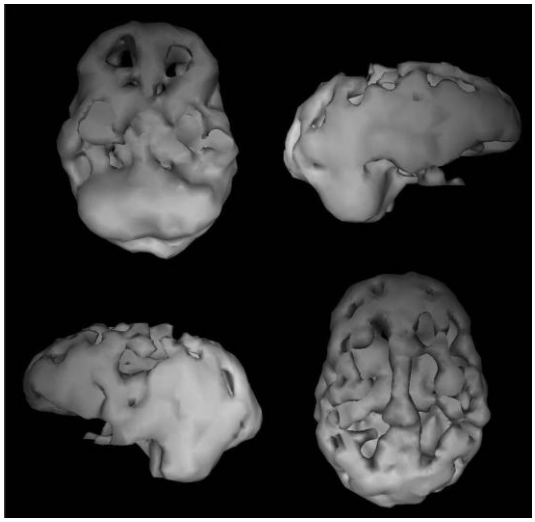
The Hormone Solution
Balance Your Hormones to Turn Back the Clock

Your hormones play a critical role in the way you act and the way you think, act, and look.

Chapter 7, excerpt from New York Times Best-Seller "Change Your Brain, Change Your Body" by Daniel G. Amen, M.D.

Did you know that your hormones have a huge impact on brain function, for both men and women? When your hormones are balanced you tend to feel happy and energetic. When your hormones are off, everything and everyone in your life suffers. For example, did you know that low thyroid hormone is associated with overall decreased brain activity, which makes you feel depressed, irritable, and have significant trouble thinking (Image 6.1).

Image 6.1 Low Thyroid



Low thyroid hormones cause overall decreased brain activity

Likewise, low testosterone levels have been associated with low libido, depression, memory problems, and have been implicated in Alzheimer's disease. We are only beginning to

talk about male menopause, but it is a real issue that needs to be treated for many men. Low testosterone levels may be a significant cause of mid-life crises and divorce. As his testosterone levels go down, he feels more negative, blames his wife, who is having her own hormonal issues, and looks outside of the marriage to feel young again. Of course, the new love usually doesn't make him happy.

Low testosterone levels also affect women. I once had a female physician come up to me at a lecture and tell me that at age fifty-one she had no interest in sex, her marriage was in trouble and her mother had just died from Alzheimer's disease. She had NO idea that low testosterone levels could be part of her problem. Later she emailed me that her testosterone levels were near zero and that taking testosterone made a huge difference for her sexuality, her memory, and her marriage.

When testosterone levels are too high, for men or for women, they can be "too competitive," have commitment issues, be hypersexual, and struggle with acne or being too aggressive. A common condition in women associated with too much testosterone is called polycystic ovarian syndrome or PCOS. More on this in a bit.

Do you believe in PMS? I have five sisters and three daughters. I believe in PMS! But it wasn't until I met Becky that I finally had evidence that PMS was, in fact, a brain disorder. Becky came to my office after a brief stay in jail. In the week before her period she often became moody, anxious, aggressive, and tended to drink too much. Shortly before she saw me, during the worst time of her cycle she got into a fight with her husband, attacked him with a knife and was arrested. When I met her, I decided to scan her during the worst time of her cycle, and then again two weeks later during the best time. Becky's scans were radically different. During the difficult time of her cycle, her worry center was overactive, indicated by the arrow on Image 6.2

and her judgment center was low in activity, which may have been why she grabbed the knife. You can see the holes in the front of her brain. During the best time of her cycle her brain looked much better (image 6.3). Seeing her scans was so instructive and on treatment she did much better. Hormone fluctuations can change your brain and literally rip your family apart.

Image 6.2 PMS Worst Time of Cycle

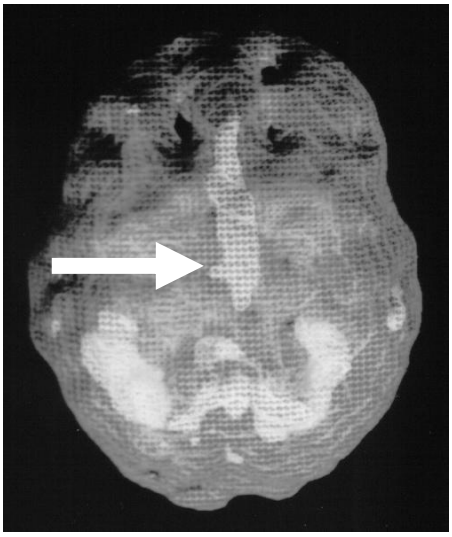
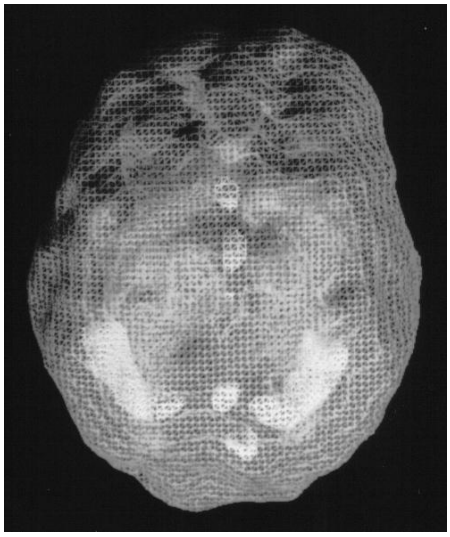


Image 6.3 PMS Best Time of Cycle



This view is looking down from the top, where gray is average activity and white is the top 15 percent of activity. The white area indicated by the arrow indicates increased anterior cingulate activity and trouble shifting attention. The holes in the front part of the scan indicate lower prefrontal cortex activity and poor judgment.

Along the same lines, menopause is often associated with lower overall brain activity, which can lead to depression, anxiety, insomnia, and concentration and memory problems. Images 6.4 and 6.5 show a woman's SPECT scan both off and on her hormones.

