LOW HORMONE LEVELS

You might be asking, “What is causing my hormone levels to drop?”

There are myriad causes for declining hormone levels.

First, you have undoubtedly been exposed to *Phthalates*, which are a common type of environmental toxin.

There are phthalates in PVC piping, which is prevalent in most modern homes. PVC stands for polyvinyl chloride. When the PVC piping begins to break down, those foreign substances are released into the water supply and find their way into your body. That is the most dangerous endocrine disruptor there is, as it interferes with the actual formation of testosterone in your body. Think about that: all the water you drink and cook with probably goes through that PVC piping, unless you have copper pipes.⁹

Water and the environment affects us all, no matter what our age. For example, The World Health Organization (WHO) has seen testosterone levels in boys six to twelve years old decrease 24-34% in the last few years. The WHO calls this a gender bender that has caused obesity, Type-2 diabetes, infertility, dementia, and loss of memory.¹⁰ Thankfully, the WHO

is currently campaigning to get PVC piping outlawed in our country.

Phthalates have been found in 100% of pregnant women, so this dangerous chemical is affecting babies in the womb. We all suffer from these types of endocrine-disrupting chemicals. There is a specific signal that programs cells in your body to die. It's normal and healthy for fifty billion cells in your body to die every day! But studies have shown that phthalates can trigger what's known as death-inducing signaling in testicular cells, making them die earlier than they should.¹¹ As a male, that scares me! Studies have linked phthalates to hormonal changes, lower sperm counts, less mobile sperm, congenital anomalies, or so-called birth defects, in the male reproductive system, obesity, diabetes, and thyroid irregularities.¹²

Second, the population-wide decline in normal hormone levels may be the result of certain *Medications* we take.

For example, studies have shown that 35-50% of men will experience a decrease in their testosterone levels when on statins.¹³ Statins are a class of lipid-lowering medications. They are typically prescribed for those who have heart disease and high cholesterol.

Third, your *Diet* and the foods you consume will affect your hormone levels.

High-grain diets are devastating. There is more sugar content in a bowl of oatmeal than in a root beer float and a bag of Twizzlers combined. Consistent consumption of large amounts of sugar can cause Type-2 Diabetes, and those who suffer from that disease have a 57% decrease in their free testosterone levels.¹⁴

We all know consuming substantial amounts of sugar is not good for us. Eating too much sugar causes a barrage of symptoms, including weight gain, abdominal obesity, decreased HDL and increased LDL, elevated triglycerides, high blood pressure, and increased uric acid levels.¹⁵

The healthiest diets are paleo or ketogenic diets, which rely on healthy fats for energy rather than glucose. Anytime you eat complex carbohydrates, like the kind found in grains,

it turns into glucose, which is essentially a form of sugar. It's better for your health if your body is a fat-burning furnace rather than a glucose-burning furnace.

Fourth, *BPA Plastics* are dangerous and nearly everyone in this country faces exposure to them daily.

BPA stands for Bisphenol-A. It is an industrial chemical that has been used to make certain plastics and resins since the 1960s, which are often used in containers that store food and beverages, such as water bottles. I would encourage you to use BPA-free products and to avoid microwaving plastics or putting them in the dishwasher, where the plastic may break down over time and allow BPA to leach into your foods.¹⁶

Fifth, *Lack of Sleep* can cause testosterone levels to plummet.

Our bodies were designed to get consistent, quality sleep. When you don't sleep well, it throws off your body, and one of the effects is a decrease in testosterone. When you are sleep-deficient, your body doesn't replenish testosterone naturally,¹⁷ which can be a vicious cycle, because we need testosterone to enter REM cycles and to sleep well, but low levels of testosterone can also cause lack of sleep. We lose both ways!

Sixth, and finally, various *Environmental Toxins* are dangerous.

Everything from air fresheners to perfumes to pesticides are potentially life-altering.

A study in England found the chemical *Atrazine* in abundance in lakes close to certain pharmaceutical plants. Atrazine is an herbicide used by farmers to control destructive weeds. Researchers noticed there were no more male frogs in and around those lakes. They had all been converted to females during the embryo-genesis phase of their development. Guess where much of that Atrazine goes? In our corn, sorghum, sugar cane, and other foods.¹⁸

We are all being exposed to dangerous chemicals daily. Everyone is familiar with Roundup, the world's most widely used herbicide. Currently, lawsuits are being filed against Roundup's maker, Monsanto, for a failure to warn farm workers and those in the forestry and landscaping industries of

potential cancer risks related to Roundup exposure. But guess what? It's not just those farmworkers who have been exposed. Studies have shown that 93% of us have traces of Roundup (Glyphosate) in our urine.¹⁹ When those life-altering chemicals get into our bodies, they wreak havoc on our systems.

Chemicals such as *aluminum* and *mercury* are hazardous to humans. Do you know the most common way those chemicals get into our bodies? It is not only through the environment but also through standard *vaccines*. We are the most vaccinated country in the world, but despite all our vaccines (or perhaps because of all our vaccines), there are thirty-three other nations with lower infant mortality rates.²⁰ We have the largest number of fetal deaths and deaths during the first year of life of any wealthy, privileged Western nation. Stop and think about why that is and what might be the cause of this extraordinarily tragic statistic. The Institute of Medicine (IOM) has finally admitted that "vaccines are not free from side effects or adverse effects."²¹

Aluminum and mercury are endocrine-disrupting heavy metals that not only cause hormone imbalance but create vitamin deficiencies within the body as well. Many of my patients have extraordinarily low levels of vitamin D. Scholarly medical research papers have been published linking low vitamin D to low testosterone. This latest information was presented at The American Urological Association's 2015 Annual Meeting by Dr. Mary Ann McLaughlin, from the Mount Sinai Hospital in New York City.²²

Exposure to *Fluoride* is a controversial topic because fluoride is generally thought to be an essential component of dental hygiene and health. It is not only a common ingredient in toothpaste, mouthwashes, packaged teas, sodas, and pharmaceutical drugs, but many cities and towns add fluoride to their water supply. Only sixteen countries in the world put fluoride in their water.²³ The United States is one of them, and the results are shocking. Fluoride has been shown to weaken skeletal strength, cause arthritis, compromise the thyroid, calcify the pineal gland (which produces melatonin), accelerate female puberty, harm male and female fertility, negatively affect kidney health,

harm the cardiovascular system, and have adverse effects on the human brain and the ability to think clearly.²⁴ The number one reason for poison control calls concerning fluoride is for children who have eaten toothpaste. Be aware of what is going into your body and the bodies of those you love!

Whether it is cosmetics you apply to your face or synthetic sweeteners added to your drinks and food, you are undoubtedly either ingesting or absorbing dangerous chemicals into your system to which previous generations were never exposed.

How to Protect Your Body Against Chemical Toxicity

The bottom line is that you can still manage to live a healthy lifestyle, even in our modern world, which has become a minefield of toxins! Our bodies are unbelievable filters. We are designed to be able to battle all types of infections and diseases. We are designed to age gracefully and handle the challenges of growing older, and that requires functioning optimally so we can thrive, not simply survive!

The engine oil and filter in your car were designed to lubricate and protect other parts from contaminants and wear. But over time, those elements become thin and no longer protect the same way. Have you noticed how your car engine sounds different when you start it after you have run it 4,000 miles on the same oil? You can tell something is not right. Only after you change the oil will your car return to optimal performance. Changing your car's oil every 5,000-7,500 miles (except in rare cases where it is indicated more frequently due to driving habits) is crucial to its health.²⁵

Your body functions the same way. Over time, hormone levels decrease, and they must be renewed and restored. The pellet replacement therapy you will read about in this book starts with an initial insertion. Each pellet insertion lasts four to six months until your body needs another oil change. Coming into Optimal Bio and receiving treatment will keep your hormone levels at their correct levels and your body functioning at its best.

Bioidenticals offer some measure of protection against the onslaught of environmental chemicals, food additives, preservatives, steroids, antibiotics, and growth hormones found in our meat products, against the pesticides, herbicides, fungicides, and larvicides sprayed all over our vegetables, and against the fluoride, chlorine, and pharmaceutical drugs in our water. The lists go on almost endlessly.

You have the right to know these things are harming you. And you should have the right to do something about it.

I believe with all my heart in the principles of liberty and freedom, as well as in our constitutional form of government that protects liberty. These are the rights our ancestors intended. That includes being free as it relates to our health. We must be free to take control of our health matters.

CHAPTER FOUR

CONSEQUENCES OF HORMONE DEFICIENCY

When your hormone levels are low, that deficiency affects many parts of your body.

- You feel tired, drained, and sapped of energy.
- You are susceptible to depression and despair.
- You are at higher risk for heart attacks, blood clots and strokes.
- You are more prone to diseases such as diabetes, dementia, and Alzheimer's.
- You are more likely to get breast cancer, prostate cancer, and other types of cancer.
- Your sex drive and sexual endurance will wane.

What is Considered Low?

Today, testosterone levels for men are typically considered normal if they are anywhere from 301 to 1,197ng/dL. That's an absurdly vast range for what is considered normal! If I came to a sign in the road that signaled that there was a sharp curve ahead, but it said my acceptable speed could be anywhere from

twenty to seventy MPH, I'd see that as an imprecise estimation of what my ideal speed should be to avoid losing control of my vehicle.

Where should my ideal hormone levels be as a man? Is 301 normal, or is it a new average to which I must be resigned? I'll tell you. It's the new average. It's not where your grandfather and my grandfather were at *any* age, but because of all the things we've been discussing, it is now the new average.

Here's the problem: the new normal is not where your body needs to be! Big Pharma and the insurance companies have redefined what normal means. The new normal, as insurance companies are calling it, is detrimental to the health of an entire generation of people. The numbers now regarded as commonplace are pitifully low in comparison to earlier generations, and our health as a society is suffering because of it. Effective July of 2017, lab standards have changed, referencing male levels of 264-916 ng/dL as normal. Some universities have criteria of 175-700 ng/dL as their reference range. Not only is this range far too wide, but it is also far too low for optimal male health.

Using that average range for male testosterone, a study of 858 veterans over fifty-two months demonstrated that those in the bottom twenty-fifth percentile of testosterone levels had a 75% higher mortality rate.²⁶

Another study by Dr. K.T. Khaw, published in 2007 in the online publication *Circulation*, proved that men with testosterone levels of 350 or lower, compared with men who had levels of 564 or higher, had a 41% higher mortality rate.²⁷ *The effects of low testosterone can be life-threatening.*

Our goal at Optimal Bio is to get your hormones back up to levels that are advantageous to your health, even though some conventional doctors might say you are in a normal range for your age. We are committed to finding your perfect hormonal balance, custom-tailored to your body, so you can have the energy, health, and vitality you desire.

The Effects of Low Testosterone

A study published by The National Institute of Health in 1990 found that half of the healthy men between the ages of fifty and seventy years old have a testosterone level below the lowest levels seen in healthy men aged twenty to forty years old.²⁸ That means men see a 50% decrease in their testosterone levels as they age into their fifties and beyond. Additional research goes back sixty years, showing a trend of decreasing testosterone that continues to this day.

Dr. Molly M. Shores, writing in *The Archives of Internal Medicine* in 2006, described how a decrease in testosterone led to an 88% increase in mortality compared to men with higher testosterone levels.²⁹

Another study published by the National Institute of Health in 2002 revealed that when levels of testosterone are depleted, there is a much higher risk for atherosclerosis.³⁰

Dr. Abraham Morgentaler, the author of *Testosterone for Life*, describes many of the soft symptoms that are difficult to measure and even, at times, hard to describe. He calls it the loss of one's Mojo.³¹ I agree with him because I've seen so many men come back to my office after receiving testosterone treatment. They are sleeping better, focusing better, having sex more often, and enjoying the energy and drive that they lacked before BHRT.

You only have one body.
You only have one life. How do you want to live it?

CHAPTER FIVE

THE BENEFITS OF HORMONE REPLACEMENT

What happens when a person's hormone levels return to normal?

It is incredible—almost miraculous—to see the difference in your body when testosterone levels are abundant in the human body.

Research has shown that people with normal to high testosterone levels have:

- Fewer heart attacks
- Fewer blood clots
- Fewer strokes
- Reduced risk of diabetes
- Reduced incidence of dementia
- Reduced risk of Alzheimer's
- Lower rates of depression
- Reduced risk of cancer
- More energy
- Greater sex drive
- A greater ability to think clearly

In addition to the above list, many patients report reduced inflammation, reduced LDL (bad) cholesterol, improved mood, relief from dry eye syndrome, lower blood pressure, relief from the pain of arthritis, elimination of excess body fat, and the absence of chronic lumbar back pain.

Look through that list, and ask yourself, “Who wouldn’t want that?” I sure do. Those are the results I’ve seen in the lives of my patients at Optimal Bio for the last few years.

BHRT Protects Against Osteoporosis

One of the most widespread and crippling diseases is osteoporosis. Worldwide, osteoporosis causes more than 8.9 million fractures annually—that’s an osteoporotic fracture every three seconds.³² Do we also want to call this a new normal? No! It might be a new average, but it is unacceptable.

Osteoporosis is estimated to affect 200 million women worldwide.

- 10% of women aged sixty
- 20% of women aged seventy
- 40% of women aged eighty
- 66% of women aged ninety³³

Osteoporosis affects an estimated seventy-five million people in Europe, the United States, and Japan.³⁴ During the year 2000, there were an estimated nine million new osteoporotic fractures, of which 1.6 million were at the hip, 1.7 million were at the forearm, and 1.4 million were clinical vertebral fractures. Europe and the Americas accounted for 51% of all those fractures, while most of the remainder occurred in the Western Pacific region and Southeast Asia.³⁵ Worldwide, one in three women over age fifty will experience an osteoporotic fracture, as will one in five men over fifty.³⁶ Needless to say, it’s a big problem.

So, what can we do? How can you take charge of your health to ensure you have the highest chance of success in keeping your bone structure strong?

Hormone treatment has been proven to increase bone density significantly. But it matters what type of hormone treatment you use. *The American Journal of Obstetrics and Gynecology* has demonstrated the four-fold increase in bone density with bioidentical hormones over oral estrogen and a two and a half times greater increase in bone density than with hormone patches. The details of those increases for women are:

- 1-2% increase in bone density per year with oral estrogen
- 3.5% increase in bone density per year with patches
- 8.3% increase in bone density per year with pellet therapy³⁷

In short, pellet BHRT has been shown to increase bone density significantly and to lessen the threat of osteoporosis.

The above is just some of the evidence that is available in thousands of articles and studies published in medical journals. The weight of the evidence is overwhelming.

Again, I encourage you to study and research. I believe you will come to the same conclusions I have about the efficacy of hormone replacement therapy.

