

Are You Sick of being...

Overweight, Fatigued and Depressed?

These three symptoms are among the most common complaints that lead people to visit their primary physician, yet they usually come away from the experience no better off than before. The reason for this is the way medicine views these problems. They are all related and are symptoms of underlying metabolic problems. If these metabolic issues are not addressed, I will guarantee you will not be successful in overcoming these quality of life robbing symptoms.

Let's face it, our country is sick and our citizens need help. Our current healthcare paradigm is headed for disaster regardless of the political rhetoric tossed about regarding 'healthcare reform'. The problem is we are not really talking about 'healthcare' but 'disease care', and until we differentiate between the two we are headed down the same road to eventually overwhelming our medical resources. We spent over \$2.26 trillion in 2007 (and is estimated to be \$4.1 trillion by 2016) on sickness care but relatively little on preventative care (about 2 cents out of every healthcare dollar spent). In addition, nearly one third of 'health care' spending is administrative costs. Every measure of health outcomes including longevity, infant mortality, fitness, and rates of chronic diseases puts America at or near the bottom compared to other developed countries. The World Health Organization rated the U.S. 37th in health outcomes, on par with Serbia. The cost of medical care has become a leading cause of bankruptcy; this happens about once every thirty seconds. The Congressional Budget Office reports that 50% of recent increases in the cost of 'health care' are attributable to the introduction of new technology, yet our outcomes remain poor. We need a change in plan in light of this bad news.

However, there is hope! In order to truly regain health, patients must be viewed through a new lens. That lens is called functional medicine. Instead of focusing on a patient's symptoms, we examine the patient in a stepwise fashion with certain priorities in mind. We essentially have to evaluate the patient's ability to make energy which is used to complete all the jobs cells have to do each day, such as grow, repair, get rid of waste and perform specialized functions such as fighting off infections.

Think of this problem as a fuel delivery issue. If you owned a gas station and the trucks that refuel your station never come to replenish the gas supply, all the cars that try to refuel at your station will end up sputtering down the road since there is nothing to put in them. This is what the cells of your body are doing.

To truly address this fuel delivery issue, a functional approach is required to discover the underlying cause. There are four main pillars to evaluate when treating a patient. These are:

1. Anemias
2. Blood sugar/adrenal glands
3. Liver/gastrointestinal
4. Fatty acid metabolism

The reason I look at anemias and blood sugar first is that every cell in your body needs oxygen and glucose to live. Anemia deals with the oxygen carrying capacity of red blood cells and glucose is the fuel used in all cells. If either of these is compromised, then the patient cannot produce energy and they will not heal regardless of the treatment. As a doctor, I need to find out what type of anemia is present. It is critical to differentiate between iron deficiency anemia, pernicious anemia or an anemia of chronic disease since the treatment will be different for each.

Blood sugar problems are rapidly becoming epidemic. Insulin resistance is linked to many of the same factors that lead to fatigue, weight gain and depression. How do we get insulin resistant?

Factors that Lead to Insulin Resistance

- Genetics
- Increased androgens - testosterone
- Stress via increased cortisol which down-regulates insulin receptors
- Inflammation
- Smoking
- Many dietary factors
- Obesity due to enlarged visceral adipose tissue which increase pro-inflammatory cytokines
- Inactivity

The liver is the major detoxification organ as well as a storage depot for many vitamins and minerals. If the liver is not functioning properly drugs, toxins and hormones cannot be cleared.

The intestines are the major barrier between the inside and outside of the body (besides the skin) and the surface where nutrient absorption takes place. About 80% of our immune system is located in our gut as well as the friendly bacterial population that aids digestion and nutrient production.

Fatty acids are found in every cell membrane of the body and depending on what kind are consumed will dictate whether more pro-inflammatory or more anti-inflammatory fatty acids are incorporated into every cell membrane.

We have to look at weight management in a new way since our current paradigm, quite frankly, doesn't work. The weight loss industry is a multi-billion dollar industry with a 95% failure rate. The sad thing is we continue to operate under the same definition of insanity – doing the same thing over and over again expecting different results. I am here to tell you if you continue to stick with the current formula for losing weight (namely eating less and exercising more), **YOU WILL NOT BE SUCCESSFUL!** The whole concept of weight control is completely backwards. Let me make this very clear: You do not lose weight to become healthy – You become healthy to lose weight. **THIS IS A CRITICAL POINT TO LEARN!** Deposition of body fat is dependent on many metabolic influences with one of the most powerful being insulin. Another is thyroid hormone. If there is a lack of thyroid hormone you will never be able to regulate body composition effectively since thyroid hormone regulates your overall metabolic rate. Low thyroid hormone leads to weight gain, fatigue and depression, yet most doctors never do a complete thyroid panel. Let's take a look at what the thyroid gland is responsible for:

- Bone development
- Gastrointestinal function
- Liver function
- Gallbladder function
- Body composition
- Blood sugar regulation
- Cholesterol levels
- Stress hormone elimination
- Detoxification
- Stomach acid balance
- Thermoregulation
- Fertility
- Inflammation levels
- Sex hormone balance

Are you starting to see the common threads?