Image 6.4 Off Hormones

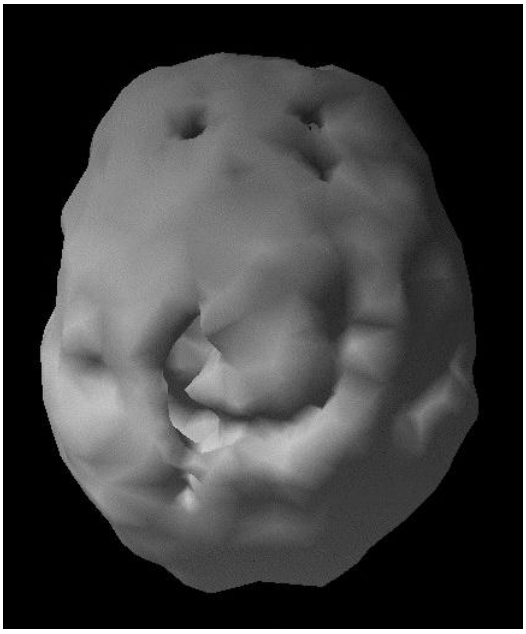
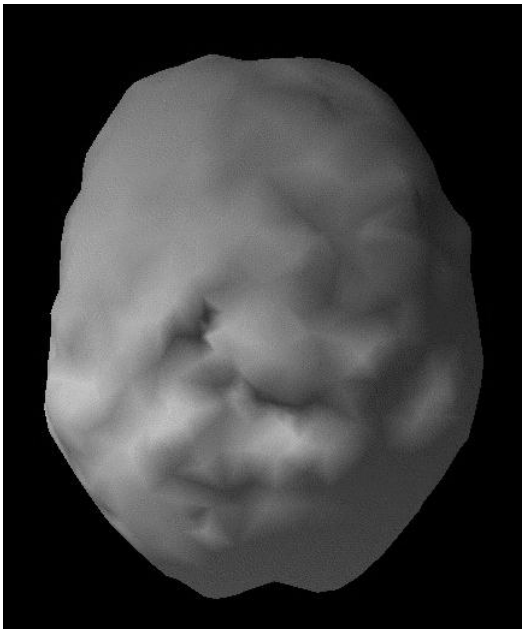


Image 6.5 On Hormones



This view is looking down from the top, the holes indicate areas of low activity. On hormones there is much better overall blood flow to the brain.

Again, these hormonal shifts can cause seismic problems in relationships. Carefully testing and treating hormonal issues for both men and women is critical to brain health and the health of your relationships. Let me give you a very personal, example of how issues with hormones can affect your relationships.

I am married to a neurosurgical ICU nurse. While Tana is both beautiful and smart, she was also used to being very assertive, working around neurosurgeons all day long. She often joked, "What is the difference between a neurosurgeon and God? … At least God knows he is not a neurosurgeon." Tana also has a black belt in tae kwon do and her approach to romance was more like the typical guy — we'd be cuddling together and she'd say, "OK that's enough, I've got to go work out." She also loved masculine dogs.

Image 6.6 Tana and Her Dog Mack

One of our first fights was over what type of dog we should get together. I wanted a King Charles Cavalier Spaniel — they're cute, little, fluffy, smart, and sweet. She wanted none of it. She actually said that the little dogs were nothing more than chew toys for the bigger dogs. So we compromised on an English Bulldog. Frasier was cute, but not the kind of cute I was looking for.

When Tana was about thirty-eight years old, she went off birth control pills and noticed that her face started breaking out and her menstrual cycles became very irregular. Despite her young age, she thought she must be going through perimenopause, a period of time that can last several years prior to menopause. To figure out what was going on, she went to see her doctor. To her astonishment, she was informed that her cholesterol and triglycerides were high and that she was pre-diabetic. What?! Tana is five-feet-six inches tall, weighs 118 pounds, has about 15 percent body fat, works out like a nut, and eats all the right foods. "That's crazy," she thought. "I'm the healthiest person I know."

As we were both concerned about her health a friend of ours introduced us to Dr.

Christine Paoletti, a gynecologist in Santa Monica. It only took about ten minutes for Dr. Paoletti to suspect that Tana had a condition called polycystic ovarian syndrome (PCOS), which causes a woman to have too much testosterone. It is also linked to irregular menstrual cycles, skin breakouts, high cholesterol, and insulin resistance. An ultrasound confirmed the diagnosis. Why didn't any other doctors catch it? Tana doesn't fit the typical physical profile of a woman with PCOS. Most women with PCOS are overweight and have excessive facial and body hair.

Dr. Paoletti treated Tana with glucophage, a medication used to balance insulin and reduce testosterone levels. The changes were dramatic. Within a few months, her cholesterol dropped fifty points, her insulin levels normalized, her skin cleared up, and her cycle became perfectly regular. Even more dramatic were the changes in her personality. All of a sudden, she wanted to cuddle more, was less intense, less anxious, and after about six months she had to have a pocket poodle and called her Tinkerbell.

Image 6.7 Tinkerbell

Now, I like to say, change your hormones, change your brain, change your body, change your personality, change your relationships… and even the type of dog you have. It is clear that our hormones are heavily involved in making us who we are.

YOUR BRAIN, YOUR BODY, AND THE HORMONAL CASCADE

There are many myths and misconceptions about hormones. First, people usually think hormones are just a female issue. Wrong! Hormones are essential for health and vitality in both men and women. Second, most people — and even some doctors — think of our hormone-producing glands as the sole source of any hormonal problems. Wrong again! In reality, the brain controls all the hormones in your body. Think of your hormones as airplanes flying through the air and your brain as the air traffic controller. Your brain tells them how fast they can fly, when they can land, and where they can land. For example, if your thyroid gland is overproducing, it doesn't know it. Your brain filters your blood to check up on your thyroid levels, sees that there is too much, and asks the thyroid gland to lower production. The hormone-producing glands don't communicate with each other, only with the brain, which controls them all.

Third, most of us think of our hormones — estrogen, testosterone, thyroid, and others — as individual and unconnected systems. Wrong again! For example, when a woman approaches menopause, many doctors look only at the ovaries. And when thyroid levels are off, they only test and treat the thyroid gland. This approach is wrong because our hormones all work together to maintain balance. Think of the hormonal system as a symphony with the brain as the conductor. If all the players are playing the right notes at the right time, it is a wonderful concert. But if the conductor takes a break, and a single player hits a sour note, it ruins the whole effect.