BHRT and Sexual Performance

Although the health benefits of hormone replacement therapy are far-reaching, what is most often asked about is the dramatic improvement of libido and sexual performance. Many of my patients—both men and women—are interested in enhancing enjoyment in their sex lives. The changes are so profound that I have seen failing marriages saved because one or both partners started BHRT and suddenly had a renewed interest in a healthy, active sex life. It is well-documented that there is a direct correlation between normal to high hormone levels and increased libido, sexual interest, sexual performance, and sexual fulfillment. You can certainly expect to feel heightened

sexual pleasure and interest if you begin BHRT. Expect it to improve and strengthen your relationship with your life partner in a compelling way!

Safety

What about the long-term implications of BHRT? Cheerleaders for synthetic hormone treatments sometimes assert that there are long-term dangers to bioidenticals, when, in fact, the reality is the opposite. A collaborative analysis published in *The Journal of the National Cancer Institute* in 2008 found that there was no association between the risk of prostate cancer and any bioidentical hormone measured, including testosterone, DHT, estradiol, and others. This conclusion was reached after pooling data from eighteen separate studies that included 3,886 men with prostate cancer and 6,438 control subjects.³⁸ Sex hormones do not increase the risk of prostate cancer—or any other kind of cancer!

Pellets Will Not Interact with Other Drugs

One of the clear advantages of using pellets—as opposed to other forms of bioidentical replacement hormones—is that there are no drug-to-drug interactions. Pellets are inserted into the fatty tissue of the hip and are absorbed over time directly into the bloodstream. They do not pass through the digestive system like most prescription drugs, and the liver does not metabolize them. It is an extremely safe method of delivery and most closely mimics your own body's natural process of secreting hormones. For this reason, pellets are ideal for people on oral medications or people with clotting disorders.

Supportive Medical Literature

I have on my computer and in my office thousands of articles on hormone therapy and its benefits. Because of the small size and streamlined nature of this book, I can only mention a few

of those articles here. In the future, I am planning to write a longer, medical-oriented book for those who wish to learn about this subject in-depth. However, until then, we have many articles available for your perusal, both on our website and in our office. I wholeheartedly encourage you to study, to do research, and to investigate what modern, progressive doctors and researchers are finding.

These documented studies show the positive effects of hormone treatment on our cardiovascular systems, our nervous systems, and our metabolic systems. They demonstrate how the overall effects of aging can prevent your body from performing optimally. They also prove that BHRT is a kind of age reversal therapy that has numerous positive effects on our health and sexual performance.

When your body is optimally balanced, you will not be as susceptible to disease. As I have said earlier, nothing is a panacea, but we all want our bodies to be functioning as efficiently as possible, as they were designed to do.

The following are the most compelling reasons to begin BHRT:

1. There is an abundance of evidence that replacing lost hormones is essential to good health.
2. Replacing low and declining hormones is best done with bioidentical hormones. Bioidentical hormones are identical—atom for atom—to the hormones your body produces naturally, which makes them completely safe without any of the adverse side effects.

I will continue discussing the last point in the next chapter.

CHAPTER SIX

WHAT ARE BIOIDENTICAL HORMONES?

Bioidentical hormones are the safest and most natural form of hormone replacement available because they are created using familiar, plant-based ingredients like yams, soy, or olive oil. The Mayo Clinic has defined bioidentical hormones as “compounds that have the same chemical and molecular structure as hormones that are produced in the human body.”³⁹ That means the body recognizes bioidentical hormones as its own, which is critical. Conventional hormone replacement therapy uses drugs that are dangerous chemical compounds, and their structure is likely to have adverse consequences on the human organism.

Hormones are not drugs. Hormones are regulatory substances created in the endocrine glands and transported in the blood to stimulate specific tissues into action. They are made up of signaling molecules that target organs to regulate physiology and behavior. Bioidenticals do not come with the undesirable side effects of traditional hormone drugs because they are identical, chemically speaking, to those made by your own body.⁴⁰

Bioidentical hormones are infinitely safer because they are the structural duplicates to the hormones your body produced

a lot of when you were young. *Hence, the term bioidentical as in identical to your biology.*

The Optimal Bio Pellet

The pellets we use at Optimal Bio are made up of 99.5% natural testosterone that comes from yams. Their chemical structure is *molecularly identical* to the testosterone made in your own body. The other 0.5% of the pellet is composed of stearic acid which allows the testosterone to hold together and to dissolve slowly after placement. This identical-ness is the primary differentiator between bioidentical and synthetic hormones. Your body will not reject or react against bioidenticals. Unlike synthetic hormones that have dangerous side effects, BHRT is safe and effective.

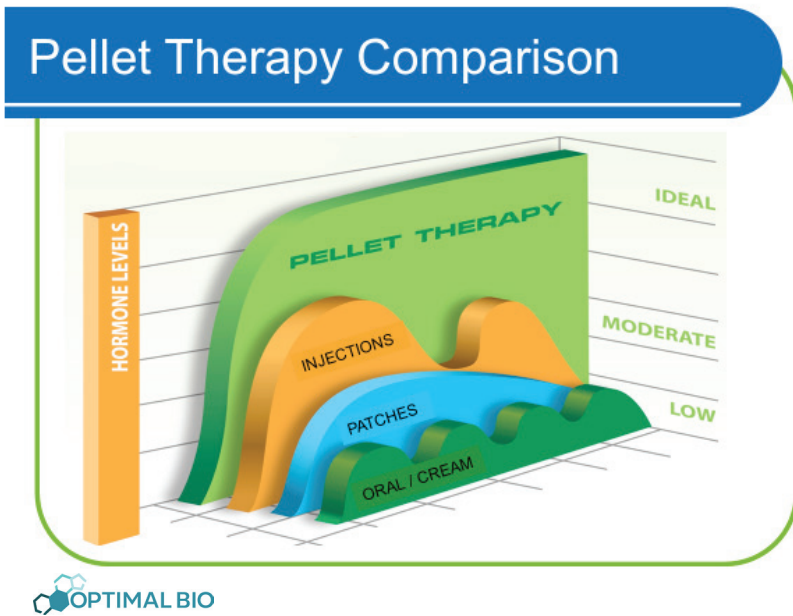
The History of Pellets

Researchers in the early 1930s first isolated the testosterone hormone. The first scholarly paper published on testosterone pellet therapy was in a British Journal in 1935. Pellet therapy was then approved for medical use in 1939. That's nearly eighty years ago! BHRT is not something new. It has been around a long time, and its safety has been proven for far longer than most of the prescription drugs so many Americans take.

Why We Use Pellets

There are several different methods of delivery for bioidentical hormones, including creams, gels, troches (small lozenges that dissolve between the cheek and gum), pills, injections, and pellets. All are better than taking synthetic hormones! However, the best and most effective method of bioidentical hormone delivery is the insertion of pellets, and that is why we use pellets exclusively at Optimal Bio.

Bioidentical pellet treatments mimic your ovary and testicle production identically. When a topical cream is used, the testosterone is not absorbed as readily through the skin, and the results are limited. Similarly, when pills are taken orally, not enough of the hormone is absorbed through the digestive tract. Treatment through intravenous injections is outlawed for women. They are available for men only, and even with that method, testosterone injections result in levels that mimic a roller coaster, with up-and-down surges of high and low hormone levels.



Pellet therapy is the only method of treatment that allows your hormone levels to remain constant for months at a time, precisely the way your body does naturally, producing a steady supply of hormones that flows directly into the bloodstream. As you work out, your blood flow increases, and more testosterone flows through your system, just as it was designed to do. Pellet therapy is ideal because it provides a steady supply of life-giving hormones. The pellets also act as a reservoir. When

the heart rate increases, more testosterone is transported into the bloodstream.

Since the pellet dissolves over time, you will want to get additional ones placed again after about four months. Why so soon if the pellet is designed to last up to six months? Because you never want to go too low again. Getting placed again after four months will prevent you from bottoming out, sending your body into a downward spiral of feeling lethargic, mentally unfocused, and devoid of a healthy libido.

The Benefits of Our Pellet Therapy

Take a moment and read through the benefits of BHRT listed below. Does this sound like the positive health model you have been seeking?

The Benefits of Bioidentical Hormones	
Safe	Lowers your risk of depression
Absorbed directly into the blood	Reduces your risk of cancer
Lowers your chance of diabetes	Increases your energy level
Lowers cholesterol	Creates a strong sex drive
Reduces your chance of obesity	Lowers your risk of heart attacks
Improves clarity	Lowers your risk for blood clots
Improves cognitive ability	Lowers your risk of a stroke
Lowers your risk of Alzheimer's	Reduces your risk of dementia
Increases lean muscle mass	Increases bone density

The dangers of bioidentical hormones are so minimal that I would venture to say it is more dangerous *not to be on them*. That is the degree of protection they offer against various ailments as we get older. There are, of course, a few minor side effects, which I will discuss in a later chapter. They are, however,

genuinely insignificant in comparison to the extraordinary benefits of BHRT.

It is the conclusion of doctors and researchers all around the world that bioidentical hormone replacement therapy is safe, proven, and effective.

Safe

I have read extensively about the safety of BHRT, and I have never seen any research that revealed any significant health risks. The research shows there are no significant dangers associated with this treatment.

Proven

Through our website, you will have access to thousands of scientific articles that outline the proven results of BHRT.

Effective

I've seen the phenomenal changes in thousands of lives at Optimal Bio in the last seven years.

Safe, proven, and effective are the words I would use to describe bioidentical hormones. In the next chapter, we will look at two vastly different methods of treatment available today: synthetic hormone replacement and BHRT. And we will see that BHRT is the safest and most effective hormone therapy available.

CHAPTER SEVEN

THE DIFFERENCE BETWEEN BIOIDENTICAL HORMONES AND SYNTHETIC HORMONES

Why is there so much controversy surrounding hormones?

It is important to understand that The Center for Disease Control (CDC) and the Food and Drug Administration (FDA) group all types of hormones together. According to their classifications, there is no difference between synthetic and bioidentical hormones. They lump them together in the same category and assume that because synthetic hormones are dangerous, bioidenticals must be hazardous, as well.

That is a false assumption.

There is a world of difference between the two.

For example, governmental regulatory agencies classify both natural progesterone and medroxyprogesterone (or MPA) as progestins, but these two are vastly different. They may produce some of the same effects in the body, but they are vastly different in terms of their chemical makeup, how they are manufactured, what sources they are derived from, and how the body ultimately responds to them over the long-term.

The disparity between these two products is so significant that it can be a matter of life and death. Studies have shown that natural progesterone *decreases* the likelihood of breast cancer while synthetic progesterone (MPA) *increases* the risk by up to 69%.⁴¹

Progestin is an extremely broad classification. To discover whether a progestin is dangerous or safe, we must look at the source and structure of that hormone.

If the ingredients sourced to create a hormone are foreign to the human body, it is far more likely to pose dangers and cause harmful repercussions.

If the ingredients are sourced from food and are identical to those produced naturally in the human body, it makes sense that the body would receive them positively.

All the research on this subject makes clear and evident the fact that the complications and problems associated with hormone replacement are only found when using synthetics, both because of their chemical makeup and their mode of application. Synthetic progestins, such as MPA, undeniably increase the likelihood of breast cancer.⁴²

Bioidenticals, on the other hand—and pellet therapy, in particular—mimic the body's natural process, with the gradual release of an organic substance over several months. I have administered bioidenticals to thousands of my patients with remarkable success and have found no major adverse side effects.

The bottom line is that we should only put what is natural to our bodies inside of our bodies.

Drug Companies are Intentionally Creating Confusion

I had a patient ask me the other day, “Why is it that, suddenly, I see ads everywhere on television, in drug stores, and in magazines, advertising hormone replacement therapy, and testosterone boosters?”

Those advertisements and therapies weren't around when I was a kid. Why now? Was it just me not noticing them, or is this truly a new problem or even a fad? And the lingo is

confusing. Not only do I hear about hormone replacement therapy, but now I see ads for bio-equivalent hormones. Is it the same thing? I'm confused. What's the difference?"

Those are excellent questions—questions that I have been asked by thousands of clients I've treated successfully. With a background in obstetrics and gynecology, I want both women and men to experience health and vigor, and to age gracefully.

As I said earlier in the book, after years of being uninformed about these topics, I began investigating with an open mind. I discovered how, with the right hormone treatment, we could achieve that younger, stronger, more energetic, and sexier reality. But it must be the correct treatment with the right hormones.

When it comes to replenishing hormone levels in our bodies, we have two options to choose from: synthetic hormone replacement or bioidentical hormone replacement. Let's look more closely at the differences between these two methods of treatment, the benefits and dangers of each, and come to a rational conclusion about which is safer for both men and women today.

First, if a substance is introduced into your body and your body cannot metabolize it or break it down, that causes problems. Synthetic hormones, as we will see, are made from substances that are foreign to our systems.

Second, the television ads touting synthetic hormones refer to them as bio-equivalent. This term has been coined because it sounds like bioidentical. The pharmaceutical companies selling synthetic hormones want you to believe that bio-equivalent and bioidentical are the same. They are deliberately creating confusion around these two terms, but the differences between these two products are vast.

Our consumerist marketplace is rife with clever marketing tactics designed to reassure unsuspecting buyers. For example, because of the dramatic increase in the consumption of organic foods, many food manufacturers have started labeling their products as natural, hoping that most consumers will equate the term natural with organic. Many people assume that natural food is safe, minimally processed, hormone-free,

antibiotic-free, and chemical-free. The reality is, neither the FDA nor the USDA has any rules or regulations in place for companies to claim that their products are natural—only a loose set of guidelines that are not enforced. Ultimately, any food manufacturer is free to use this term on its food packaging, regardless of the ingredients it contains.

Organic foods, however, are regulated by stringent guidelines. They cannot contain synthetic pesticides, herbicides, fertilizers, antibiotics, or growth hormones. Organic farmers are subject to frequent unannounced certification inspections by third-party inspectors. Organic growers and food producers go through extremely rigorous testing for the privilege of placing the term organic on their packaging.⁴³ As a result, the quality of a product marked organic is usually far superior to one labeled natural, even though those two terms might appear to be indistinguishable at first glance.

This comparison illustrates why it's essential to be educated and aware of who wants to sell you what. The pharmaceutical industry wants you to think bio-equivalent and bioidentical are the same, precisely the way industrial food producers want you to think organic and natural are the same things. Pay close attention to the phrasing of companies trying to get you to spend your money on their products!

Synthetic Hormone Replacement Therapy

For years, doctors have prescribed synthetic hormone treatment for menopausal women. The two most common hormones prescribed are Premarin® and Provera®. With the best of intentions, doctors gave these drugs to women experiencing menopausal symptoms such as hot flashes, night sweats, hair loss, poor sleep, anxiety, and depression.

It is important to realize that Premarin and Provera are not natural. They are chemical compounds alien to the human body, and they cause some dangerous side effects.

Premarin is a conjugated equine estrogen (CEE) derived from the urine of a pregnant horse. Women, do you want

something made from horse urine in your body? Think about that for a moment. Does it make sense to introduce a chemical long-term that is entirely unfamiliar to your genetic make-up? Premarin changes the standard ratio of estradiol to estrone (two forms of estrogen) in a woman's body from 2:1 to 1:2. That in and of itself is unnatural.