The adrenal glands should also be evaluated. The adrenal glands (small glands which sit on top of the kidney) are responsible for your stress response, hormone production including adrenaline/noradrenaline, blood sugar maintenance and cortisol production. And why is cortisol important?

EFFECTS OF CORTISOL

Cortisol is a hormone produced by the adrenal gland in response to stress. It follows a circadian rhythm throughout the day which is linked to patterns associated with sleeping at night and being awake during the day. Cortisol levels are typically highest in the morning and tapers down throughout the day to their lowest levels at midnight. Cortisol is ultimately controlled by the hypothalamus of the brain which is charged with maintaining homeostasis (metabolic balance) and orchestrating our responses to stress. The following is a list of the impact of cortisol on different systems of the body:

Cortisol and the Immune System

- Normally, cortisol release can happen in seconds after a stress, but if the stress is great enough the negative feedback loop is interrupted and we get too high of a cortisol response
- The number of white blood cells also fluctuates inversely with cortisol – ie. \uparrow cortisol = \downarrow white blood cells (WBCs)
- Cortisol redistributes WBCs out of the bloodstream, therefore, it affects WBC migration patterns
- Cortisol can impair the function of WBCs by inhibiting WBCs from producing pro-inflammatory cytokines – This is why cortisol is the body's own in house anti-inflammatory
- Cortisol can actually kill WBCs – cell apoptosis
- On the other hand, too little cortisol impairs the body's ability to constrain inflammation
- Dysfunctional cortisol levels are more specific for passive stresses such as depression, loss of control, helplessness rather than exercise or active stresses

Cortisol and Blood Sugar

- Elevated cortisol causes increased insulin resistance, therefore, more insulin (pro-inflammatory) is released by the pancreas
- Decreased cortisol causes hypoglycemia because it can't influence making glucose from other tissues (gluconeogenesis) or breaking apart stored glucose (glycolysis)

Cortisol and Thyroid Function

- Elevated cortisol has a suppressive effect on the enzyme that converts T4 (inactive thyroid hormone) to T3 (active thyroid hormone) = less active thyroid hormone

Cortisol and the Intestines

- Elevated cortisol suppresses Secretory IgA (an antibody involved in the first line of defense against invaders of mucous membranes) which delays regeneration of cells lining the intestine and promotes a pro-inflammatory environment
- Elevated cortisol contributes to dysbiosis (increase in pathogenic bacteria in the gut) and leaky gut (increased permeability due to thinning of the GI lining) →The GI tract becomes more susceptible to parasites and other pathogenic organisms

Cortisol and Bone Density

- Elevated cortisol has a negative impact on bone metabolism due to calcium malabsorption

Cortisol and Insomnia

- Depressed cortisol levels leads to the inability to stay asleep due to the lack of blood sugar able to be created from gluconeogenesis and glycolysis
- If no cortisol is available for blood sugar regulation the body will use epinephrine and norepinephrine (glucocorticoids) which are excitatory hormones →wake you up
- Elevated cortisol →Hard time getting to sleep

Cortisol and the Brain

- Dysregulation of the hypothalamic/pituitary/adrenal axis (HPA axis) has been related to neurodegenerative diseases such as multiple sclerosis and lower DHEA has been linked to Alzheimer's
- Elevated cortisol has been shown to cause hippocampal cell destruction (the part of the brain associated with memory)
- Dysfunctional HPA axis can also cause an increase in pro-inflammatory cytokines leading to inflammatory damage in tissues (cardiovascular disease)→Can also lead to an increase in blood pressure due to elevations in catecholamines

Cortisol and Metabolism

- Elevated cortisol induces insulin resistance which has been shown to lead to leptin resistance (leptin is a hormone that tells the brain to stop eating)→increased potential for obesity
- With elevated cortisol lowering the production of active thyroid hormone→slows down metabolism and fat burning
- Also, hypothyroidism shuts down the receptor sites that respond to lipase, an enzyme that metabolizes fats