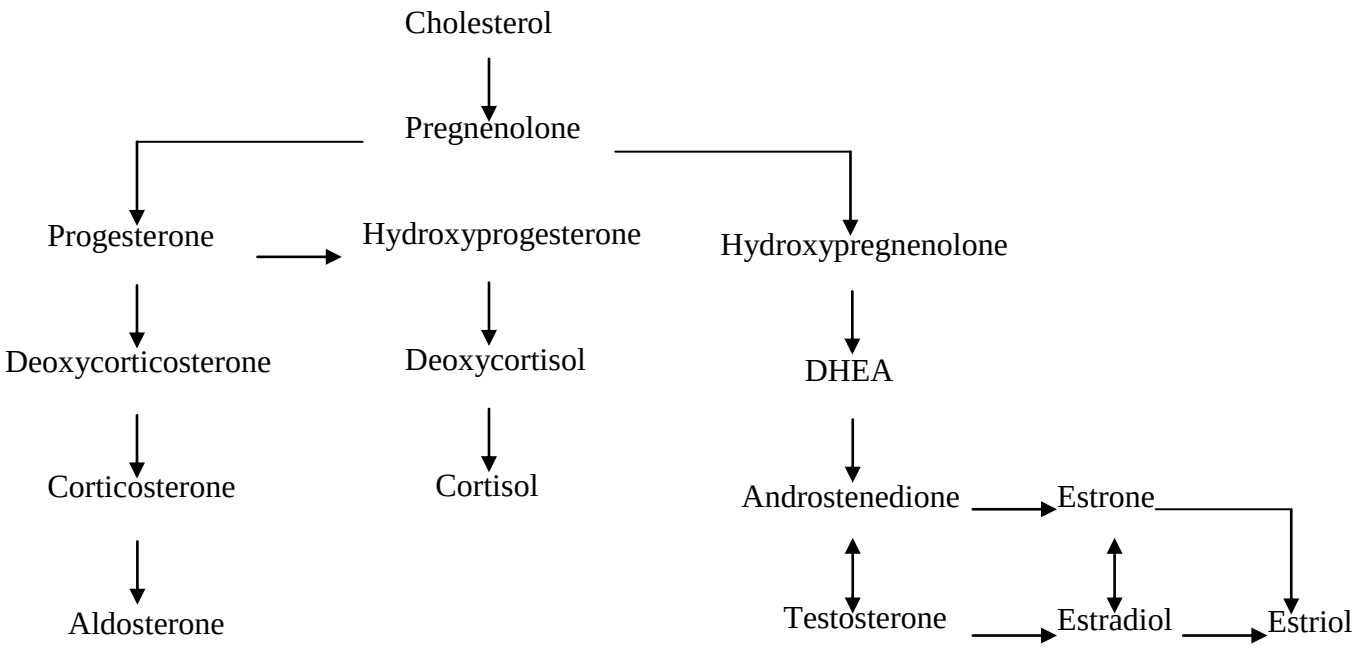
Similarly, when one hormone system is out of balance, it causes imbalances with the other hormone systems.

When your hormones are in sync, a magnificent mind, a slimmer body, clearer skin, better energy, a happier outlook, and improved health are the rewards. Hormonal imbalances lead to cloudy thinking, make you fat, give you acne and wrinkles, sap your energy, sour your mood, and increase your risk for disease.

What exactly are hormones? They are little chemical messengers that travel through the bloodstream, allowing the brain and bodily organs to communicate. You might be surprised to learn that hormones are derived from cholesterol. Cholesterol gets a bad rap in the media, but cholesterol isn't the enemy. Yes, it is true that when cholesterol is too high, it is associated with heart disease. But when it is too low, it is associated with homicide, suicide, and severe depression. Your brain and body need some cholesterol. Approximately 60 percent of the solid weight of the brain is fat, so you need healthy levels of cholesterol for optimal function. From cholesterol, your body makes a chemical called pregnenolone, a mother hormone, from which all the other hormones are derived. This hormonal tree is referred to as the hormonal cascade (Figure 6.1).

Figure 6.1

HORMONAL CASCADE



Like most people, you are probably most familiar with the body's reproductive hormones: estrogen, progesterone, and testosterone. But these are only some of the many hormones that help keep your brain and body balanced. In this chapter, you will discover how many other hormones play a vital role in the health of your brain and how your body looks, feels, and functions.

BALANCE YOUR THYROID

FOR A BRIGHTER MIND, MORE ENERGY,

SLIMMER SHAPE, AND A BETTER MOOD

The small, butterfly-shaped thyroid gland located in the lower neck has become big news ever since Oprah revealed that she was suffering from hypothyroidism. Oprah isn't alone. Tens of millions of people worldwide are estimated to have thyroid problems. The thyroid is the hormone of metabolism, regulating how fast the processes in your body work. It is similar to a car's idle.

Low thyroid activity (hypothyroidism): When your thyroid is low, your body works more slowly or sluggishly. Your heart rate is usually slower, your bowels move slower, your digestion rate is slower, and your thinking is slower. On SPECT scans of people with hypothyroidism, we see decreased brain activity. Many studies on hypothyroidism have shown overall low function in the brain, which leads to depression, cognitive impairment, anxiousness, and a sense of being in a mental fog or feeling spacey. Some people have what's called subclinical hypothyroidism. These are patients whose thyroid levels are in the normal range, but who have symptoms. When other hormonal systems within the body are out of balance, it can affect thyroid activity and alter it.

Common signs of hypothyroidism: Fatigue, weight gain, dry skin, chronically low temperature below 98.6, fuzzy thinking, depression, and being cold when others feel fine.

High thyroid activity (hyperthyroidism): When the thyroid gland is producing too much thyroid, everything in your body works too fast. Your heart beats faster, your bowels move faster, your digestion works faster. It is like you've had too much caffeine and you feel jittery or

edgy.

Common signs of hyperthyroidism: Sleeplessness, anxiety, irritability, racing thoughts, and being hot when others feel fine.