Provera is another synthetic chemical made from medroxyprogesterone acetate, which is a chemical derivative of progesterone. However, it offers none of the positive benefits of natural progesterone. A high percentage of women who start taking Provera discover the side effects are so uncomfortable that they discontinue its use.

Dangers Associated with Synthetic Hormones

Some of the risks and common side effects of Premarin include: increased risk of breast cancer, blood clots, high blood pressure, fluid retention, headaches, leg cramps, increased risk of stroke, gall stones, tenderness of the breasts, worsened uterine fibroids, increased risk of diabetes, worsened endometriosis, increased risk of endometrial cancer, impaired glucose tolerance, nausea, and vomiting.⁴⁴

Similarly, some of the possible side effects of taking Provera include hair loss or hair growth, depression, fluid retention, skin rashes, breast tenderness, weight gain, acne, impaired glucose tolerance, menstrual irregularities, blood clots, breast cancer, and congenital anomalies.⁴⁵

Prempro, a pill combining both Premarin and Provera, has been shown to cause an increase in breast cancer by 26% after four years of ingestion.⁴⁶

The Women's Health Initiative (WHI) was a long-term national health study focused on strategies for preventing heart disease, breast and colorectal cancer, and osteoporotic fractures in postmenopausal women. In 2002, WHI proved that synthetic hormones cause breast cancer, heart attacks, strokes, dementia, and blood clots.⁴⁷

In 2004, the results of The Women's Health Initiative Memory Study were released. Their research proved conclusively that not only was Prempro failing to protect women from declining mental capacity, but it also doubled the risk of dementia for women who took the drug.⁴⁸

Bioidenticals vs. Synthetics

An article published in the 2005 issue of *The Journal of Cancer* reported on a study analyzing the health of over 54,000 female patients. Half of the patients were treated with a combination of bioidentical estrogen and bioidentical progesterone. The other half were treated with a combination of bioidentical estrogen and synthetic progesterone. The first group had a 10% decrease in the incidence of breast cancer. The group that was treated with synthetic progesterone saw an increase in the rate of breast cancer by 40%.⁴⁹

Two years later, a follow-up study analyzed the health of another 80,000 women over a longer period. The researchers reported zero cases of breast cancer in the bioidentical group and a 69% increase of cases in breast cancer in the synthetic progesterone group.⁵⁰

Here's my question. Why would you want to ingest any foreign substance—such as horse urine—when there are better, more effective, and healthier alternatives? Why would you want to do that to yourself?

If you are a horse suffering from hormone imbalance, then Premarin might be just what you need. But if you aren't, I strongly encourage you to stay away from it, or any of its derivatives.

My Patient, Jan

Jan, one of my OB/GYN patients, came to see me in my office recently, dissatisfied with the Premarin she was taking, and scared of the side effects. Her initial reaction was to get off

hormones completely, but she knew what the consequences were of discontinuing hormone therapy entirely.

We talked for a while, and as I described the alternative of BHRT, she lit up with excitement. Was it possible that there could be a solution both safe and effective?

Within two months of starting treatment, Jan returned to see me, elated with the results, and relieved of her fears. She said, “I feel like I have my life back again.” She did—and without the dangerous side effects of synthetic treatment.

My Experience Prescribing Both Types of Hormones

As an OB/GYN, when I prescribed Premarin I never got the opportunity to follow up with a patient and monitor her blood labs. I just prescribed the drug. Besides, the conventional medications used to treat menopause such as Premarin and Estrace do nothing to lower a woman’s FSH level, which is what she needs to relieve her symptoms.

I have a unique background, being a doctor who has treated thousands of menopausal women, with both conventional drugs and bioidentical hormones. There are very few doctors who have had the experience of treating so many women and observing the effects of both forms of hormone treatment on their patients. I can tell you beyond a doubt, after having plenty of exposure to and familiarity with both, that bioidenticals are by far the superior method of treatment in terms of safety and effectiveness.

Synthetic Hormones are Unnatural

To summarize, here is my case against the use of synthetic hormones in replacement therapy:

- Synthetic hormones are unnatural and foreign to the human body. Premarin is made from a pregnant horse’s urine and contains more potent estrogens than the human body can handle.

- The body has serious trouble assimilating synthetic hormones and will react against them. Conjugated estrogens are estrogen products that contain blended equine estrogens—including estrone sulfate, equilin sulfate, and equilenin sulfate. Taken orally, they must pass through the liver before entering the blood system, and that is where the problems occur. The liver primarily metabolizes estrogens, and conjugated estrogens inhibit the production of bile, sometimes causing jaundice. Premarin has also been known to elevate liver enzymes, causing a rise in clotting factors, which increases the chances of clots in the veins and lungs. When bioidentical pellets are the method of hormone replacement therapy used, there is no danger to the liver. Pellets are inserted into the fatty tissue of the buttocks and dissolve there over time. Hormones will be absorbed naturally and gradually into the bloodstream without ever even passing through the liver. In addition, bioidentical hormones are not nearly as potent as those conjugated estrogens from horses.
- The side effects of Premarin, Provera, Prempro, and other conjugated estrogen products are dangerous and well-documented. They cause more problems than they solve.
- Synthetic hormones are formulated to treat symptoms but do not get to the root of the problem.

CHAPTER EIGHT

HORMONE REPLACEMENT FOR WOMEN

Let me put my OB/GYN hat on and talk first to women, specifically about changes in their levels of testosterone, estrogen, and progesterone.

Changes in Testosterone

Women need testosterone. It's not just a man's hormone! In the past, testosterone levels in an average twenty-year-old woman might have been between 70-90 ng/dL. What I am seeing in today's women are ranges much lower: between 8-30 ng/dl. By the time those women reach the age of fifty, their levels will drop even more significantly—to between 2-10 ng/dL. On average, women are losing 3% of their testosterone each year. By menopause, women have lost 70-90% of their total testosterone.

At Optimal Bio, we restore a woman's testosterone level to somewhere between 90-200 ng/dl. Female T-levels are not considered high unless they are over 200. I routinely find the most advantageous T-level for each one of my female patients. The higher a woman's T-level, the greater her libido and energy

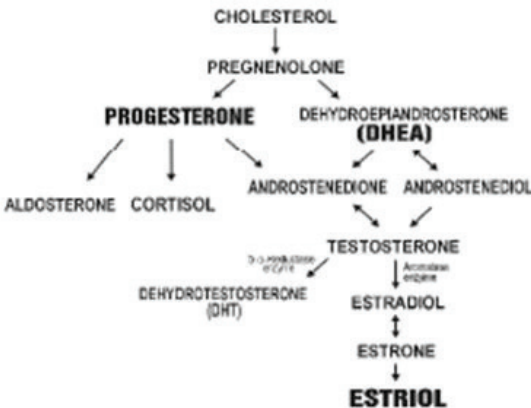
level, however, we don't want to go so high that she starts to see side effects, such as clitoromegaly, an enlargement of the clitoris. It is a careful balancing act with each female patient. In general, the optimal level for a woman's testosterone is 10% of a man's optimal level.

In 1996, a clinical study was conducted by treating Alzheimer's patients with testosterone. Although there is no cure for Alzheimer's, the researchers proved that the disease could be slowed. The patients who participated in the study experienced some regression and some incredibly positive outcomes.⁵¹ Other similar studies confirm the therapeutic effects of testosterone on the human brain.⁵²

Women benefit from healthy levels of testosterone!

The human body is like a finely tuned engine. It converts cholesterol into hormones necessary for optimal functioning. The diagram below illustrates the conversion of cholesterol to progesterone, testosterone, and estrogen.

Method of Enzymatic Breakdown of Testosterone (Diagram):



Changes in Estrogen

Estrogen is produced by a maturing ovum during the menstrual cycle. When the estrogen in a woman's body reaches 200pg/

ml, that triggers her anterior pituitary to release luteinizing hormone, which causes ovulation. Menstruating women produce estrogen from the time their periods start as teenagers, until menopause. Levels can fluctuate from 50-400 pg/ml throughout their cycles.

At menopause, a woman's body stops producing estrogen, and over time, her levels of estrogen drop to zero.

The lack of estrogen may lead to a variety of symptoms, including:

- PMS, irregular menstrual cycles, heavy bleeding
- weight gain
- decreased sex drive, mood swings, and depression
- thyroid dysfunction
- fibroids, endometriosis
- gallbladder problems
- breast tenderness and fibrocystic breasts

Changes in Progesterone

Progesterone, testosterone, and estradiol are all made in the ovaries. The corpus luteum in the ovaries is the primary site of progesterone production in women, although progesterone is also produced in smaller quantities by the adrenal glands. If a woman becomes pregnant, her progesterone levels will continue to rise. Progesterone prepares the lining of the uterus to accept a fertilized egg. During a woman's monthly cycle, progesterone peaks after ovulation, a time when most women report feeling their best.

Levels of progesterone begin to decline, commonly by age thirty-five. At this time, women may notice changes in their periods, such as prolonged bleeding and shorter times between menstrual cycles. They may also experience mood swings and have more trouble sleeping. It is at this point that many women complain to their doctors about anxiety, sleeping problems, and depression. That is why progesterone can be thought of as the anti-stress hormone.

In addition to receiving estrogen and testosterone in the form of bioidentical pellets, women who still have an intact uterus would also be prescribed progesterone at our clinic. Studies have shown that estrogen therapy without progesterone therapy can increase the chances of endometrial cancer; therefore, the addition of natural progesterone eliminates this concern for women who still have an intact uterus. For women who have had a hysterectomy, the progesterone would be optional.

However, taking progesterone has many irrefutable benefits, even if a woman no longer has a uterus, including blood sugar regulation, the promotion of normal sleep patterns, and the stimulation of new bone cells. Accordingly, women who have undergone a hysterectomy may choose to take progesterone anyway.

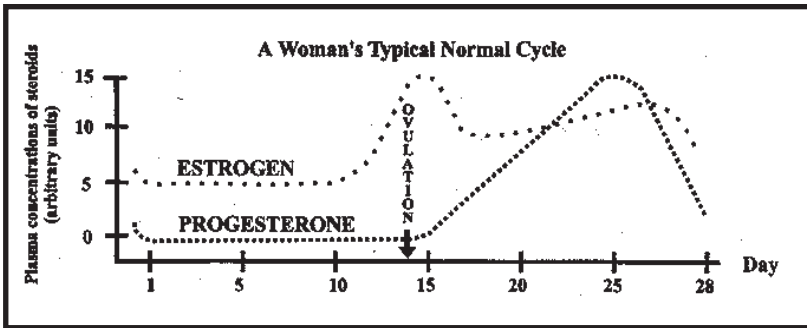
Women have the option of taking natural progesterone using one of the following delivery methods:

- It can be absorbed through the skin using a cream rubbed on at night.
- It can be prescribed in the form of a troche, which is a small medicated lozenge designed to dissolve on the tongue.
- It can be taken orally in the evening as a pill called Prometrium[®], a patented form of bioidentical progesterone that comes in 100 and 200 mg doses.

All three forms of progesterone are made from plant sources like yams, olive oil, and soy, and will protect the uterus from cancer. They are all useful as a treatment for the symptoms of perimenopause and menopause.

A Normal Menstrual Cycle

In the chart below, you will see graphed changes in the levels of estrogen and progesterone throughout a women's menstrual cycle.



But where are the testosterone levels in this diagram? Graphically speaking, they would be way at the top of the page. What is the reason for that? Remember this equation:

$$T = 10 \times E$$

In other words, T is the testosterone level, and E is the estrogen level. Your testosterone level should, ideally, be ten times your estrogen level. Depending on the time during a woman's menstrual cycle, a woman's testosterone level can be up to 100x greater than her estrogen level. However, a normal woman's menstrual cycle affects her hormone levels, and so her levels fluctuate up and down more than men's throughout any given month.

Women, the crucial aspects to note here are:

- The menstrual cycle occurs in two phases. The beginning of the cycle is the follicular phase, and the final part of the cycle is the luteal stage. Midway through the cycle, between days twelve and sixteen, is when ovulation occurs.
- The levels of estrogen and progesterone fluctuate consistently throughout every menstrual cycle.
- When you know how a typical menstrual cycle works, you can understand the symptoms of premenstrual syndrome (PMS), perimenopause, and menopause. These symptoms are often the result of hormone imbalance.
- An irregular menstrual cycle is a good indicator of hormonal imbalance.

Symptoms of Menopause

When a woman's hormone levels drop, she will begin to enter menopause, where common symptoms include:

- Menstrual periods that occur less frequently and eventually cease
- Heart pounding or racing
- Hot flashes (usually worst during the first one or two years)
- Night sweats
- Skin flushing
- Sleeping problems
- Sexual response changes or decreased sexual interest
- Forgetfulness
- Headaches
- Mood swings including irritability and anxiety
- Urine leakage
- Vaginal dryness and painful sexual intercourse
- Vaginal infections
- Joint aches and pains

Can you relate to some or all of these?

Lab tests can be performed to look for changes in hormone levels. Test results can help determine if you are close to or have already gone through menopause. Lab testing may include determining levels of estradiol, FSH, luteinizing hormone (LH), testosterone, free testosterone, thyroid panel with thyroid stimulating hormone, T3 uptake, total T4, free T4 index, progesterone, complete blood count, and vitamin D.

BHRT is the Cure for Menopause

Women, the most important thing to remember is you don't need to fear the change of life. If you are approaching perimenopause, are in the throes of menopause, or menopause has already come and gone, BHRT can alleviate any symptoms you may have. BHRT prevents you from going through dramatic

symptoms associated with the change for as long as you are on it. If your ovaries are intact and functional, you will most likely continue to ovulate, which is healthy for your body and will preserve your health and your looks for a much longer time.

One patient asked me, “So, will I be able to get pregnant when I’m seventy-five?” The answer to that is no. At a certain point, your ovaries will stop releasing eggs. You will undoubtedly continue to ovulate for longer than you might have without the bioidenticals, but even on hormone replacement therapy, your ovaries will cease to be functional as you reach your mature years.

After starting bioidenticals, if a woman’s uterus is still intact but she has gone through menopause, she will be given both estrogen and progesterone to avoid resuming her menstrual cycle, which is undesirable to most women. Most of the time, women will not have a full-on period, but they may have some breakthrough bleeding. The relief of other post-menopausal symptoms is so great that usually the minimal amount of bleeding from time to time is simply a minor inconvenience.

If breakthrough bleeding occurs, we ask our female patients to see their regular gynecologists to have it evaluated. Sometimes bleeding can be an indication of another problem unrelated to hormone therapy, such as polyps, fibroids, or endometrial cancer. In most cases, our patients’ workups will prove benign. The spotting is usually merely the result of restoring the sex hormones to youthful levels. (Imagine your uterus is asleep, and I’m going to wake it up!) However, if spotting does occur, a thorough evaluation by a gynecologist is a precautionary measure to protect you from overlooking a more significant issue.

