



Do or Diabetes

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Diabetes is one of the most common problems in the United States today. The Standard American Diet (SAD) continues to promote blood sugar disorders and will for decades to come. Some have predicted that the diabetic explosion will bankrupt the national healthcare system. Diabetes is on the rise and is the leading cause of blindness, amputations, kidney failure, and neuropathy in the United States. Over 26 million Americans are affected by diabetes, at an annual cost of over \$218 billion per year. Diabetes is a growing problem in industrialized countries, primarily due to a lack of lifestyle education and physical activity, as well as the consumption of high-calorie, low-nutrient, processed foods.

Defining Diabetes

Diabetes disrupts all aspects of human physiology. It increases the risk of cardiovascular disease, cancer, cognitive decline, and virtually every other disease. There are different categories of blood sugar handling issues: reactive hypoglycemia (low blood sugar, below 60) and hyperglycemia (high blood sugar, above 100). Contrary to popular belief diabetes is not a blood sugar issue, it is 100% of the time an insulin issue. High blood sugar is a symptom of insulin resistance or a lack of insulin production.

Diabetes is classified as either type 1 or type 2, and both result in high blood sugar. In type 1 diabetes a person has lost the ability to make insulin because their pancreas is being destroyed by either their own immune system or a virus. A type 2 diabetic eventually loses the ability to make insulin due to poor lifestyle choices, specifically diet.

It is estimated that 20% of type 2 diabetics are misdiagnosed and are actually suffering from Latent Autoimmune Diabetes in Adults (LADA). These diabetics are typically not overweight and live a healthy lifestyle, but still remain on insulin as a result of pancreatic destruction.

How Hormones Affect Blood Sugars

A hormone is an important chemical messenger that is made in one part of the body and communicates with another part of the body. At the root of virtually every illness are two hormones, insulin and cortisol. Insulin is a hormone made by beta cells in the pancreas. In insulin's case, its job is to drive sugar into virtually every cell in your body to be converted into energy. All foods, such as proteins, fats, and carbohydrates will eventually be converted into glucose (sugar) so that the body can use it as a fuel.

Cortisol is a hormone that is made by your adrenal glands (stress glands). One of its main roles is to increase blood sugar. It does this by releasing a stored sugar (glycogen) from the liver and muscle tissue. Cortisol will also reduce the sensitivity of the insulin receptors on cells. This forces the pancreas to make more insulin to lower blood sugar; and a vicious cycle begins.

Developing Diabetes

Before a person becomes a diabetic, they go through a stage called insulin resistance. This means that their cells require more insulin than usual to force that sugar into the cells. This problem is promoted by

lifestyle factors such as physical inactivity, overeating, high sugar and high starch snacks and meals, and a lack of fiber. People in the insulin resistance stage usually complain of getting tired after meals, cravings for sweets, and trouble losing weight. When the insulin receptor becomes over-saturated (due to inflammation or insulin resistance) sugar cannot get into the cells. This excess sugar is converted into circulating fats called triglycerides. This process demands a lot of energy, resulting in fatigue after a meal. High triglycerides on a blood test are one of the first signs of insulin resistance.

Insulin resistance ALWAYS comes before diabetes is officially diagnosed. A person may be severely insulin resistant and still present with normal blood sugars. This high demand of insulin results in pancreatic burn-out, ultimately resulting in insulin dependence (medication). High circulating insulin does not only affect blood sugar; remember, insulin is at the root of virtually all chronic disease and therefore affects various other systems in the body.

The Consequences Of High Insulin And Blood Sugars

Insulin resistance and elevated blood sugar affect virtually all aspects of physiology. When sugar can't get into a cell it oxidizes and turns into glycosylated end products (GEP). When something oxidizes, think of it like rust on a car. GEP's combined with high levels of insulin are inflammatory and cause destruction to tissues such as retinas, nerves, kidneys, and blood vessels. This is why diabetes is the leading cause of blindness, kidney failure, neuropathy, and amputation. An excellent marker for measuring GEP is Hemoglobin A1C. HbA1C is an important marker because it measures how quickly an organism is aging. The higher the HbA1C, the faster a person is aging on a cellular level. As bad as all this sounds, the health problems don't stop there.

Did you know that the size of diabetic's brain shrinks twice as fast every year compared to a non-diabetic.



Here are 8 aspects of your health that are impacted by Insulin:

- 1 Insulin tells your liver to make more cholesterol.** Cholesterol is the precursor to many of your hormones, including cortisol. Your body makes more cholesterol in response to the demands placed on it. This is a highly intelligent response to your environment and lifestyle, not an error. Your body never makes mistakes.
- 2 Insulin raises your blood pressure by increasing sodium retention.** Many diabetics also have high blood pressure as a result of insulin issues.
- 3 Insulin keeps your liver from being able to detoxify properly.** Your liver is like your body's oil filter. Your liver takes the trash and sludge out of your blood, but it can't do as good of a job when insulin and blood sugar are constantly elevated.
- 4 Insulin promotes inflammation, the very thing that causes insulin resistance.** Inflammation promotes joint pain, cardiovascular disease, fluid retention, and weight gain to name a few.