Get it balanced: A simple blood test is all you need to see if you have thyroid problems. Unfortunately, many doctors only look at the overall functioning of the thyroid, by a test called a TSH or thyroid stimulating hormone. Thyroid problems often go undiagnosed because TSH levels can be normal even when a problem exists. Ask your doctor to perform a test that looks at your T4 and free T3 levels, which are the actual levels of thyroid floating in your system. What does that mean? It is very simple. Nearly all the hormones in the body float around in the bloodstream attached to a protein. When they're attached to this protein, they aren't available for use. The hormones that are active, or available for use, are free-floating in the bloodstream rather than attached. So it is these free-floating levels that are very important to test.

ACTION STEP

Be sure to have your physician test your T4 and free T3 levels when checking your thyroid levels.

If you are diagnosed with a thyroid imbalance, a number of medications can be prescribed. Typically, when medication is prescribed, it will have to be taken throughout your lifetime. Many supplements support the thyroid, including iodine and selenium.

BALANCE YOUR ADRENAL HORMONES TO CALM STRESS, REDUCE ABDOMINAL FAT, AND DECREASE YOUR RISK FOR DISEASE

The triangle-shaped adrenal glands, which sit on top of your kidneys, are critically important in helping your body deal with stress. The adrenals produce DHEA and cortisol, which is known as the stress hormone. Our adrenal glands have the ability to put us in "fight-or-flight" mode. For example, let's say you are hiking and you come across a bear. Your body produces adrenaline, which gives you the strength to either fight the bear (usually not a good idea) or run from the bear. DHEA has been called coping fuel and the "universal promoter of goodness." DHEA is one of the most abundant hormones in the body, second only to cholesterol. A lack or deficiency of DHEA impacts the person's ability to cope with stress, potentially leading to damaging effects and behavioral changes ultimately leading to emotional burnout, early aging, and physical exhaustion. With age, DHEA declines.

Adrenal fatigue: In today's hustle-and-bustle world, we are faced with stress on a daily basis. Rush-hour traffic, family issues, and work demands mean that we are stressed from the minute we wake up until we go to sleep. This puts our adrenal gland on overdrive so it is constantly producing cortisol. After months or even years of unrelenting stress, the adrenal glands can burn out. We call this adrenal fatigue, or adrenal gland failure, and it means your body no longer has the capacity to deal with daily stress. You have trouble getting out of bed, struggle to function, and may even have trouble getting yourself to work. Adrenal fatigue makes you fat — especially in your abdomen, which not only looks bad but also increases your risk for cardiovascular disease. Chronic exposure to stress hormones also kills brain cells in the hippocampus, a major memory structure in the brain.

Part of the reason why adrenal fatigue is becoming so common is because so many of us are skimping on sleep. If you don't get seven to eight hours of sleep at night, your system automatically goes on stress overload. Then you do terrible things to try to make up for the lack of sleep. You drink coffee, which is a stress inducer, to wake up. Then you drink wine in the evening to calm you down, but when the alcohol wears off, it puts your body into another stress response and wakes you up at two o'clock in the morning. It is a never-ending cycle of stress.

Common signs and symptoms of adrenal gland failure: Abdominal fat, tiredness, low stress tolerance, craving sweets, difficulty concentrating, mental fog, low libido, and poor memory.

Overactive adrenal system: When the adrenal system is working too hard, it is a very serious medical condition that can lead to a rare kind of tumor that is usually non-cancerous called pheochromocytoma.

Common signs of overactive adrenals: High blood pressure and high heart rate.

Get it balanced: Diagnosing adrenal fatigue or overactive adrenals involves checking cortisol and DHEA-S levels with a blood test. Ways to combat adrenal fatigue include learning stress-management techniques, meditating, using self-hypnosis, and getting an ANTeater in your head to talk back to the automatic negative thoughts (ANTs). See Chapter 13 for more on ANTs (automatic negative thoughts) and ANTeaters. B vitamins — either in foods like green leafy vegetables or in supplements — support the adrenal system and help our bodies deal with stress. 5-HTP helps you sleep and boosts serotonin levels in the brain, which helps you calm stress and lose weight. Phosphatidylserine can also

ACTION STEP

If you have a waist circumference of more than 31.5 inches for women or 37 inches for men, you might want to consider having DHEA and cortisol levels checked.

be helpful for adrenal fatigue. See Appendix C The Supplement Solution for more information on these and the rest of the supplements mentioned in the chapter.

DHEA, if low, is an important supplement to counteract adrenal fatigue. DHEA serves as a precursor to male and female sex hormones (androgens and estrogens). DHEA levels in the body begin to decrease after age thirty, and are reported to be low in some people with anorexia, end-stage kidney disease, type 2 diabetes (non-insulin dependent diabetes), AIDS, adrenal insufficiency, and in the critically ill. DHEA levels may also be depleted by a number of drugs, including insulin, steroids, opiates, and danazol. According to the NaturalStandrard.com website, there is good scientific evidence supporting the use of DHEA in the treatment of adrenal insufficiency, depression, systemic lupus erythematosus, and obesity. Dosages of 25 to 200 mg have been generally recommended. It is usually well tolerated. Acne and facial hair are common side effects, as it increases the body's testosterone levels. To avoid getting acne or facial hair, many doctors prescribe a metabolite of DHEA called 7-keto-DHEA. It is more expensive, but if acne and facial hair are an issue, it is worth it.

The main worry about DHEA by some professionals is that it will partly convert itself into sex hormones such as testosterone and estrogens. This seems to be an obvious advantage for the healthy, looking to combat age-associated hormonal decline. Unfortunately, this means advising people who are at risk for hormonally-dependent cancers (prostate, breast, ovarian) against taking DHEA. For these, 7-keto-DHEA is a good solution.

BALANCE TESTOSTERONE

FOR BETTER SEXUAL FUNCTION AND A BETTER BRAIN

We typically think of testosterone as a sex hormone, but it does a lot more than just drive your libido. If you get a Y chromosome from your father, you get a spike of testosterone in the womb, which makes your brain more male. If you get an X chromosome from your dad, you

don't get that spike of testosterone. This makes a huge difference in the kind of brain you have. Female brains have better language ability, are more interconnected, more communicative, more relationship-driven, and less competitive. Male brains are wired for competing and dominating, but not as much for commitment.

Testosterone's effect on the brain goes far beyond typical male/female differences. Emerging scientific evidence is revealing that testosterone offers neuroprotection, helping prevent cognitive impairment, Alzheimer's disease, and depression. Researchers are also uncovering a relationship between low testosterone levels in men and chronic pain. Studies are currently under way to determine if balancing a man's testosterone levels can improve pain tolerance and reduce the perception of pain.