Ladies, I will be happy to talk with you about your situation during our one-on-one consultation and answer any questions you may have regarding BHRT and how it can prevent the symptoms of menopause forever.

Who Can Benefit from BHRT?

First, women suffering symptoms of perimenopause or menopause (listed above) will experience immediate and life-long

relief. BHRT is also particularly restorative for women who have had a full or partial hysterectomy.

Additionally, bioidenticals can treat and improve a broad spectrum of other problems, including Chronic Fatigue Syndrome, Post Traumatic Stress Disorder, depression, autoimmune diseases, hypothyroidism, metabolic syndrome, weight gain, low energy, insomnia, osteoporosis, low libido, adrenal fatigue, PMS, memory loss, and migraines.

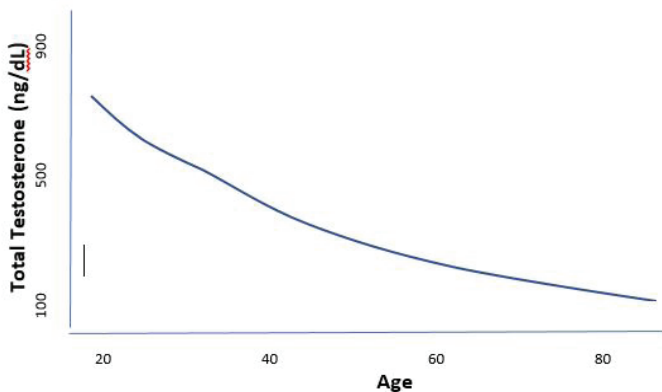
CHAPTER NINE

HORMONE REPLACEMENT FOR MEN

Now, let me speak to the men.

As a man ages, his hormone levels also drop. Optimal testosterone levels for a man are between 800-1,200 ng/dL, but I see men come into my office every day with levels in the 100s and 200s.

You will notice on the chart below that today, men's testosterone levels typically decrease as they age.



This graph should alert us to the changes happening in our bodies. Something is different, and that difference has dramatic effects.

Think of your body as an engine. In your twenties, that engine was firing away on all eight cylinders. You had energy, focus, concentration, sexual drive, muscle mass, and a great memory. You were a warrior!

However, something started happening in your mid-thirties. At first, the change was almost imperceptible. Soon, you began noticing that you could not do the things you used to. You became irritable and anxious.

Things were different sexually. That once-powerful eight-cylinder engine was now down to three or four cylinders, and you could feel the effects.

These engine problems are something previous generations did not experience, at least not to the degree we see today. Men's testosterone levels have been steadily declining since the 1960s. In 2007, an article published in *The Journal of Clinical Endocrinology and Metabolism* reported that the average American man is experiencing a sinking testosterone level that goes down about 1% per year. In other words, fifty-year-old men today have, on average, testosterone levels that are 38% lower than fifty-year-old men from 1980.⁵³ A similar study in Denmark revealed that testosterone levels have been declining for decades in other parts of the world as well.⁵⁴

The Effects of Low Testosterone in Men

There are many signs and symptoms of testosterone deficiency in men as they age. They may experience one or more of the following symptoms:

- Anxiety
- Irritability
- Fatigue
- Loss of energy
- Poor focus

- Poor concentration
- Depression
- Osteoporosis
- Decrease in sexual interest
- Restless leg syndrome
- Higher LDL cholesterol
- Arthritis
- Alzheimer's
- Weight gain (despite exercising)
- Loss of memory
- Overall loss of muscle mass and tone
- Decreased nocturnal erections
- Inability to maintain a hard erection
- Heart attack
- Stroke
- Diabetes
- Hypertension
- Loss of confidence

Is any of that normal? No. *It might be common, but it is not normal.* Something is wrong, and we know it. It is not the way our bodies were designed to age. We are meant to live full, passionate, and active lives throughout our forties and beyond.

It's No Longer Just an Aging Issue

Unfortunately, there is more to this sad story. I see something at Optimal Bio that I never thought I would. Young men in their late teens and twenties come into my office with testosterone levels dangerously low—in the 100s and sometimes below. Some of these men are returning from serving our country in military service in Afghanistan and Iraq. Others are in college or just starting their careers. They are depressed, lethargic, and sometimes suicidal. They have lost sexual interest and have changed from the warriors they once were into complacent couch potatoes.

However, the beauty of BHRT is that it is effective, regardless of age and no matter what the cause of low testosterone.

Men, the good news is you don't need to dread getting older anymore! You can still be the warriors you were created to be—long into your seventies and eighties.

Natural testosterone not only helps a fifty-year-old man feel like he is thirty again, but it also protects his overall health.

CHAPTER TEN

BECOMING A PATIENT AT OPTIMAL BIO

By now, you might be wondering, *How do I get started? What's the process of becoming a patient at Optimal Bio?*

The Initial Consultation

Your first step is to call one of our four clinics and set up a consultation appointment. We'll sit down and talk one-on-one in the privacy of my office.. At Optimal Bio, we *Listen* to you, *Identify* your concerns, and *Individualize* a treatment plan to *Replenish* your hormones and *Revitalize* your body and life. Feel free to take as much time as you need to address your concerns.

I look forward to meeting you!

Recently, a new patient named Sally came into my office. She had a lot of questions—and I mean, *a lot* of questions. She had talked with her physician, she had read articles, and she had talked with friends. All that added up to about forty questions she had written down on a legal pad.

We went through them one by one. Several times I pointed her to additional articles available on our website. By the end of our visit, I had answered all her questions, but she still needed

some time to decide if BHRT was right for her. I understood her need to take things slowly and make an informed decision.

I told her, “It’s your body. It’s your decision. No one can or should make that decision for you.”

Sally called back two days later. We scheduled her for labs, and two days after that, she was back in our office, receiving her first pellet placement. If you talked with her today, she would tell you it was the best decision she ever made, but it was made only after careful investigation and reflection.

I also frequently hold public seminars, which are another wonderful opportunity to get all your questions answered and listen to the concerns of other prospective patients like you.

Labs

After our consultation, the next step is putting in an order for your lab work. You can choose to have your blood drawn that day if you like, or whenever it’s convenient. The lab tests are easy and quick. It’s a simple blood draw that can be done at any local blood lab (for example, Labcorp). I will send the necessary order for the tests to be done, called a blood lab requisition, to the lab of your choice. You can visit the lab on your schedule. It usually takes fifteen minutes or fewer, depending on the schedule of the lab. I receive the results back on my desk within twelve to twenty-four hours.

In our Cary office, we have a phlebotomist on staff, so the turnaround for labs done there is even more expeditious.

Pellet Placement

Once I receive the results of your bloodwork, our administrative assistant will call you to schedule an appointment for your first pellet placement. Using your lab results, I will personalize a BHRT pellet treatment specifically for you. When you come back into our office, it takes no more than fifteen minutes for the placement procedure. I will re-consult with you, your lab results in hand, and then do the quick and easy placement,

which is an outpatient procedure performed in our clinic. After a pellet placement, you may return to work or normal daily activities, but it is recommended that you take it easy for the rest of the day. In other words, no vigorous exercise!

At that time, our office staff will give you specific instructions for caring for the bandage and tape that protect the incision area. A member of our friendly staff will call you the next day to ensure you are doing well and to answer any other questions you may have at that time. It is quite simple to get started, and you'll be feeling the effects of the pellets in no time!

The Dosing Model

The dosing model is crucial to the overall success of this program for all my patients. After doing this for many years and administering thousands of placements, I utilize an algorithm that indicates what is best for each patient. The algorithms are derived from information based on thousands of patients, which makes me extremely confident in my ability to design a treatment plan that will work perfectly for you.

I hope you see immediate results and a positive impact on your health and vitality in the short term. However, I choose BHRT for the long-term results—to prevent things like atherosclerosis, dementia, and diabetes—which is equally, if not more, important. It's like taking vitamins every day. I may or may not feel the short-term benefits of daily supplementation, but I know I am building a solid foundation for long-term health. Similarly, we jog, work out, and eat the right foods so we're not only healthy now but will be in the future.

Dosage for Females

Regarding pre-menopausal women, I am especially concerned with their testosterone levels. We will get them checked with the labs and make sure they are high enough. A staff member from Optimal Bio will call you the next day to see how you are doing, and we will also re-check the labs in four weeks. We'll monitor how you feel and continue to analyze your blood work.

In general, I like to make sure that my female patients maintain a testosterone level between 90-200 ng/dl. Appropriate levels for a woman's progesterone and estrogen will vary based on her time of life, and we can discuss what is optimal for you when we meet.

Dosage for Men

At Optimal Bio, when we run labs for our male patients, we pay especially close attention to their testosterone level, which, ideally, should be over 800 ng/dl.

Too often, I am seeing men (even men in their twenties) who have such low testosterone (often in the 100s or lower) that it concerns me. I will run their levels through the proprietary Optimal Bio algorithm and determine a dosage plan that includes the number of pellets they will receive. Once treated, we check back in four weeks with new lab tests, and invariably, our patients' testosterone levels rise dramatically.

I want to find out who you are and what's best for you. That's why the subjective part of my record-keeping is so important.

Subjective and Objective Data

At Optimal Bio, the careful monitoring of each patient is based on both objective and subjective data, which is information from the patient's point of view, including symptoms, feelings, and experiences reported first-hand from those receiving BHRT.

Objective data is observable and/or measurable data from the physician's point of view, obtained through observation, physical examination, and laboratory testing. It is important to pay close attention to both subjective and objective data to achieve the best results for all my patients.

Why is the subjective data so important? Because the most significant determining factor in whether BHRT is working should be how the patient feels. Although the labs are important, *how you feel* is the reason for the therapy. The external, objective data will simply confirm what you are telling me.

Ongoing Consultations

What happens if you have questions after a week or a month? Schedule an appointment. Come in to see me. I am here for you anytime you need a question answered. I encourage all my patients to do additional research. Bring articles to me that you've read. I want you to know more than I know. It's your body. Take charge of it.

Patient History

It is imperative that you provide a complete and accurate picture of your health history before we begin treatment. That includes all current medications you take and vitamin supplements. Any illnesses you suffer from should be fully disclosed, such as diabetes, hypertension, liver, kidney, or heart disease, a history of stroke or cancer, HIV, or clotting disorders. You should also be under the care and supervision of a general physician and receive standard yearly examinations. You must be at least eighteen years of age to receive pellet therapy.

Follow Up

Four weeks after your pellet placement, you will have follow-up blood labs to ensure your hormones have reached the proper levels for optimal health. Occasionally, a small percentage of patients (5-7%) may need a booster shot of testosterone to reach their target levels. There is a separate fee for the booster.

Health Insurance

Unfortunately, BHRT is not covered by health insurance. However, after getting started on bioidenticals, you can expect to make far fewer trips to the doctor!

Many prospective patients say, "Dr. Brannon, I want to try this, but it costs money." And I say, "Yes, it does. But think about this: these treatments will benefit you for the rest of your

life. Right now, and into the future. Several dollars a day is a small price to pay when compared to the cost of developing potentially life-threatening diseases later in life. Just ask any one of my patients if the cost was worth it!”

Big Pharma is opposed to BHRT because they cannot profit off it. Why? Because bioidentical hormones are natural. As natural products, they cannot be patented. You cannot patent an organic molecule, and therefore, the return on their investment would be extremely low in comparison to most other pharmaceutical drugs—ones that they make a killing on.

Health insurance typically does not cover BHRT. I don’t know about you, but I don’t want the government telling me how or how not to take care of myself. I don’t want a bureaucrat or an insurance company telling me what type of medications I should or shouldn’t take. The most important property you own is *you*. The person who cares the most about you is *you*.

I believe in individual liberty. There is a freedom in taking responsibility for yourself.

CHAPTER ELEVEN

THE PELLETT PLACEMENT PROCEDURE

In this chapter, you will find more detail about the pellet placement procedure, which is the part of BHRT that seems to cause the most trepidation in those considering this therapy. It is a quick, simple, and safe procedure most of my patients get used to in no time at all.

Pellet Placements are performed in my office every four months. Most of my patients receive new pellets every four months. However, that is a general estimate, as the period between placements varies from person to person. How fast you metabolize your pellets is dependent upon age, weight, the ratio of body fat to muscle mass, diet, how often and how intensely you exercise, and your metabolic rate. Those who have faster metabolisms will tend to absorb the pellets more quickly and will need pellet placements slightly more often, perhaps every three months. Once we start regularly checking your bloodwork and doing your pellet placements, we will discover the optimal schedule to keep you feeling your best at all times.

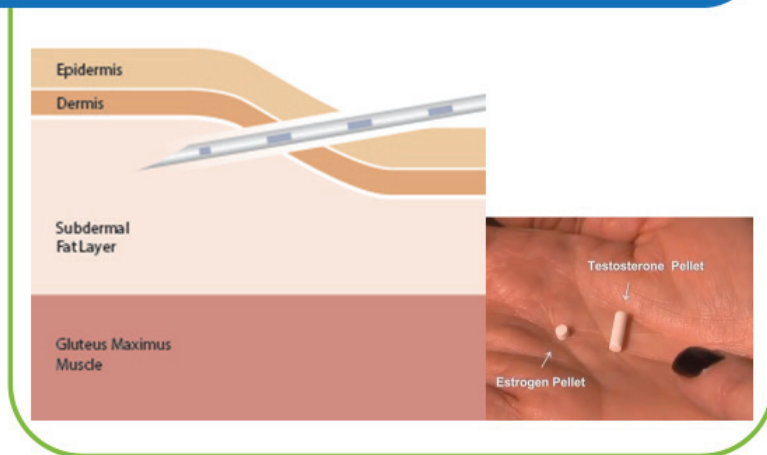
The pellet placements are performed at Optimal Bio clinics during regular business hours, Monday to Friday. You will be seen in the privacy of one of our comfortable exam rooms,

where we will have the opportunity to talk briefly and address any new questions you might have.

Your appointment time will last fifteen minutes. The pellet placement itself takes only five minutes. You may remain fully clothed. Only the area that needs to be treated will be exposed. It is best to wear sweatpants or something comfortable. You will be asked to lie down on your side, and the hip area where the pellets will be inserted will be covered with a sterile drape sheet.

Placement involves a simple, sterile incision into the fatty area of one side of the buttocks. After cleaning the area with betadine and alcohol, the incision site is numbed with a 2% lidocaine solution.

Placement Procedure



A small, straw-like instrument called a trocar is inserted at a thirty-degree angle, and the pellets are inserted into the fattiest part of the tissue, approximately one inch under the skin. This part of the procedure is virtually painless, because the area has been numbed. The incision is closed with wound closure tape strips, then covered with a transparent medical

film, and finally, a sterile pressure bandage. The only part of the procedure you will feel is the insertion of the needle containing the anesthetic, which is not entirely painless, but most of my patients experience only minor discomfort. Very few people stop pellet therapy because of the pain of the needle!