Signs and Symptoms of Adrenal Stress Syndrome

Cortisol Imbalance Signs and Symptoms

- Fatigue (most common symptom)
- Headaches with physical or mental stress
- Weak immune system
- Allergies
- Slow starter in the morning
- Gastric ulcer
- Afternoon headache
- Fullness or bloated feeling
- Crave sweets, caffeine, cigarettes
- Blurred vision, unstable behavior
- Get shaky or lightheaded if meals are missed or delayed (reactive hypoglycemia)
- Irritable before meals (reactive hypoglycemia)
- Eating relieves fatigue (reactive hypoglycemia)
- Cannot stay asleep (adrenal hypofunction)
- Cannot fall asleep (adrenal hyperfunction)

You can see from the previous list how cortisol and the adrenals factor into the symptoms of overweight, fatigued and depression. If the HPA axis is not functioning properly, it will be next to impossible to achieve optimal health.

Fatigue is epidemic in our society. The bottom line is people are unable to produce enough energy to get through the day. The fatigue remains even if the person gets adequate sleep. A question I ask my patients is: "On a scale of one to ten, with ten being the most energy, what would you rate your energy level on a daily basis while taking your willpower out of the

equation?” A simple urine test can be done to check for blockages in the energy production system due to certain nutrient deficiencies. It’s as if a dam is inserted in the pathway of energy production and intermediate compounds are backing up and spilling into the urine. This is how you can precisely determine which co-factors are missing; by determining where the log jam is occurring.

Depression is the consequence of altered brain cell functioning. This can stem from altered adrenal gland function which is the gland that produces cortisol. Cortisol is involved in our stress response and regulates blood sugar. Difficulties with blood sugar control will impact neurotransmitter production (the chemicals brain cells use to talk to each other) such as serotonin. The use of this class of anti-depressant drugs has exploded with millions of dollars spent on medications such as Celexa, Lexapro, Paxil, Prozac and Zoloft.

Conclusion

The human body really is amazing. Consider these facts:

- A fully formed human brain contains 100 billion neurons or nerve cells and gives off the equivalent power of a 20 watt light bulb.
- The human brain has the storage capacity of 100 trillion bits of information over the course of 70 years, equal to 500,000 sets of encyclopedias.
- Breathing one pint of air 17 times a minute, we take in 78 million gallons in an average lifespan, enough to fill the Hindenburg airship one and one half times.
- You have 45 miles of nerves in your body that send impulses as rapidly as 325 miles per hour. Your brain and your body communicate instantly.
- 8,000,000 new red blood cells are produced in the bone marrow every second.
- 2,100 gallons of blood are pumped through 62,000 miles of blood vessels in a day.
- Your heart pumps enough blood in an average lifetime to fill the fuel tanks of 56 moon rockets.
- The heart weighs less than one pound and yet beats approximately 40 million times per year.
- The lungs use about 90 gallons of pure oxygen per day.
- Because of the alveoli (tiny air sacs in the lungs), the surface area of the lungs is approximately 40-60 square miles.
- Stomach acid (hydrochloric acid) is so strong, that one drop of it on the skin will leave a painful blister, but the stomach is left unharmed.
- The stomach produces 2.5 quarts of acid per day.

Your body is a self healing entity but it needs the right raw materials to get the job done. Drugs, surgery and emergency care are like the fire department putting out fires. Functional medicine should be the construction company coming to repair and rebuild. In our modern disease care system the construction company usually doesn't show up. We all basically require the same things:

1. Aerobic activity
2. Physical (strength) activity
3. Essential fatty acids
4. Vegetables and fruits
5. Adequate protein
6. Rest
7. Good social contacts
8. Proper hydration/fluids

The prevalence in modern society of many chronic diseases is the consequence of a mismatch between modern dietary patterns and the type of diet that our cells require. Physiology is the genetic expression of one's lifestyle choices (type II diabetes, obesity, hypertension, insulin resistance, dyslipidemia, osteoporosis). These conditions can be changed given the right diagnosis, lifestyle changes and time.

Millions of dollars are spent on weight loss groups and products, energy drinks and supplements as well as antidepressants without actually addressing the underlying problem. I sense the frustration of patients when they tell me they can no longer work due to these symptoms, the loss of relationships and the loss of hope that they will ever have quality of life again. I am here to tell you that things can change, BUT, you cannot get healthy on a diet of misinformation. YOU NEED A COACH! Even professional athletes have coaches and they are the best in the world. Don't attempt this on your own.

Please call my office and schedule a consultation with me at 716-204-0743. I will look over your case and determine if you qualify for my program as there are circumstances which may make a person not eligible for the program.

**Please call 716-204-0743 today for a free
consultation to start changing your life!**