We tend to think of testosterone as a male hormone, but it is also vitally important for women. It is involved in her sex drive, her ability to build muscle, her outlook on life, and her memory.

ACTION STEP

There is a simple test I like to do. Hold up your hand and look at the ratio of your ring finger to your index finger. If your ring finger is longer, you got a lot of testosterone in the womb.

Low testosterone in men: For men, testosterone levels peak at age twenty-two and slowly decline thereafter. On average, men lose 10 percent of their testosterone every decade after age thirty, or about 1 to 3 percent each year. Recent research also indicates a link between low testosterone and Alzheimer's disease. As testosterone drops, there's less blood flow to the brain, which causes problems with sexual and cognitive function. It can also affect body weight, muscle mass, sex drive, mood, and energy. We call this male menopause or andropause. Some of my patients like to joke that it puts men on pause.

Common signs of low testosterone: Declining libido, erectile dysfunction, depression, lack of energy, and memory problems.

Low testosterone in women: Without enough testosterone, a woman's libido can go out the window. I treat a lot of women who are on the brink of divorce. In many cases, I find that their testosterone levels are off, or their husband's levels are low, and that is actually the source of their dissatisfaction with the marriage. So many times, I hear someone tell their spouse, "You are not the same person I married." And they aren't! That's because their hormone levels are nowhere near the same levels as when they got married. I think that before you file for divorce and throw away twenty or thirty years of a good marriage, you should both get your hormones checked.

Common signs of low testosterone in women: Lack of libido, depression, and poor memory.

High testosterone in men: Guys who produce too much of this hormone tend to fly off the handle for no reason. Men with the most testosterone are also the least likely to get married and stay married. That may be why so many men tend to wait until they're older to tie the knot.

Common signs of high testosterone in men: Aggression, moodiness, acne, and extreme competitiveness.

High testosterone in women: Some women produce too much testosterone, which is often associated with PCOS — the same condition my wife has. PCOS can cause big changes in your body that affect your weight, skin, mood, and overall health.

Common signs of high testosterone and PCOS in women: Obesity, irregular periods, acne, oily skin, excessive facial and body hair, aggression, high cholesterol, high blood pressure, diabetes.

Get it balanced: For the best results from this blood test, make sure your doctor looks at two levels: your total testosterone and your free testosterone. New research shows **that spikes in blood sugar can lower a man's testosterone levels** by as much as 25 percent. So if want an accurate reading on your test, you may want to skip having anything like donuts, candy, or Gatorade for at least a few hours before your blood test. For men with low testosterone, options include creams, gels, and injections. For women who need more of the hormone, creams are the most common treatment method. Treatment for women with high testosterone or PCOS is highly individualized and may include birth control pills, diabetes medications, fertility medications, and anti-androgens. DHEA is often helpful in raising testosterone levels.

BALANCE YOUR ESTROGEN

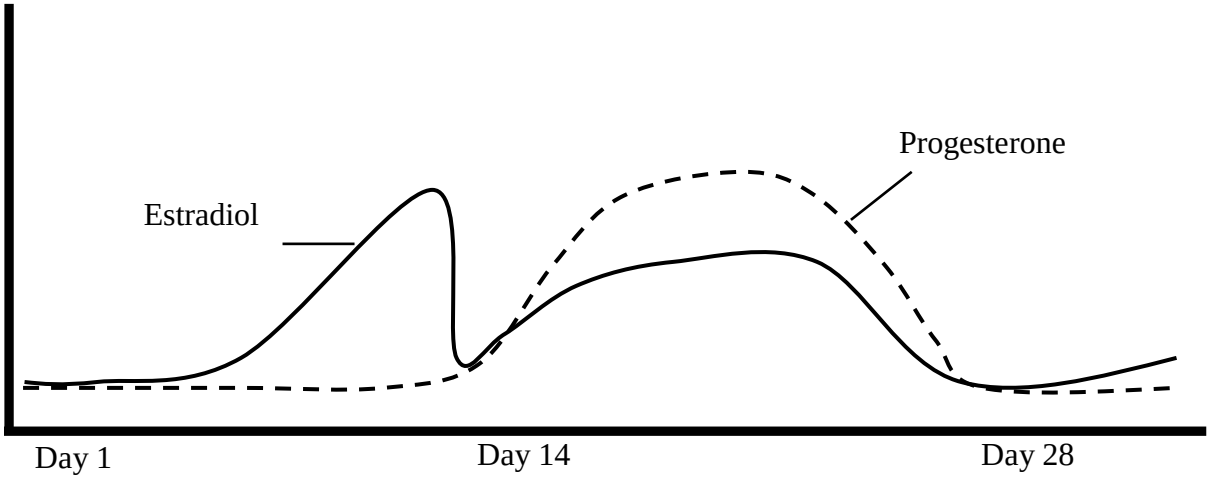
TO CONTROL YOUR WEIGHT AND MOODS

AND TO STRENGTHEN YOUR BONES, HEART, AND MEMORY

Estrogen is an amazing hormone that affects every organ system in the body — the bones, cardiovascular system, reproductive system, and the brain. Most people think of estrogen as a female hormone, but men need it too — only in much smaller doses. When women first start menstruating, estrogen levels begin rising and falling in a cyclic fashion. During a normal twenty-eight-day cycle, estrogen peaks and falls like a gentle rolling hill twice (See figure 6.2).

Figure 6.2

MONTHLY HORMONAL CYCLE



In your thirties and forties when you enter perimenopause, the hormone system doesn't work as efficiently and changes start to take place in this pattern. Instead of gentle ups and downs, estrogen spikes and then crashes dramatically right before your period starts, which can cause severe PMS symptoms. This see-saw effect of going from estrogen dominance to estrogen withdrawal isn't fun and can make you feel like you are crazy, literally. An eye-opening study found that 40 percent of women being committed to mental institutions were admitted during the two days prior to the start of their period. By the time you hit menopause, estrogen withdrawal is in full swing, which affects your weight, cognitive function, and health.