Post-Procedure Instructions

Patients should abstain from vigorous exercise for five days after a pellet placement. It is normal to have swelling for one to five days, and the incision may be slightly sore or itchy for up to two weeks afterward. There will be a bruise around the incision, which usually takes one to three weeks to fade completely. All this is normal. We cannot remove your pellets for any reason. As with any incision, there is a minimal risk of infection. It is rare, but if it occurs, we will prescribe an oral antibiotic.

The Optimal Bio Pellet

We take pride in offering you the purest type of pellet possible. Over the years, we have worked with compounding pharmaceutical companies that produce the best and most effective pellets money can buy. We use organic yams as the primary ingredient from which the testosterone is made. The pellet is 99.5% pure yam-hormone. The other 0.5% of the pellet is stearic acid (a naturally occurring fat), which acts as a lubricant and binding agent to hold the pellet together in proper form. It is important to note that the stearic acid is never absorbed into your system. We don't want the pellet to be too hard; otherwise, it won't dissolve. And we don't want it to be too soft, or it won't hold together. The stearic acid allows the pellet to dissolve at the optimal rate.

Typically, a man will receive anywhere from six to twelve pellets at a time, depending on his lab levels. His pellets will contain bioidentical testosterone, with each pellet having a dosage of 200 mg. His total testosterone dosage, per placement, will range between 1,200-2,400 mg. The dosage amount is

based upon a precise mathematical algorithm individualized for every person.

The pellets we use for women contain bioidentical testosterone and estrogen. Depending on their lab work, all our female patients receive somewhere between 75-150 mg of testosterone, and somewhere between 6-25 mg of estrogen. In some instances, if women are still ovulating, or have a tendency toward estrogen dominance, they may receive no estrogen at all. Each patient's case is evaluated carefully to determine the best course of action for her as an individual.

Pellet Expulsion

The standard literature about this procedure estimates that approximately 5-10% of men will expel one or more pellets per procedure. For women, the rate is much lower—about one in one thousand. These statistics are influenced by many factors, including how hard the pellets are, what your body fat percentage is, and how high your level of physical activity is the first few days after receiving your pellets.

We try and minimize the rate of expulsion as much as possible. We're proud of the fact that our accidental expulsion rate at Optimal Bio is only **2% for men and .1% for women**. Nationally, this rate is significantly higher, but because of the high quality of the pellets we use and the technique of placement, we see an extremely low expulsion rate.

If one or more of your pellets is expelled, you will see the pellet when you remove your bandage. It will look like a tiny, white cylindrical object like a long grain of white rice. It is always a good idea to remove your bandage carefully and check for any expulsions. You will need to look closely.

So, what happens if a pellet is expelled? Simply call our office, come back in, and we will re-insert a replacement pellet. It's relatively easy.

To avoid expelling your pellets in the first place, we recommend you refrain from vigorous physical activity, particularly on the first day, but also for up to five days after your placement

so your incision has a chance to heal. Try to relax and put your feet up. Read a book. Watch a movie or two and avoid lots of walking and heavy lifting. Under no circumstances should you run, do squats, or do deep knee bends.

If you have little body fat, you will have a higher likelihood of expelling your pellets, so *lean individuals should be extra careful* during this time. If the area the pellet is placed in has a good amount of fat to cushion and surround it, there is only a small chance of expulsion. That is why on average, women retain their pellets better. If the area around the gluteus maximus is hard with little fat, the pellets are more easily pushed out if that muscle is contracted, which is why men have a higher rate of expulsion. That, coupled with the fact that men always receive more pellets than women do, increases the expulsion rate. So, it is primarily my male patients who will need to slow down and take it easy for the first few days after their placements.

CHAPTER TWELVE

SIDE EFFECTS OF BHRT

While it's true that bioidentical hormones are often described as miraculous because of all the problems, disorders, and illnesses they can treat and improve, it is important to inject a dose of reality here. Bioidentical hormones are gentle, natural products which, ironically, have quite powerful effects. However, BHRT is not a cure-all. It returns your hormones to the best or most favorable levels for *your* body, so it can function the way it should. You will still age, but you will age gracefully, as you were designed to. BHRT is about giving your body an internal advantage to help cope with growing older.

Secondly, although there is currently no research that shows any life-threatening or long-term dangers from this therapy, there are some minor side effects of which I want all my patients to be aware. Pellets are typically very well-tolerated. Many of these side effects will occur in the first month while the body is adjusting to the new hormone levels but then diminish over time.

Be aware; not all patients will experience these side effects. Some patients may experience none, and some may only experience one or two. However, in the spirit of full disclosure, we

list every possible side effect of BHRT so you, the patient, can adequately weigh the risks versus the benefits.

Minor Pain During Pellet Placement

There can be some minor pain during the pellet placement procedure, which happens once every three to four months. Typically, this pain lasts only a few seconds while injecting the lidocaine. It feels similar to a bee sting. It's nobody's favorite part of BHRT, but most of my patients do not consider it a reason to stop treatment. The actual pellet insertion is nearly painless, though you may feel slight pressure.

Some people ask, "How much pain are we talking about here?" It differs from patient to patient, based on their level of pain tolerance. Most patients say there was "not too much pain" or "about as much as getting my blood drawn." In my experience, women have less pain, mainly because they usually receive only one pellet at a time, whereas men can receive six to twelve pellets at a time, depending on their blood levels.

Minimal Hair Thinning or Loss

About 5-7% of my patients (both men and women) experience some hair thinning.

About 2-4% of my patients have experienced minimal amounts of hair loss.

Unfortunately, some people will experience one of these two side effects on testosterone supplementation. If either of these occurs for you, there are steps we can take to minimize it in the future.

We recommend *biotin b7* and the herbal supplement *saw palmetto* as effective hair loss remedies. We also sell an excellent Metagenics® product in our office called Collagenics®, which is another alternative for hair loss prevention that works well.

Mild Acne

Another 1-3% of my patients have experienced mild breakouts of acne, which is treatable with over-the-counter acne medications and is not a long-term issue. Usually, acne will lessen over time with continued treatments. Patients who experience this side effect sometimes say they don't mind breaking out like a teenager, because they also have the energy, stamina, and sex drive of a teenager!

Minor Facial Hair Growth

Testosterone can sometimes stimulate facial hair growth, which is not something that bothers men (most don't even notice), but for the 2-5% of women it affects, it can be bothersome.

There are several options for solving this problem, including *electrolysis*, *waxing*, *laser hair removal*, *bleaching*, *shaving*, or a medication called *spironolactone*, which blocks skin five-alpha-reductase and can thin the hair. If you happen to experience this side effect, we can discuss which option is best for you.

Breast Tenderness for Women

Women who receive estrogen may experience breast tenderness, breast enlargement, or fluid retention, precisely as they would during the ovulation phase of their menstrual cycle.

Occasionally, men may experience breast tenderness as well.

We recommend evening oil of primrose to treat this symptom.

An Enlarged Clitoris

A small percentage of women will experience a *slight* enlargement of their clitoris. I have found some women like it, some don't mind one way or the other, and some are unhappy with this side effect. A slightly larger clitoris is due to testosterone

supplementation. For some women, the clitoris will shrink back to its original size with continued pellet therapy, and for others, it will remain a slightly larger size. The critical thing to note is that it *will not continue to grow* after its first initial growth spurt during the first month or two. It will remain the same size as you continue with the therapy over the years.

Voice Deepening

Some women or men may experience a *slight* voice deepening as a result of testosterone therapy. It is so subtle that it is usually not noticeable to anyone but the patient.

Low Sperm Counts for Men

Testosterone therapy suppresses the development of sperm; therefore, it is not recommended for men who are trying to conceive with a partner. Current research shows that sperm counts return to normal after pellet therapy is discontinued, should the patient decide to have children. BHRT should not, under any circumstances, be used as a method of contraception. A man will still have viable sperm on BHRT, just not as many.

A Decrease in Testicular Size for Men

Testosterone suppresses natural testosterone production in the testes. BHRT in essence does the work *for* your body, so over time, this could result in a decrease in the size of a man's testicles. The size decrease is reversible. If BHRT is discontinued, the testicles will return to their previous size. For most men, it is not an issue, but it's a side effect of which we'd like patients to be aware.

Higher Red Blood Cell Counts for Men

Men who are given bioidentical testosterone will experience increases in strength and energy levels, which is partly due to a proliferation of red blood cells and the extra hemoglobin that carries oxygen to all the cells in higher numbers.

Critics of BHRT speculate that an elevated red blood cell mass increases the risk of blood clots and strokes. That fear is unfounded as professional athletes whose hemoglobin counts are as high as twenty-four grams per deciliter do not experience cardiovascular events.⁵⁵ However, as a precautionary measure, on the occasions when a patient's red blood cell count becomes elevated, we resolve the issue by either decreasing his testosterone a little or recommending he donate blood about every four months. Simply donating blood will allow his red blood cell count to return to normal.

Breast Enlargement for Men

In male patients, the body will naturally convert excess testosterone to estrogen, which can result in the growth of fatty tissue around the pectoral muscles, also known as gynecomastia. To avoid this, we recommend that all our male patients take Meta I3C by Metagenics. This supplement helps metabolize excess estrogen, and for most men, it is enough. However, a few patients may require a prescription medication called Letrozole, which is an aromatase inhibitor that we use off label for the purpose of estrogen control. When a medication is used in a so-called off label manner, all that means is that it is used to treat a condition other than the specific one for which the Food and Drug Administration (FDA) originally approved it.

If any of these side effects sound to you like something that would outweigh the benefits of BHRT, then I would advise you to do some additional research and take more time with your decision. *Informed Consent* is an essential part of our practice. That means we will make every effort to ensure the patient understands the purpose, benefits, and risks of pellet therapy

ahead of time. We will endeavor to make sure the patient is well-educated, with the information presented both orally and in writing. That is the foundation of ethical medicine.

Let me reemphasize that the side effects are mild because we keep your hormones at the correct physiological levels. When you compare them to the far more serious side effects that accompany synthetic hormone treatments (high cholesterol, obesity, heart attacks, strokes, dementia, cancer, and other diseases that bioidentical hormones prevent), it is easy to see why so many people choose BHRT.

Who Should Not Take Bioidentical Hormones?

Pellets are not recommended for the following people:

- Patients who have a yam allergy
- Women who are pregnant or wish to become pregnant within three months
- Men who want to impregnate their partner within three months
- Any person who currently has cancer or who has been treated for cancer within the last five years, particularly breast, uterine, or prostate cancers

The bottom line is that bioidenticals offer incredible benefits, pose no significant health dangers, and have mild or infrequent side effects. They are entirely natural and are safer and more effective than synthetic hormones.

CHAPTER THIRTEEN

COMMON MISCONCEPTIONS

There are a few common misconceptions about BHRT reported in the mainstream media—specifically, that hormone replacement is bad for your heart, that testosterone supplementation causes prostate cancer, and that over-the-counter supplements are the same thing as bioidenticals. All these assumptions are false. I will address each one individually.

Fact: Bioidentical Hormones Improve Cardiovascular Function

Many of my patients have questions about their heart. There is a widespread misconception that patients with cardiovascular issues get worse with hormone treatment. That has been proven false. In 2000, a study by a team of doctors at Royal Liverpool University Hospital in England discovered that treating angina patients with testosterone helped improve their condition.⁵⁶

In 2010, a study was published in *The Journal of the American College of Cardiology* that examined the effect of testosterone on people who had exercise ischemia. Exercise ischemia is a common condition whereby a person experiences an inadequate blood flow to the heart during exercise. It generally

results in shortness of breath, an elevated heart rate, fatigue, and sometimes nausea and chest pain. During the study, subjects were carefully monitored on a treadmill. At the onset of their symptoms, they were given gel-testosterone. They were not given pellets because researchers wanted to be able to see if there was an instant effect. All the subjects felt immediate improvement and were able to continue exercising.⁵⁷

A prevailing myth in the conventional medical community is that it is dangerous to give testosterone to people with bad hearts. In 2004, another study was conducted in the Department of Cardiology at Royal Hallamshire Hospital in England. The researchers concluded that increased levels of bioidentical testosterone decreased the load on the heart. Not only were there no adverse effects of administering testosterone, but there were also positive effects.⁵⁸

Despite the prevailing myth, studies show that hormone replacement therapy improves cardiovascular function.⁵⁹

Fact: Testosterone Does Not Cause Prostate Cancer

One of the concerns many men have is that hormone replacement will increase their chances of getting prostate cancer. In 2000, Dr. J.E. Morley, of The Education and Clinical Center at St. Louis V.A. Medical Center, conducted extensive research on this very subject. He concluded that “There is no clinical evidence that the risk of either prostate cancer or benign prostate hypoplasia increases with testosterone replacement therapy.”⁶⁰

In 2008, *The Journal of the National Cancer Institute* detailed a collaborative study, combining seventeen independent studies investigating the possible link between BHRT and cancer. In the end, it was surmised that “There is no association of increased risk of prostate cancer with increased testosterone or its by-products, DHT or estradiol.”⁶¹

Dr. Abraham Morgentaler is a Harvard-trained urologist and an internationally-recognized expert in sexual medicine and male hormones. He authored the phenomenal book *Testosterone for Life*. In that book, he addresses the ordinary misconception

that all hormone treatments cause cancer. He published some fascinating facts.

Dr. Morgentaler attacks and debunks a flawed hypothesis put forth in 1941 by Dr. Charles Huggins. Seventy years ago, Huggins decided that testosterone increased the risk of prostate cancer, and the mainstream medical community has held his word as gospel ever since. Morgentaler took it upon himself to reread Huggins' papers and discovered that Huggins initially did his study on dogs, not humans! Huggins did a later study on only three men. Two of the individuals were taken off the protocol in the middle of the study, leaving only one remaining man, from which Huggins drew his conclusion—and that one subject was a castrated man! It is critical to note that all the subsequent literature which purports to prove testosterone causes prostate cancer, can be linked back to this one study. Morgentaler realized Huggins' scientific methodology was so ludicrously inadequate to make the erroneous theory “based on almost nothing at all.”⁶²

Morgentaler now has thousands of patients in his practice. In a twenty-year study featured in *The Journal of Urology*, he documented thirteen patients with biopsied prostate cancer. thirty months later, after treating them with testosterone, he biopsied them again. 54% of those patients had no residual disease. It was gone! The other 46% had zero increased progression or metastasis of their cancer. Morgentaler concluded that, if you *have* cancer, you have a 54% chance of curing it by treating it with testosterone! Additionally, you will also minimize other risks, such as cardiovascular disease and dementia.⁶³

There is not now, nor has there ever been, a scientific basis for the belief that testosterone causes prostate cancer to grow.

~ Dr. Abraham Morgentaler⁶⁴

Fact: BHRT Does Not Cause Cancer

There are articles all over the internet claiming that all hormone treatments cause cancer. However, as I said earlier, this conclusion is based on researchers lumping together all hormone treatments—synthetic and bioidentical. BHRT has become guilty by association. Regardless, I cannot find a single research paper that shows a link between cancer and bioidenticals. If there was a link, you can bet that Big Pharma would have found it and spent millions of dollars exploiting that information. Bioidenticals are a skyrocketing market, and there is ever-growing competition for their patented, expensive, and synthetic hormone products. As it is, there is false information published continuously to create intentional confusion about, and distrust of, natural products like bioidentical hormones. We must be cautious what we read, where that information comes from, and who stands to benefit from changing public opinion.

Fact: There is No Substitute for Pellet Therapy

You've probably seen the commercials on television for over-the-counter pills and treatments that claim to increase hormone levels. Some of them are natural, herbal supplements, which may be helpful for those who cannot afford pellet therapy at this time. Some of them are synthetic hormones and should be regarded with extreme caution. Over-the-counter hormone supplements of all kinds are far cheaper than pellet therapy, so many people ask me, "Are they effective?"

My answer is that the good ones can be somewhat effective but to a limited extent. Studies show that most herbal supplements are not beneficial.

For example, let's consider a man looking to increase his testosterone. He first needs to understand there are two kinds of testosterone in his body. You will often hear the term total testosterone. A man's total testosterone is found in two forms: bound testosterone and free testosterone. Bound testosterone can be bound to two types of proteins: albumin and sex

hormone-binding globulin (SHBG). Bound testosterone binds tightly to the hormones, testosterone, DHT, and estradiol. These proteins transport testosterone throughout the body. About 98% of testosterone is bound to one of these proteins. The other 2% of bio-available testosterone is known as free testosterone and is loosely bound to albumin. That is the percentage that over-the-counter supplements might help restore, but even if it does, it's only 2%.

The important thing to understand is that all the workouts you do and all the over-the-counter supplements you take will not increase testosterone production in your body to genuinely significant levels, because it's only affecting 2% of your total testosterone. You will still wind up with a low overall T score.

Another part of the problem with just taking some pills is that you won't know what your initial testosterone level is, and you'll have no way of knowing if it is rising with treatment. You lack real data. At Optimal Bio, we monitor your testosterone levels, from the beginning and continuously record your levels throughout treatment so we find the optimal level for you that makes you feel great. That doesn't happen when you buy an over-the-counter supplement.

Also, BHRT does not force your body to increase testosterone production; it simply supplements it. BHRT does the work for your body. It brings your levels back to where they should be and keeps them there. That's real health change. That's a difference you will feel and experience.

95% of my patients who begin BHRT say they will stay on it for life. It is essential that you read the personal success stories of those who have had their lives transformed by BHRT. Hear from just a few of my patients in the next chapter.

CHAPTER FOURTEEN

THE IMPORTANCE OF VITAMIN D

There are thousands of scientific studies regarding vitamin D3, making it one of the most studied vitamins on the planet. There is no debate in the medical community that normal vitamin D3 levels influence human health profoundly.

At Optimal Bio, we monitor more than your hormone levels. We also track vitamin D levels because we know that the process of achieving optimal health requires that we address nutrition as well.

What does vitamin D3 do?

- Affects virtually every cell in your body and affects the expression of around 3,000 genes.
- Unlocks the genetic blueprints that are stored inside our cells.
- Promotes healthy weight, blood sugar regulation, and normal blood pressure.
- Affects everything from bone strength to mood, immune function, and optimal sleeping patterns.

Vitamin D3 can help with weight loss. According to a 2007 study by The Women's Health Initiative, the combination of calcium and vitamin D3 slowed postmenopausal weight gain in women who were not getting enough calcium.⁶⁵ We need vitamin D to help the body absorb calcium and phosphorus from our diets. These minerals are also crucial for healthy bones and teeth. Anyone with metabolic syndrome, hypertension, pre-diabetes, or excess weight should have their vitamin D levels checked. If you are low, you should be supplementing with a high-quality vitamin D3 to optimize your levels.

What are the symptoms of vitamin D deficiency?

- Fatigue
- General muscle pain and weakness
- Joint pain
- Weight gain
- High blood pressure
- Restless sleep
- Poor concentration
- Headaches
- Bladder problems
- Constipation or diarrhea
- Depression

As part of your initial lab tests, we will also test your levels of vitamin D. We will recommend your appropriate daily dose of supplementation once your level is determined.

The two main ways of getting vitamin D are by exposing your bare skin to sunlight and by taking vitamin D supplements. Most people do not get nearly enough sunlight due to their work schedules, lifestyle, and sunscreen use. The lack of UVB (Ultraviolet B) prevents our bodies from producing enough vitamin D.

I recommend supplementing with 5,000 to 10,000 IU of vitamin D3 per day, depending on your lab levels. In addition to protecting you from the deficiency symptoms listed above,

vitamin D3 can decrease your risk of obesity, diabetes, heart disease, and cancer.⁶⁶

It's important to take your vitamin D with a meal that contains some fat and with a high-quality vitamin K supplement for the best absorption.

A 2012 article published by the National Institute of Health revealed that the combination of low free testosterone and low vitamin D could be a predictor of mortality in older men. The conclusion was that this combined deficiency is commonly associated with heart attacks.⁶⁷ At Optimal Bio, our goal is to make sure our patients always have plenty of D and plenty of T to protect their health for the long term!

CHAPTER FIFTEEN

TREATING THYROID PROBLEMS

I am a board-certified OBGYN, which makes me an expert in female endocrinology. I've had twenty-five years of experience in delivering babies and treating and advising women regarding pregnancy, sex, diet, hormonal changes, perimenopause, menopause, and related topics. Sometimes, when I run comprehensive blood labs for my new patients, I discover they also have thyroid abnormalities, which can be related to low or fluctuating levels of testosterone, estrogen, and progesterone. Treating the root of the problem, which is usually an underactive thyroid, is an integral part of the equation in making these patients feel better. My goal is not just to replace hormones, but to treat the whole individual and truly restore his/her health.

What Does My Thyroid Do?

Think of your thyroid gland as the traffic controller of your entire endocrine system—the cop in the middle of a busy intersection with a whistle. Your thyroid is at the center of all the activity, signaling what gets to go where and who gets to go first. If this master gland is asleep on the job, your body is

in big trouble and there is bound to be a major traffic jam, as well as a few crashes.

The thyroid gland is at the base of your neck, just above your collarbone. It orchestrates all your bodily functions, including body temperature, metabolism, digestion, cholesterol levels, heart rate, breathing, muscle development, appetite, and the release of your sex hormones. Your thyroid is continually communicating with your brain, your hypothalamus, and your pituitary gland to make all these complicated hormonal changes happen throughout the day, every single day.

The two primary hormones released by the thyroid are Triiodothyronine (T3) and Thyroxine (T4). T3 and T4 levels must be neither too low nor too high. I like to make sure that all my patients are in balance, and if they need a thyroid replacement hormone, I will prescribe it for them, and counsel them on the best diet and supplements to get them back to feeling energized and healthy.

Our Thyroid Treatment Plans

Optimal Bio offers treatment plans for two types of thyroid disorders.

- Hypothyroidism is a condition in which the thyroid gland doesn't produce enough of the thyroid hormones. Symptoms include weight gain, sleeplessness, brain fog," constipation, dry skin and hair, depression, anxiety, sensitivity to cold, joint pain, muscle cramps, and extreme fatigue.
- Hashimoto's Thyroiditis is an autoimmune disorder characterized by inflammation of the thyroid gland and severe inflammation throughout the body. Symptoms are usually the same as those for hypothyroidism, although, in the initial stages, Hashimoto's patients sometimes experience weight loss, heart palpitations, and panic attacks.

Full treatment plans for our thyroid patients will include:

- Initial consultation and ongoing consultations throughout treatment.
- Comprehensive lab testing to determine the type and severity of the thyroid disorder.
- Recommendations for a proper diet to address the patient's individual needs.
- Detox information to help clean and heal the body from the inside out.
- The best possible supplements for the patient's condition will be available for purchase in our office.
- Prescriptions for thyroid replacement hormone or other medications the patient may require.

How BHRT Can Help

Women are eight times more likely to develop thyroid disorders than men, although thyroid disorders are becoming increasingly common in men as well. According to the American Thyroid Association, an estimated twenty million people in the United States are suffering from thyroid dysfunction, and more than half are unaware of it.⁶⁸ A fact mainstream medical professionals commonly overlook is that the loss of testosterone and estrogen as we age is intricately connected to thyroid problems. It naturally follows that treating patients with bioidentical hormones goes hand in hand with restoring proper thyroid function.

At Optimal Bio, our goal is to optimize your hormones so you can look and feel your best for a lifetime. The endocrine system is extraordinarily complex and delicate. The key to perfect health is balancing hormones at the ideal levels, adding high-quality nutraceuticals (a pharmaceutical alternative which claims physiological benefits), and adopting a healthy diet.

With appropriate lab testing, we can help you identify the specific cause of your symptoms and design a treatment plan that best suits you as an individual. Allow us to help you feel better than you ever dreamed possible—at any age! No, you

do not have to resign yourself to feeling tired, achy, and old. Join the thousands of men and women who have realized that with proper hormone replacement, age is truly just a number!

CHAPTER SIXTEEN

TESTIMONIALS

This next section contains written testimonials of eleven Optimal Bio patients who explain how BHRT has made a difference in their lives. I composed the first eight with my patients' help, and the final three were written by the patients.

Derek's Story⁶⁹

Derek came into my office at his mother's request. She knew some friends who were patients of mine and who had seen encouraging and positive results through BHRT. As a twenty-two-year-old, Derek had struggled for years with depression, anxiety, fear, insecurity, and inferiority issues. Despite treatment from doctors and psychiatrists, his symptoms were only getting worse. A top high school athlete, he was now sedentary and lethargic, and his grades dropped to rock bottom. Shockingly, he had been contemplating suicide.

After running the appropriate lab tests, I confirmed that his testosterone levels were unusually low for his age. Seeing his need, I started him on treatments at Optimal Bio. He sensed no change after two weeks. After four weeks, still, there was no discernable

improvement. But six weeks to the day after beginning treatment, he woke up that morning and declared “everything was different.” His depression lifted. His focus returned. His testosterone had finally risen back to a normal level, and Derek had his life back again. He described it like this: “It was like someone flipped a switch, and the lights came back on!” He has now returned to playing college lacrosse and excelling in school.

Why did this dramatic change happen? Derek’s health and well-being returned when we put his body back in balance. His hormones were optimized to normal levels for his age, and he is experiencing the benefits. Simply put, at Optimal Bio, *the new you is the old you!*

My heart goes out to the thousands of Dereks out there who are suffering from testosterone deficiency and have lost hope. It is tragic that men and women in their thirties, forties, fifties, sixties, and even their seventies have been told they are just going to have to live with those changes to their bodies.

The truth is, there is something you can do about it. And you deserve to hear the truth.

Bridgette’s Story

Bridgette was an OB/GYN patient of mine. An athlete all her life, she worked out and trained consistently. When she reached her forties, she noticed the pay-off was not what it once was. It became more difficult for her to stay in shape. She was experiencing a combination of poor results from working out, as well as increasing lethargy. She also had been suffering from debilitating migraine headaches.

Bridgette had been following a pretty strict nutritional plan for many years of fresh vegetables and good protein, rarely eating processed foods and very few grain products. She frequently exercised, changing up her routine regularly, but still was not achieving the results she used to see and feel. She was frustrated, trapped on the roller coaster of not sleeping soundly and working out more often, yet not getting the results she wanted regarding her physique.

At one of her annual examinations, she shared these struggles with me. We began talking about BHRT. She sounded intrigued and said she needed to research and study what I was suggesting.

Now, I *love* that type of response. I want my patients to think for themselves. I never want them to take my word as truth. I encourage everyone to read, study, research, speak with those who currently receive BHRT, and decide based on what they believe is the best choice for themselves.

Bridgette started the treatment and over the following months saw much improvement in her sleep, energy level, mood, and workout results. The migraines she was accustomed to suffering through regularly were virtually gone. She rarely had to take her migraine medicine. Her body was recovering faster from workouts, her cardio endurance was increasing, and she was getting stronger. Her emotional health had also improved. She felt happier and more positive. Over time, she became cognizant of when the pellets were becoming depleted, as many patients do. (Usually, at the three to four-month mark, most of my patients can feel when it's time for another treatment.) Bridgette has completed two Spartan races in the last year and is in better shape now than she was ten years ago.

Mike's Story

No one can tell the story of health returning better than Mike. I've known Mike for over twenty years. He was a friend and golfing buddy before he became a patient.

Mike was a former Big Ten quarterback at Northwestern. He could throw a football sixty to sixty-five yards, but this once stud-of-a-guy began to see his health deteriorate. He broke his right arm, ending his playing career, and had to have a cyst removed from his right hand the day before graduation. He never had the cyst on his left hand removed, and it continued to grow and spread, entrapping the nerves up his left arm to the point where his left arm was virtually paralyzed.

He graduated and went to his first job. Over the years, his arm got worse. His wife, a registered nurse, told him, “Your arm is becoming deformed. It looks like a little alligator arm.”

Thirty years of pain took its toll. Mike was continually in agony. After years of playing football, Mike also suffered from stenosis of the neck and upper back. Doctors prescribed steroid shots to ease the pain. On one occasion, one of those shots temporarily paralyzed Mike. He could not feel his lower extremities for several hours. He was wheeled into the emergency room, where he eventually recovered, but he never received another steroid shot.

To compensate, his doctors started prescribing lots of pain pills for him. Little did he know that those pills would further reduce his testosterone levels. That put him in a clinical depression, so the doctors prescribed more pills. Only a year ago, this once-great athlete was considering the possibility of going on disability. He was self-employed and could only work four hours a day, productive for perhaps only an hour a day. By his admission, Mike was suffering from twenty of the twenty-three symptoms of low testosterone listed in Chapter Nine. As he says, “I was a mess, physically, emotionally, and spiritually—in all ways.”

Mike was one of my neighbors and one day we were talking about what was going on in his body. He was depressed and discouraged. He was also desperate. As I told him about BHRT, his face lit up. He agreed to try it.

Within weeks, Mike’s body started changing. His big belly started shrinking, and soon, he had lost all his excess weight. He recovered his muscle definition, and the pain in his upper back, neck, and arm went away completely. Mike likes to explain this small miracle by saying, “I’m not a doctor. I’m an engineer and a businessman. I can’t explain how all this happened. I just know I love the results. All I can do is tell you that for me, it has been nothing short of life changing. It has made every part of my life better. I was at the golf course the other day and a woman saw me and shouted out, “Wow! Those are the biggest biceps I’ve ever seen!”

Mike told me recently, “Before I started BHRT, I was pale. Now I’m bronze and muscular again! I call it ‘Body by Brannon.’”

Mike concluded, “People wonder if high testosterone makes you angry. From my experience, I can tell you that I was angry when I wasn’t happy. I struggled with anger in the years before I started on BHRT. Now it’s just different. I love harder. I live harder. And I enjoy life a whole lot more.”