Women have three kinds of estrogen: estrone, estradiol, and estriol. During the childbearing years, estradiol is the most abundant of the three estrogens. Like a fountain of youth, estradiol protects your brain, heart, and bones, provides anti-aging protection your skin, and helps prevent weight gain. Researchers at Yale University have found that estradiol

suppresses appetite using the same pathways in the brain as leptin, one of the hormones involved in regulating the appetite. (See more on leptin later in this chapter.) The scientists concluded that impaired estrogen signaling, which may occur during menopause, may be the cause of menopausal weight gain and obesity. In perimenopause and menopause, estradiol begins to wane, and you lose its protective qualities.

Estrogen withdrawal: When estrogen levels decline during the menstrual cycle, perimenopause, or menopause, you have more trouble with your short-term memory and are more likely to have crying spells and depression. You may find yourself wondering, "Where did I park the car?" or "Why did I walk into this room?" Low levels of estrogen can also make you more sensitive to pain. A study in the *Journal of Neuroscience* focused on the effects of estradiol on pain. Researchers tested women at different times during their menstrual cycle — first during their period when estradiol is at its lowest and then after being treated with the hormone to raise its level. The women were subjected to a controlled amount of pain and were asked to rate their pain. When estradiol was at its lowest, the women reported feeling much more pain than when the hormone was at its highest. This shows that when your estrogen levels are low, such as during menopause or during your period, you are likely to feel pain more acutely.

ACTION STEP

Consider taking supplements that may reduce symptoms of estrogen withdrawal, such as fish oil, primrose oil, or flaxseed oil.

Common signs of estrogen withdrawal: Fuzzy thinking, trouble focusing, and depression or bad moods.

Estrogen dominance: High estrogen levels in conjunction with low levels of progesterone can cause heavier periods, cramping, and shorter cycles. In some women, this leads

to a seemingly non-stop period.

Common signs of estrogen dominance: Weight gain, retaining water, bossiness, aggressive behavior, and depression.

Get it balanced: A simple blood test is used to determine levels of the three types of estrogen. Estrogen pills, birth control pills, creams, and vaginal inserts are just some of the options for estrogen replacement. Living a brain-healthy life by exercising and limiting caffeine, sugar, and alcohol can also help alleviate symptoms. Fish oil, primrose oil, and flaxseed oil may ease symptoms.

BALANCE YOUR PROGESTERONE FOR BETTER MOODS, DEEPER SLEEP, AND ENHANCED COGNITIVE FUNCTION

Say hello to the "feel good" hormone. Progesterone is like nature's Xanax — it calms you down, makes you feel peaceful, and helps you sleep. But while Xanax clouds your brain, progesterone sharpens your thinking. Progesterone is sometimes referred to as the pregnancy hormone because it promotes pregnancy. When you get pregnant, your progesterone levels shoot sky high, giving you a glow, great energy, and a flood of enthusiasm and love.

Like estrogen, progesterone follows a rolling hill pattern during the second half of the menstrual cycle, rising and falling along with estrogen. By the time you hit your thirties, your body starts to produce progesterone less efficiently. In your late thirties and forties, those nice rolling hills of progesterone decrease to little more than bumps. Without the nice rise, you start having progesterone withdrawal symptoms. If estrogen is on a hill or a spike while progesterone is low, it really exacerbates the symptoms of estrogen dominance.

Low progesterone: Without enough progesterone, you lose the brain's natural sleeping pill and anti-anxiety hormone. A deficiency of this hormone can also lead to addictions. Wendy, age forty-five, came to the Amen Clinics after her husband threatened to divorce her if she didn't stop drinking. She started to drink heavily around the age of forty because she had increasing issues with anxiety and insomnia. When I tested her, she had very low progesterone levels. Research shows that progesterone levels start to decrease eight years before a woman goes into menopause. Balancing her progesterone levels helped to calm her anxiety, improve her sleep, and end her addiction.

Common signs of low progesterone: Trouble sleeping, headaches, migraines, anxiety, fuzzy thinking, poor memory, mood swings, and difficulty concentrating. When coupled with high estrogen, bossiness, aggressiveness, and water retention are intensified.

High progesterone: It is rare to have high progesterone levels unless you are pregnant or your dosage of hormone replacement therapy is too high. Typically, it can make you feel like you are experiencing the first few weeks of pregnancy.

Common signs of high progesterone: Morning sickness, extreme fatigue, and backaches.

Get it balanced: Most doctors check progesterone levels using saliva, blood, or urine tests. For the best results, tests are usually done on day twenty-one of your menstrual cycle. Synthetic and bio-identical hormone replacement is available.

PREMENSTRUAL SYNDROME (PMS)

Lisa Nowak, the astronaut in the scandalous love triangle that made the news some time ago, put on a diaper and drove 900 miles to confront the girlfriend of her love interest. She was

later accused of attempted kidnapping. During pretrial motions I appeared on Fox News to talk about what could have caused a highly successful woman to do such a crazy thing. I was on a panel with five women. She had just filed an insanity plea – not guilty by reason of insanity – and the moderator asked me, "If you were the consulting psychiatrist for her defense team, what would you want to know?" I told him I would want to know where she was in her menstrual cycle when she committed the crime. All five women on the panel were aghast and one said, "Oh my God, I can't believe he just said that!" I explained that we've scanned many women at different times of their cycle, and that during the worst time of their cycles for women with PMS their brains change. The way our society reacts to saying that a woman may fluctuate with her hormones is, in my mind, stupid because it is just so obvious.

PMS is real. From a hormonal perspective, the days prior to your period coincide with the days when your estrogen and progesterone levels hit rock bottom. What we see on brain scans is during the last two weeks of the cycle, the anterior cingulate gyrus starts to fire up. That's the part of your brain that helps you shift attention, be flexible, and go with the flow. This is due to a deficiency of serotonin, a natural antidepressant, feel-good chemical. We've seen that as estrogen levels fall, serotonin does too. Also, during the worst time of the cycle the prefrontal cortex tends to go low, which is why women may struggle with focus and impulse control.

Common signs of PMS: This crash causes emotional difficulties, intensifies feelings of depression, and can affect sleep. By now, you know that this can be a precursor to poor eating habits, which pack on unwanted pounds. It also robs your skin of the nighttime rejuvenation it needs. Other symptoms include bloating, breast tenderness, irritability, anger, worry, focusing on negative thoughts, poor concentration and impulsivity.