Carol’s Story

Carol came to see me recently. Her husband was already a patient and had encouraged her to try pellets, hoping to improve their sexual closeness and intimacy. Carol had been on progesterone cream therapy for several years, but her hormone levels were still significantly low. She also had a major deficiency in her vitamin D levels. Within one week after placement, she and her husband reported back to me that her sexual responsiveness and ability to become aroused had returned. She and her husband are both thrilled with pellet therapy.

Jake’s Story

What about men? How does BHRT affect their sexual performance? Among other symptoms men often experience when their testosterone is low, Jake suffered from erectile dysfunction. I could tell he was initially embarrassed even to bring it up with me during our consultation. I make it a point to create a safe, open atmosphere during my consultations, and Jake responded with candor. He said, “I just can’t get it up like I used to. I want to have sex with my wife, but I can’t get hard enough.”

Once we ran his labs, it was apparent what the problem was. His testosterone was very low, which, in my office, is an easy fix! And his response was, “Doc, if you can find the solution for this, I’m all in.”

After his first placement, not only did Jake see significant improvement in his ability to maintain an erection, but there

were also other areas where he saw a change and positive results. His energy level and ability to wake up rested and refreshed were, in his words, “back to what it used to be.” In a matter of weeks, Jake was feeling like himself again.

Kimberly's Story

Kimberly is a forty-nine-year-old OB/GYN patient. I've known her for many years and delivered her babies. She started pellet therapy several years ago and came in for a check-up recently. During her visit, she thanked me and said, “Over the last two years, my husband and I have finally realized what our bodies are for. Even when we were younger, we only had sexual intercourse once or twice a month. Now we are having sex two or three times a week. It's been a great way for us to communicate and draw closer as a couple. You gave us our love relationship back. You allowed me to know my body. The last several years have been phenomenal.”

James' Story

James came into my office, having done his research. At our original consultation, which lasted nearly an hour, he was ready to sign up. His questions were all answered, and we ordered his labs. His testosterone level was 136, way below normal. Two days later, I performed his initial placement. I saw him at one of our public seminars about six weeks later and asked him how he was feeling. His labs now showed his testosterone level to be over 1,100.

He said, “Yesterday, I worked fourteen straight hours on three separate, highly intense projects. I was able to keep my focus, energy level, and momentum throughout the day. My thinking was clear. My spirit was energized, and I was effective. I could not have done that six weeks ago. BHRT is really making a difference.”

Do you know what my best argument for BHRT is? The testimonials of people like James, who have experienced dramatic

changes in their lives. That's my greatest privilege—to be a part of helping bring about that change. Our goal at Optimal Bio is to help bring back the old you.

Gary's Story

Out of all my patients, Gary's story might be the most remarkable because the changes to his health were so unexpected. Gary is a retired Special Agent of the U.S. Office of Personnel Management.

Gary went to see his eye doctor in Dunn, North Carolina, for a routine eye exam. He was immediately referred to Dr. Overman⁷⁰ of UNC Kittner Eye Center on July 11th of 2014. Dr. Overman asked him to read the letters on a standard eye chart. It was at that moment that Gary realized that he could see the letters on the sides of the chart, but not the ones in the middle. "It was as if there was a black hole in the center of my field of vision in my left eye," said Gary.

Dr. Overman diagnosed him with a rare form of macular degeneration, for which there is no known cure. The doctor admitted that, in his experience with this condition, he expected Gary's vision to deteriorate rather quickly, and that he should prepare himself to be blind by the time he was eighty. He explained that the sight in Gary's left eye "would slowly darken and go black over time, like the curtain lowering in a movie theater." Dr. Overman said he did not see the benefit of taking any drug or supplement. He said the type of macular degeneration Gary had was not treatable and the gradual decline of his sight would be irreversible. Gary was distressed by this news.

In mid-2016, Gary started taking the supplement Lutein, which is reported to be beneficial for eye health. He thought it might help to slow the progress of the disease, even if it could not cure him. In April of 2016, with encouragement from his girlfriend, Gary started BHRT at Optimal Bio to improve his overall health. His energy level, libido, mental clarity, and mood all improved for the better, and Gary was pleased with the treatments, but what happened next was something he never expected.

During his next semi-annual visit to the eye doctor on February 23rd of 2017, Gary reported that his vision had improved dramatically, although it was somewhat distorted. Dr. Overman examined him, and to his great surprise, the photoreceptors in the back of his left eye and retina were being rejuvenated! Gary explained he had started BHRT, he had been taking the Lutein, and he had also had some good people praying for him. Gary said, “My miraculous recovery has to be the result of one of those things, or perhaps all three.”

Dr. Overman was genuinely astounded. He said, “I have never seen anything like this in all my years working in ophthalmology. And I specialize in macular degeneration. This just doesn’t happen. I have never seen a recovery of vision in any patient who has your type of MD.” Dr. Overman provided Gary with high-resolution digital images of his eye before and after treatment. The images provide clear visual proof of the changes to his eye fewer than ten months after starting BHRT and lutein.

When Gary came to see me for his next pellet placement, he sat down and told me the incredible story of his restored vision and the reaction of his eye doctor. Ironically, I had just been reading an article that day about how bioidentical hormones might be able to reverse macular degeneration and end the epidemic of blindness among older Americans.⁷¹ Currently, studies are being done to prove BHRT’s effectiveness for this condition. I shared the article with Gary.

I am overjoyed one of my patients was able to reverse his macular degeneration with the help of BHRT, and I look forward to helping more people like Gary in the future.

The final three testimonials are written in the patients’ own words.

Lindsay’s Story

Twenty years ago, I had my first GYN appointment with Dr. Brannon. So, I know him well, and I have trusted him as my doctor for a long time. Then, about five years ago, my husband and I felt that God was calling us to live and work in East Asia.

The language there is one of the most difficult to learn, and my husband and I are both in our early fifties.

About two years into our time there, we were teaching English to college students at a university in our city. They also wanted to involve us in playing ping-pong, badminton, and other Asian games. I was post-menopausal, and it was at that time I started thinking about how little energy I had and how tired I was. I couldn't keep up with these students we were trying to minister to. In addition, my libido was low, and six months before a return trip to the States, I also began experiencing pain during sexual intercourse.

I am a registered nurse by trade, and I began looking online for help. Nothing was working, and by the time we came back in the summer of 2015, I was in tears. At my annual check-up with Dr. Brannon, I shared with him what was going on.

He looked at me and said, "I have the answer." And I replied, "I knew you would!" He called my husband and me into Optimal Bio, and we had a consultation. I am very science-driven, and my husband is very research-driven. We received the information and went home to do research and study. We looked everything up and concluded that this is what we needed to do.

We scheduled an appointment to have our pellets placed, and my first comment to Dr. Brannon was, "You want to put what, where?" But because I had known him for over twenty years, I trusted him.

On the pamphlet that Dr. Brannon gave us about the benefits of BHRT, the first benefit was increased libido. I will tell you that it was probably two to three weeks later, not even at the six-week mark, I started feeling like I was twenty-nine years old again—not the fifty-eight years old that I was. I was probably driving my husband crazy at that point!

The second benefit on that pamphlet was increased clarity. My mom, who has since passed away, suffered from dementia and Alzheimer's for the last eight years of her life. I watched her suffer from the horrific effects of those diseases. Again, after several weeks of receiving the pellet placement, I could sense clarity and focus in my mind that I hadn't had in years.

I also have seen better cardiovascular benefits. When we returned to East Asia, I found myself, unlike before, now being able to keep up with these college students. We need energy, and that is one of the greater benefits I've experienced.

John's Story

I had talked to Dr. Brannon for many years about hormone therapy. Honestly, I think the reason I didn't jump into BHRT was ego. I work in construction. I've always been a man's man, and I didn't think I needed testosterone. Whatever issues I had physically, I thought I could overcome them on my own. I think there are probably a lot of guys out there who can identify with that attitude.

Recently, I was at a Christmas party surrounded by many who were patients of Dr. Brannon and were receiving hormone therapy. They all looked fit and trim. They had all lost weight and were in tremendous shape, and they all talked so positively about it. One of those was a friend of mine who also works in construction. He's someone I really respect. He's been on the hormone treatment for three years and finally told me, "Dude, you just gotta do it!" And I knew it was time.

I was convinced. I had the pellets done the next week. I know many people do not see changes in their lives as immediately as I did, but within a week, I could sense a difference. It seemed like my body was being turned into a machine that was much more in sync with itself.

I am fifty-seven years old and have suffered from ADD for as long as I can remember. The first real change I noticed was that "the fog" was lifted in my head. My job in construction requires me to do some bid work, and a bunch of take-offs (material figuring). Because I've started thinking more clearly, I can set up processes much more quickly than before. Now I am usually two or three steps ahead in my mind. The hormone therapy has helped me with my concentration ten-fold.

It has also helped my stamina on the job site. The older I've gotten, the worse my sleep became. I would wake up in

the middle of the night and not be able to get back to sleep. No more. With Optimal Bio treatment, I am now sleeping through the night again and waking up refreshed. No more dog-tired, low-energy days.

I've also had the energy to fly through workouts and am seeing changes in my body shape and muscle tone.

I know there are a lot of people out there—especially guys—who are hesitant to start. All I can tell you is it's been a game-changer for me. My only regret is that I waited too long to start. My challenge to guys I talk with is to give it a shot. When you look at all you can gain, I say, "Go for it!"

Johanna's Story

In March of 2014, I was diagnosed with an autoimmune disorder called Hashimoto's Thyroiditis. This condition causes a person's own body to attack the thyroid gland. The symptoms include joint pain, fatigue, brain fog, digestive issues, panic attacks, insomnia, heart palpitations, and weight changes. I had all the above symptoms and went from a size ten to a size two in the space of six months. I became very, very ill, and had such debilitating joint pain that most of the time, I could barely walk. At times, I needed to use crutches, and sometimes even a wheelchair. I was forced to quit my job. I was so sick that I went to live with my parents for several months. I saw thirty different doctors in one year, trying to figure out how to treat my condition.

Unfortunately, conventional medicine is of little help when it comes to treating autoimmune disorders, which respond better to natural treatments than to drugs. Finally, I had the good fortune to find a Functional Medicine Practitioner who set me on a path to healing using nutritional supplements and a Paleo diet. I have read and researched a tremendous amount, and I have been vigilant about sticking to the diet and taking the proper supplements. After four years, I have succeeded in putting my Hashimoto's into remission, and my bloodwork continually shows that everything in my body has returned to normal.

There were a few wonderful doctors who were instrumental in my recovery, and one of them is Dr. Greg Brannon. A problem that is common with Hashimoto's patients is hormone dysfunction, which my bloodwork confirmed. A significant part of the reason why I feel so much better is that Dr. Brannon was able to correct the erratic, abnormal fluctuations of my estrogen, progesterone, and testosterone. He did this not with dangerous synthetic hormones, but with all-natural bioidentical hormones which are made from wild yams and are good for your body. Bioidentical hormones, along with various other helpful treatments, have taken away my pain and allowed me to heal. I am now walking well, and my life is returning to normal.

Dr. Brannon was incredibly supportive and possessed a wealth of knowledge. He gave me a book that changed my understanding of health care and how we can make ourselves healthy without drugs or surgery. Dr. Brannon inspired me to want to help other people to heal, as he has helped me. Even when I was at my lowest point, his words of encouragement confirmed that I was doing all the right things and gave me the will to persevere.

At my most recent appointment with him, he was astounded at how well I was walking and how much progress I've made since the last time he saw me. I assured him that a huge part of my recovery had to do with the hormone treatments and that I was so grateful for all he had done for me. He thanked me and said, "This is why I do what I do. Because the reward is so great when I can see a tremendous change in someone like you." He added, "You are a walking miracle, Johanna. Don't ever forget that. And don't ever give up your fight. You have healed yourself. Conventional medicine says you can't cure Hashimoto's, but they're wrong. You are living proof of that." I have thought of his words many times since, and they always give me strength.

Dr. Greg Brannon is a great man and a great doctor: educated, forward-thinking, compassionate, and inspiring. I am lucky to be his patient, and I hope that more people like me will be able to benefit from his care.

For those of you out there suffering from depression, menopausal symptoms, low testosterone, Post Traumatic Stress Disorder, autoimmune disorders, Attention Deficit Disorder, macular degeneration, fibromyalgia, hypothyroidism, and many other common conditions, BHRT can help. There is hope!

CHAPTER SEVENTEEN

CONCLUSION AND ADDITIONAL READING

I sincerely hope that I have honestly and forthrightly answered all your questions about BHRT. If you have more questions, I encourage you to schedule a consultation with me at one of my four North Carolina clinics so I can give you my undivided attention.

I hope you now understand how hormones work in your body and why you need them to be at optimal levels.

I trust you understand the critical and life-changing difference between the synthetic hormones that Big Pharma is pushing today, and natural, safe bioidentical hormones.

I assure you, as a doctor who has studied hormones his whole life, and as a current patient receiving BHRT, this therapy will restore energy and vitality and will keep your body youthful and healthy, and able to guard against various diseases as time goes on.

I have devoted the last few years of my life to making sure that Optimal Bio's pellets are the purest and best bioidentical products available today. I hope you will now take the next step and become one of my patients.

Suggested Reading

Throughout this book, I have encouraged you to do your research. Don't simply believe what your family physician tells you. Don't believe what you hear on television or in advertisements. And don't even believe me simply because I've said it. Take the time to investigate the topic using multiple sources and make an informed decision. Below, I recommend five essential books that explain why BHRT is safe, proven, and effective. Check them out! All five of these books refer hundreds of articles, white papers, and research studies that have been done over the years.

1. *Testosterone for Life: Recharge Your Vitality, Sex Drive, Muscle Mass and Overall Health!*, Abraham Morgentaler, M.D.
2. *Hormone Optimization in Preventive/Regenerative Medicine*, Ron Rothenberg, M.D.
3. *The Youth Effect: A Hormone Therapy Revolution*, Ronald L. Brown, M.D.
4. *Feel Younger, Stronger, Sexier: The Truth About Bioidentical Hormones*, Dan Hale, M.D.
5. *You Don't Have to Live With It! Uncovering Nature's Power with SottoPelle Bioidentical Hormones*, Gino Tutera, M.D., F.A.C.O.G.

For your convenience, many of the articles mentioned in the books above are also listed on our website, which is continually updated and expanded.

You will be able to find them at:

www.optimalbio.com

Contact Us

I began this book with you in mind—as if we were engaging in a conversation in my office. I hope this book has answered your questions. I've shown you how you can prolong youth, health and vitality with BHRT.

The next step is up to you!

I look forward to meeting you in-person and helping you get your life back. I will take great joy and pride in helping the new you become the old you (and maybe even better!)

Regardless, I would like to help you become the healthiest you can be.

~

Give us a call to schedule a consultation to learn how we can help you revitalize your body:

919-977-3231

~

We look forward to helping you find your vitality!

GLOSSARY

Adrenal Glands: Small, triangular-shaped glands located on top of both kidneys. They produce hormones that help regulate metabolism, immune system, blood pressure, response to stress, and other essential functions.