Get it balanced: Replacing a small amount of progesterone during the second half of

your cycle may neutralize symptoms. Medications that boost serotonin, such as Prozac or Zoloft, have been shown to be helpful to calm the anterior cingulate symptoms of worry, depression, and anxiety. In my practice, I've noticed that 5-HTP reduces symptoms of PMS.

PERIMENOPAUSE

Perimenopause is the ten to fifteen years leading up to menopause. It is the time when your hormone fluctuations gradually start to change from your regular cycle and you don't know where your hormones will be on any given day. Most women don't think about perimenopause until estrogen levels have fallen to a point where they get hit with hot flashes and night sweats, the most common symptoms. But by the time you are having hot flashes, you've probably been going through perimenopause for up to ten years. And you may already be saddled with the effects of estrogen dominance.

ACTION STEP

If you suffer from PMS, try taking 5-HTP to improve your mood and help you sleep better.

Common signs of perimenopause: Hot flashes, night sweats, weight gain, depression, anxiety, irritability, and poor memory.

Get it balanced: It is a good idea to get your hormone levels checked when you are about thirty-five years old so you have a baseline. Then get them checked every two to three years. Synthetic or bio-identical hormone replacement therapy may be helpful in the form of creams, pills, and vaginal inserts. The best way to treat hot flashes is with a combination of estradiol and estriol. Natural treatments include supplements, such as B vitamins, fish oil, primrose oil, and flaxseed oil. Plus, adopt brain-healthy habits. Get plenty of exercise, adequate sleep, drink lots of water, eat whole foods, and meditate.

MENOPAUSE

Menopause is a woman's last period, after which, she is said to be postmenopausal. Menopause can also be surgically induced if your ovaries are removed during a hysterectomy. If you are postmenopausal, you may continue to experience many of the same side effects associated with perimenopause. By this time, estrogen and progesterone have usually fallen to such low levels that it also makes you more vulnerable to conditions, such as heart disease, stroke, and Alzheimer's disease.

> ***ACTION STEP***
>
> *Have your physician check your hormone levels every few years starting at age thirty-five.*

Common signs of menopause: Menopause is often associated with lower overall brain activity, which can lead to depression, anxiety, insomnia, weight gain, and concentration and memory problems. Hot flashes and night sweats may continue.

Get it balanced: Typically, a diagnosis of menopause is only given after twelve months have passed since your final period. Synthetic or bio-identical hormone replacement are commonly prescribed. B vitamins, fish oil, primrose oil, and flaxseed oil are natural treatments that may ease symptoms. Adopting brain-healthy habits becomes more important than ever to preserve cognitive function and keep your body looking young. Exercise, good sleep, great nutrition, and meditation can help.

HORMONE REPLACEMENT THERAPY

There is a huge controversy surrounding hormone replacement therapy (HRT). In 2002, the World Health Initiative Study found that the hormone replacement medication Prempro increased the risk for breast cancer, heart disease, stroke, and blood clots. The fallout was

immediate and widespread, with millions of women tossing their HRT medications in the trash.

The problem with this study is that it only looked at one medication, Prempro, which is a combination of synthetic estrogen (made from horse urine), a little estrone, and a synthetic progesterone called progestin. These hormones are not the same as those produced in the human body. In addition, the estrogen in this synthetic drug was more potent than the estrogen your body produces naturally.

Today, we have come full circle on the question of HRT and there is a trend toward treating women with hormones that are identical to those produced in the body. These medications are called bio-identical hormones, and they can be helpful in boosting your vitality as well as protect cognitive function. They also protect you from serious diseases, including cardiovascular disease, stroke, and Alzheimer's disease. Studies show that women who have complete hysterectomies, including taking their ovaries, without hormone replacement have double the risk for Alzheimer's disease. This confirms that these hormones are critical for brain health. In a new study from UCLA, researchers used brain scans to study the health of a group of women's brains on and off hormone replacement. Over two years, the woman who did not take hormone replacement showed decreased activity in an area of the brain called the posterior cingulate gyrus, one of the first areas that dies in Alzheimer's disease. The women who were taking HRT showed no reduction in this area of the brain.

Research on pain has found that women going through menopause who don't take HRT may struggle more with pain. I have noticed this in my own practice. I treat a lot of postmenopausal women who complain of pain, whether it is chronic backaches, neck problems, or even conditions like fibromyalgia. If you are considering HRT, remember that it is highly individualized and that one treatment does not work for everyone. The same way your brain is

completely unique, so are your hormones.

BALANCE LEPTIN AND GHRELIN

TO CONTROL YOUR APPETITE AND LOSE WEIGHT

These two hormones may hold the key to your weight loss. Regulated by sleep leptin and ghrelin work together to control feelings of hunger and satiety. Ghrelin levels rise to signal the brain that you are hungry, then leptin levels increase to tell your brain when you are full. Adequate sleep keeps these two hormones nicely balanced. But when you don't get enough sleep, they get out of whack and increase your appetite and your cravings for carbohydrates, cookies, and candy. See Chapter 10 The Sleep Solution for the latest research on how these two hormone affect your weight.

Low leptin: Without enough leptin, you never feel like you've gotten enough to eat. Overweight people have high levels of leptin because their brain becomes resistant to it. The less fat on your body -- the better.

High ghrelin: Studies show that high levels of this hormone trick your body into thinking you are hungry and make you want to dive into the donuts and candy bowl as opposed to the fruit bowl. With chronically high levels of ghrelin, there's a strong possibility you are going to gain weight.

Common symptoms of low leptin and high ghrelin: Overweight, obesity, overeating, and cravings for simple carbohydrates.

Get it balanced: At present the treatment to balance these hormones is mostly behavioral. Get good sleep, eat small meals throughout the day so that you are not hungry and maintain a healthy blood sugar, decrease stress eating, and reduce your stress. Since leptin and

ghrelin are regulated during sleep, supplements that promote sleep — such as L-tryptophan, 5-HTP, valerian, kava kava, magnesium, and melatonin — may help balance your levels.

ACTION STEP

One of the best ways to balance leptin and ghrelin is to get at least seven hours of sleep each night.