Aluminum: The third most abundant element in the earth's crust. It occurs naturally in the environment, foodstuffs, and drinking water. It is also found in processed foods, food packaging, cooking utensils and baking trays, cosmetic products (including antiperspirants, sun creams, and toothpaste), and drugs (antacid agents).

Atherosclerosis: The buildup of fats, cholesterol, and other substances in and on artery walls (plaque), which can restrict blood flow.

Attention Deficit Disorder: A neurological disorder that causes a range of behavior problems such as difficulty attending to instruction, focusing on schoolwork, keeping up with assignments, following instructions, completing tasks, and social interaction.

Autoimmune Disease: A condition in which the immune system mistakenly attacks the body.

- Atrazine:** A widely used herbicide that interferes with the hormonal activity of the human body at extremely low doses.
- Bio-equivalent Hormones:** Plant-derived hormones that are chemically changed in a laboratory until they are equivalent (not identical) to what the body would naturally produce.
- Bioidentical Hormones:** Man-made hormones derived from plant estrogens that are chemically identical to those the human body produces.
- Biotin:** A water-soluble B-complex vitamin that helps the body metabolize proteins and process glucose. It is also known as vitamin B7 or vitamin H.
- Bisphenol-A (BPA):** An industrial chemical used to make certain plastics and resins since the 1960s. BPA is found in polycarbonate plastics and epoxy resins. Polycarbonate plastics are often used in containers that store food and beverages, such as water bottles.
- Centers for Disease Control (CDC):** The leading national public health institute of the United States. Its main goal is to protect public health and safety through the control and prevention of disease, injury, and disability in the U.S. and internationally.
- Cholesterol:** A waxy substance the body needs to build cells. Cholesterol comes from two sources. The liver makes all the cholesterol the body needs, while the remainder of the cholesterol in the body comes from foods derived from animals.
- Chlorine:** One of the most commonly manufactured chemicals in the United States. Its most important use is as a bleach in the manufacture of paper and cloth, but it is also used to make pesticides, rubber, and solvents. Chlorine is used in drinking water and swimming pool water to kill harmful bacteria. It is also used as part of the sanitation process for industrial waste and sewage.
- Chronic Fatigue Syndrome:** A disorder characterized by extreme fatigue or tiredness that doesn't go away with rest and can't be explained by an underlying medical condition.
- Collagenics:** A unique combination of free-form amino acids, essential minerals including magnesium bis-glycinate,

horsetail herb (containing silica), and other nutrients known to be involved in the biochemical processes that support healthy connective tissue and collagen.

Complete Blood Count: A blood panel requested by a doctor or other medical professional that gives information about the cells in a person's blood. The test reports the amounts of white blood cells, red blood cells and platelets, the concentration of hemoglobin in the blood and the hematocrit, which is the percentage of the blood that is made up of red blood cells.

Corpus Luteum: A hormone-secreting structure that develops in an ovary after an ovum has been discharged but degenerates after a few days unless pregnancy has begun.

Cortisol: A steroid hormone that regulates a wide range of processes throughout the body, including metabolism and the immune response. It also has a vital role in helping the body respond to stress.

Di-Hydro Testosterone: A hormone with powerful androgenic actions that causes the body to mature during puberty and is responsible for many of the physical characteristics associated with adult males.

DNA: The hereditary material in humans and almost all other organisms.

DNA Expression: Gene **expression** is the process by which the instructions in our **DNA** are converted into a functional product, such as a protein.

Depression: A mood disorder that causes a persistent feeling of sadness and loss of interest. Also called major depressive disorder or clinical depression, it affects how people feel, think, and behave and can lead to a variety of emotional and physical problems.

Endocrine Disrupting Chemicals: Chemicals or mixtures of chemicals that interfere with the way the body's hormones work.

Endocrine System: A network of glands in the body that make the hormones that help cells talk to each other. The glands are responsible for almost every cell, organ, and function in the body.

Epigenetics: The study of biological mechanisms that will switch genes on and off.

Estradiol: An estrogen steroid hormone and the major female sex hormone.

Estrogen: The primary female sex hormone. It is responsible for the development and regulation of the female reproductive system and secondary sex characteristics.

Estrogen Mimickers: Artificial hormones that have a different chemical structure but behave the same as **estrogen** biologically.

Evening of Primrose Oil: An oil made from the seeds of the flowers of a plant native to North America, traditionally used to treat bruises, hemorrhoids, digestive problems, and sore throats

Fibromyalgia: A disorder characterized by widespread musculoskeletal pain accompanied by fatigue, sleep, memory, and mood issues.

Five-alpha-reductase system: The enzyme system that metabolizes testosterone into dihydrotestosterone,

Fluoride: A mineral in bones and teeth. It's also found naturally in water, soil, plants, rocks, and air. Fluoride is commonly used in dentistry to strengthen enamel, which is the outer layer of teeth. Fluoride helps to prevent cavities. It's also added in lesser amounts to public water supplies in the United States and many other countries.

Follicle Stimulating Hormone (FSH): A hormone made by your pituitary gland, a small gland located underneath the brain. FSH plays a vital role in sexual development and functioning.

Food and Drug Administration (FDA): A federal agency of the United States Department of Health and Human Services, one of the United States federal executive departments. The FDA is responsible for protecting the public health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, our nation's food supply, cosmetics, and products that emit radiation. The agency also provides accurate, science-based health information to the public.

- Free Testosterone:** Testosterone molecules available to enter the body's cells—unimpeded by SHBG or albumin—to carry out their function as signaling molecules that regulate metabolism and other cellular functions.
- Fungicides:** Chemical compounds or biological organisms used to kill parasitic fungi or their spores.
- Gene Expression:** The process by which information from a gene is used in the synthesis of a functional gene product.
- Glyphosate:** A broad-spectrum systemic herbicide and crop desiccant.
- Hashimoto's Thyroiditis:** A condition in which the immune system attacks the thyroid, a small gland at the base of your neck below the Adam's apple.
- HDL:** High-density lipoproteins. It is sometimes called the "good" cholesterol because it carries cholesterol from other parts of the body back to the liver, which removes the cholesterol from the body.
- Herbicides:** Substances used to control unwanted plants, commonly known as weed killers.
- Hormones:** A regulatory substance produced in an organism and transported in tissue fluids such as blood or plasma to stimulate specific cells or tissues into action.
- Hypothalamus:** A small region of the brain located at the base, near the pituitary gland. While it's small, the hypothalamus plays a crucial role in many essential functions, including releasing hormones and regulating body temperature.
- Hypothyroidism:** An underactive thyroid gland, which means that the thyroid gland can't make enough thyroid hormone to keep the body running normally.
- Institute of Medicine:** A nonprofit organization established in 1970 as a component of the US National Academy of Sciences that works outside the framework of government to provide evidence-based research and recommendations for public health and science policy. The IOM is also an honorific membership organization.
- Ketogenic Diet:** A high-fat, adequate-protein, low-carbohydrate diet that in medicine is used primarily to treat

difficult-to-control epilepsy in children. The diet forces the body to burn fats rather than carbohydrates.

Larvicides: An insecticide that is specifically targeted against the larval life stage of an insect. Their most common use is against mosquitoes.

LDL: A microscopic blob made up of an outer rim of lipoprotein and a cholesterol center. Its full name is “low-density lipoprotein.” It’s bad because it becomes part of plaque, the stuff that can clog arteries and make heart attacks and strokes more likely.

Luteinizing Hormone (LH): A hormone produced by the anterior pituitary gland.

Macular Degeneration: An eye disease that causes vision loss in the center of the field of vision.

Medroxyprogesterone: A female hormone that helps regulate ovulation (the release of an egg from an ovary) and menstrual periods.

Menopause: The time in a woman’s life when her period stops. It usually occurs naturally, most often after age 45. Menopause happens because the woman’s ovaries stop producing the hormones estrogen and progesterone.

Mercury: A heavy metal that is toxic to humans.

Metabolism: The chemical processes that occur within a living organism in order to maintain life.

Metabolic Syndrome: A cluster of conditions that occur together, increasing the risk of heart disease, stroke, and type-2 diabetes. These conditions include increased blood pressure, high blood sugar, excess body fat around the waist, and abnormal cholesterol or triglyceride levels.

Metagenics: Founded in 1983, **Metagenics** offers premium vitamins and supplements recommended by health practitioners across the world.

mIU/mL: A unit of volume measurement—milli-international units per milliliter.

ng/ml: A unit of weight measurement—nanograms per milliliter. One gram is equal to 1,000,000,000 nanograms.

Osteoporosis: A disease in which the density and quality of bone are reduced.

- Paleo Diet:** A dietary plan based on foods similar to what might have been eaten during the Paleolithic era, which dates from approximately 2.5 million to 10,000 years ago. A paleo diet typically includes lean meats, fish, fruits, vegetables, nuts, and seeds—foods that, in the past, could be obtained by hunting and gathering. A paleo diet limits foods that became common when farming emerged about 10,000 years ago. These foods include dairy products, legumes, and grains.
- Perimenopause:** Refers to the time during which a woman's body makes the natural transition to menopause, marking the end of the reproductive years. Perimenopause is also called the menopausal transition.
- Pesticides:** Substances that are meant to control pests, including weeds. The term includes all of the following: herbicides, insecticides, nematicides, molluscicides, piscicides, avicides, rodenticides, bactericides, insect repellents, animal repellents, antimicrobials, and fungicides.
- pg/ml:** A unit of measurement of weight—picograms per milliliter.
- Phthalates:** Substances mainly used as plasticizers, i.e., substances added to plastics to increase their flexibility, transparency, durability, and longevity. They are used primarily to soften polyvinyl chloride.
- Pituitary Gland:** A small pea-sized gland that plays a major role in regulating vital body functions and general wellbeing. It is referred to as the body's "master gland" because it controls the activity of most other hormone-secreting glands.
- Poly-Vinyl Chloride (PVC):** A synthetic plastic polymer, widely used in the building and construction industry to produce door and window profiles, pipes (drinking and wastewater), wire and cable insulation, medical devices, etc.
- Post-Traumatic Stress Disorder (PTSD):** A disorder in which a person has difficulty recovering after experiencing or witnessing a terrifying event.
- Pre-Menstrual Syndrome:** The physical and emotional symptoms that occur in the one to two weeks before a woman's period.

- Premarin:** A patented medication owned by Pfizer used to treat menopause symptoms such as hot flashes and vaginal changes, and to prevent osteoporosis in menopausal women. Premarin is also used to replace estrogen in women with ovarian failure or other conditions that cause a lack of natural estrogen in the body.
- Prempro:** A patented medication owned by Pfizer that contains a combination of estrogens and medroxyprogesterone.
- Medroxyprogesterone:** A form of progesterone, a female hormone important for regulating ovulation and menstruation.
- Prempro:** A drug used to treat menopause symptoms such as hot flashes and vaginal changes and to prevent osteoporosis in menopausal women.
- Progesterone:** A steroid and progestogen sex hormone involved in the menstrual cycle, pregnancy and embryogenesis of humans and other species.
- Progestins:** A type of medication that produces effects similar to those of the natural female sex hormone progesterone in the body. A progestin is a synthetic progestogen.
- Prometrium:** A female hormone important for the regulation of ovulation and menstruation.
- Prometrium:** A drug used to cause menstrual periods in women who have not yet reached menopause but are not having periods due to a lack of progesterone in the body. Also used to prevent overgrowth in the lining of the uterus in postmenopausal women who are receiving estrogen hormone replacement therapy.
- Provera:** A drug used to treat conditions such as absent or irregular menstrual periods, or abnormal uterine bleeding. Also used to decrease the risk of endometrial hyperplasia (a condition that may lead to uterine cancer) while taking estrogens.
- Rapid Eye Movement (REM) Sleep Cycles:** REM sleep happens ninety minutes after humans fall asleep. The first period of REM typically lasts ten minutes. Each of the successive REM stage gets longer, and the final one may last up to an hour. Heart rate and breathing quicken. Humans

can have intense dreams during REM sleep since the brain is more active.

Saw Palmetto: A type of palm native to the southeastern United States. The berries of the plant are commonly used in supplements to improve prostate health, balance hormone levels, and prevent hair loss in men.

Sex Hormones: A hormone, such as estrogen or testosterone, affecting sexual development or reproduction.

Spirolactone: A potassium-sparing diuretic that removes excess fluid from the body in congestive heart failure, cirrhosis of the liver, and kidney disease.

Synthetic Hormones: Man-made hormones that are similar to the hormones produced by the human body. These are then used as a treatment for men and women whose own hormones are low or out of balance.

T3: A thyroid hormone. It plays a key role in the body's control of metabolism (the many processes that control the rate of activity in cells and tissues).

T4: A hormone called thyroxine, which plays a role in several of the body's functions, including growth and metabolism.

Testosterone: The primary male sex hormone and anabolic steroid. In male humans, testosterone plays a key role in the development of male reproductive tissues such as testes and prostate, as well as promoting secondary sexual characteristics such as increased muscle and bone mass, and the growth of body hair.

Thyroid: A butterfly-shaped gland in the front of the neck. It produces hormones that control the speed of the body's metabolism

Thyroid Panel: A group of tests that may be ordered together to help evaluate thyroid gland function and to help diagnose thyroid disorders. The tests included in a thyroid panel measure the volume of thyroid hormones in the blood.

Thyroid Stimulating Hormone: A pituitary hormone that stimulates the thyroid gland to produce thyroxine and then triiodothyronine, which stimulates the metabolism of almost every tissue in the body.

- Transcription:** The first of several steps of DNA based gene expression.
- Triglycerides:** A type of fat (lipid) found in your blood. When a person eats, the body converts any calories it doesn't need to use right away into triglycerides. The triglycerides are stored in fat cells. Later, hormones release triglycerides for energy between meals.
- Ultraviolet B:** One of the three types of invisible light rays given off by the sun.
- Uric Acid:** A product of the metabolic breakdown of purine nucleotides, and it is a normal component of urine.
- United States Department of Agriculture (USDA):** The U.S. federal executive department responsible for developing and executing federal laws related to farming, forestry, rural economic development, and food.
- Vaccines:** A biological preparation that provides active acquired immunity to a particular disease. Typically contains an agent that resembles a disease-causing microorganism and is often made from weakened or killed forms of the microbe, its toxins, or one of its surface proteins.
- World Health Organization (WHO):** A specialized agency of the United Nations that is concerned with international public health.
- Women's Health Initiative (WHI):** A long-term national health study focused on strategies for preventing heart disease, breast and colorectal cancer, and osteoporotic fractures in postmenopausal women.
- Vitamin D:** Plays a crucial role in helping to increase intestinal absorption of calcium, magnesium, and phosphate, and multiple other biological effects. Plays a key role in helping the blood clot, preventing excessive bleeding.
- Vitamin D3:** Used as a dietary supplement in people who do not get enough vitamin D in their diets to maintain adequate health.
- Vitamin K:** plays a vital role in helping the blood clot, preventing excessive bleeding.

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