BALANCE INSULIN

TO BATTLE OBESITY AND IMPROVE HEALTH

Insulin is produced by the pancreas, primarily in response to a rise in blood sugar. One of insulin's primary functions is as a storage hormone. Its function is to take nutrients from the blood stream and store them in the body's cells. Insulin increases the uptake of glucose into the liver and muscles for storage, as glycogen, and it also helps store excess glucose in fat cells. Since insulin is a storage hormone, rather than a mobilizing hormone, it also stops the body from mobilizing and utilizing fat as a fuel source. Too much insulin stops fat burning. Eating too many simple carbohydrates, like candy, cake, or white bread causes your blood sugar to spike, which triggers intense insulin production to remove the glucose from your bloodstream. Once insulin has removed the glucose from your blood, your blood sugar drops, causing cravings for even more sugar. It is a vicious cycle that can lead to obesity, insulin resistance, and eventually type 2 diabetes.

Insulin imbalances: When this hormone is out of balance, it can lead to weight gain, delayed healing, Alzheimer's disease, strokes, heart disease, and many other problems.

Common signs of insulin imbalances: Obesity, abdominal fat, diabetes, high blood pressure, and metabolic syndrome (abdominal fat, high cholesterol and high blood pressure).

Get it balanced: The most common blood test for glucose only looks at the way your body is metabolizing glucose on that particular day. A better test checks your Hg A1C levels,

which show how you are metabolizing glucose over a two to three-month period. Losing weight, exercising, and taking certain medications such as insulin or glucophage can help balance your blood sugar levels. Alpha lipoic acid, cinnamon, and ginseng have been found to help balance blood sugar. Reducing your intake of sugary sweets and simple carbohydrates can help keep insulin levels in balance.

BALANCE YOUR GROWTH HORMONES

TO SLOW THE AGING PROCESS

The pea-sized pituitary gland located at the base of the brain produces human growth hormone. As its name implies, growth hormone fuels growth throughout childhood and into adulthood. It also helps bodily tissues and organs repair themselves for optimal function. As we enter middle age, however, the pituitary gland slows production of growth hormone, also known as IGF-1 (insulin-like growth factor-1). The reduction in growth hormone impairs the body's ability to repair itself, thus triggering cell death and aging.

A breakthrough study published in a 1990 issue of the *New England Journal of Medicine* sparked interest in growth hormone as a potential anti-aging therapy. In the study, twelve men over the age of sixty were followed for a six-month period. During that time, one group received growth hormone therapy while the other group did not. The men receiving growth hormone experienced a 14.4 percent decrease in body fat and an 8.8 percent increase in lean body mass. This landmark — albeit small — study prompted a wealth of new research aiming to determine to what extent low levels of growth hormone promote the aging process and whether raising levels of growth hormone could put the brakes on aging.

Low levels of growth hormone: Dr. Eric Braverman, a clinical assistant professor of integrative medicine at Weill Cornell Medical College, conducted a comprehensive review of the medical literature about growth hormone. His findings show that low levels of IGF-1 may result in the following:

- Delayed cognitive processing speed (the equivalent of ten to twenty years of aging), which leads to declines in memory, IQ, and attention span as well as mood problems, such as anxiety and depression.
- Decreased blood flow to the brain.
- Obesity.
- Decreased muscle mass and bone density.
- Cardiovascular disease, high blood pressure, and diabetes.

According to Dr. Braverman's review, increasing levels of IGF-1 can help reverse these problems. Growth hormone has also been found to protect against some forms of cancer and beta amyloid, an abnormal protein found in the brain that is considered to be one of the major hallmarks of Alzheimer's disease.

Common signs and symptoms of underactive growth hormone: Osteoporosis, muscle deterioration, memory problems, obesity, anxiety, depression, cardiovascular disease, high blood pressure, and diabetes are all potential signs of low levels of IGF-1.

Get it balanced: A blood test is typically used to evaluate growth hormone levels. Growth hormone replacement is achieved with injections that can cost thousands of dollars, which makes it prohibitive for many people. The practice is considered very controversial, and some concern has been raised about a possible link between growth hormone replacement and cancer. However, based on Dr. Braverman's review, there have been no studies that have shown

that growth hormone therapy increases the risk of cancer.

Take note that growth hormone injections aren't the only way to increase the amount of growth hormone in the body. Natural ways to stimulate the production of growth hormone include getting adequate sleep, doing intense physical activity, and eating protein at every meal, while reducing the consumption of sugar and high-glycemic carbohydrates.

ACTION STEP

If you are obese or have age-related problems, try lifestyle and diet changes first, then consider having your IGF-1 levels checked.

The Hormone Solution

Hormone Robbers	Hormone Balancers
Low thyroid	Thyroid replacement, supplements like iodine and selenium
Adrenal fatigue	Adequate sleep (at least seven hours), eliminate caffeine and alcohol, B vitamins, 5-HTP, phosphatidylserine, DHEA or 7-keto DHEA
Low testosterone	Testosterone replacement, DHEA
High testosterone in women (PCOS)	Glucophage or other medications
Low estradiol	Estrogen replacement, fish oil, primrose oil, flaxseed oil
Low progesterone	Progesterone replacement
PMS	5-HTP, medications to boost serotonin, exercise, enriched nutrition, meditation, adequate sleep
Perimenopause	Hormone replacement, B vitamins, fish oil, primrose oil, flaxseed oil, exercise, meditate enriched nutrition, adequate sleep
Menopause	Hormone replacement, B vitamins, fish oil, primrose oil, flaxseed oil, exercise, meditate enriched nutrition, adequate sleep
Low leptin/high ghrelin	Adequate sleep, eat frequent small meals, 5-HTP, L-tryptophan, valerian, kava kava, melatonin,
Insulin imbalances	Lose weight, exercise, alpha lipoic acid, cinnamon, ginseng, reduce intake of simple carbs, medication.

ACTION STEP

Online at www.amenclinics.com/cybcyb, you will find a series of questionnaires for both men and women, developed by my friend and colleague Angie Meeker, Doctor of Pharmacy. The questionnaires will give you a sense of your own potential hormone issues. Of course, you should discuss the results of the questionnaires with your own health care professional.