- 5 High insulin levels in women cause them to make more testosterone.** Symptoms include; polycystic ovarian syndrome or PCOS, hair thinning, and unwanted facial hair.
- 6 Men end up with higher levels of estrogen when they have higher levels of insulin.** This can contribute to breast enlargement and prostate issues with men, along with other things like erectile dysfunction and loss of motivation.
- 7 High levels of insulin are also directly related to higher risk for colon and breast cancer.** Insulin promotes cell division and therefore also accelerates the aging process and cancer cell division.
- 8 High levels of insulin promote weight-gain because it is a fat storage hormone.** When insulin can no longer drive sugar into cells to make energy, its job is then to store that sugar as fat for use at a later time. Guess what, that time never comes!

It becomes quite clear the amount of devastation that can be caused by a single hormone. The bad news is that we have drugs and supplements to address all the concerns listed above, ignoring the root cause. The good news is that insulin is one of the few hormones that you have direct control over.



The 5 Action Steps to Conquer Insulin Resistance

Let's look at how we can address this notorious hormone and radically improve your health outcomes. We are going to address 5 components of your health that have a direct impact on your insulin levels.

1 Diet

The average US citizen eats over 170,000 pounds of food in their lifetime, as much as a space shuttle weighs! Let's look at how diet affects your insulin levels.

Glycemic Index (GI) and Glycemic Load (GL) – The glycemic index is a scale that measures the insulin response your body will have after eating a certain food. The higher the number, the more insulin your pancreas will secrete. GL is the amount of that food eaten. An example of a food that is high on both GI and GL is a large baked potato. Foods high in good fats and fiber help lower GI numbers when eaten simultaneously. A complete list of GL and GI for foods can be found at www.becomeproof.com.

Processed foods and fast foods are inflammatory – Inflammation causes insulin resistance. Inflammation also increases cortisol levels and therefore further increases blood sugar levels. It's a vicious cycle.

Food Sensitivities – First let's discuss the difference between a food allergy and a food sensitivity. A food allergy is when someone eats a peanut and they break out in hives and their throat swells shut. When a person eats a food they are sensitive to, it will cause an immune and inflammatory response which causes insulin resistance. Most people are eating food they are sensitive to every day, but they don't realize it. It is like a bad relationship, you don't know how bad it is until you eliminate it from your life. Testing for food sensitivities can lead to breakthroughs in virtually every case.

Food timing – not eating regularly and eating larger meals causes blood sugar and insulin spikes. It is better to eat smaller, frequent meals that have a low GI and GL to help keep your blood sugars stay balanced and to prevent them from extreme highs and lows.



Insulin is one of the only hormones that we can control. The food that you eat has a profound impact on your insulin levels. Eat more unprocessed, healthy foods.

2 Exercise

Our ancestors moved 5 times more than we do today. In fact, they would have walked enough to get to the moon and back 3 times in their lifetime. In contrast, people today would only get about 2/3 of the way to the moon. Movement is a required part of life and many of us are becoming more sedentary. Let's discuss how exercise lowers insulin levels.

Exercise helps burn calories – You have to have more going out than what is coming in. You want to create a calorie deficit if you are trying to lose weight. Fat is just stored energy, so you need to use up some of the reserves. If you lower your weight you decrease the demands of insulin on your body because fat cells have insulin receptors too. Less body mass equals less hormones, it's a simple concept.

Exercise increases insulin receptor site sensitivity – When you use your muscles, they need more energy to fire, so the insulin receptor sites on muscle tissue become more receptive to insulin. This is why even a short walk can lower your blood sugars and insulin demands dramatically.

Exercise up-regulates over 500 genes in your body – Your genetics in combination with your environment are the blueprint for your health. Activity will positively impact gene expression and allow you to better utilize all your hormones, including insulin.

Exercise helps your body filter waste – Movement and muscular contraction are required for your lymphatic system to work and get rid of metabolic waste in your body. This can help your body detoxify better by mobilizing these toxins and flushing them out of your system.

Exercise helps to control your cravings and hunger signals – The hormone leptin signals your brain that you are full and to stop eating. When you have leptin resistance, not only do you feel hungry all the time, but you crave the wrong foods. So by increasing exercise levels, we can help decrease those cravings and the constant need to eat. A lot of people with insulin resistance are thought to be leptin resistant as well. This hormone has a lot to do with how your body stores and uses energy, just like insulin.



There is no such thing as too much movement! The more you move, the better you will feel, and the better you will manage insulin and blood sugar levels. To start we suggest that you try to incorporate walking and remain as active as possible throughout the day.

3 Stress

Did you know that up to 90% of visits to a physician's office are in some way connected to chronic stress, and that virtually all disease is impacted or begins with a stressor? Stress comes in 3 forms: physical, chemical and emotional. But your body reacts exactly the same way to each form. Stress has a massive impact on insulin and other systems in the body.

Stress decreases insulin receptor sensitivity - Your body has to make more insulin to have the same response on blood sugar when the receptors are not working properly.

Stress elevates cortisol levels - High cortisol levels result in weight gain in the mid-section, poor sleep, lowered immunity and slower muscle growth to name a few.

Stress causes cravings - During periods of stress you may crave sugary, salty and fatty foods, therefore affecting insulin and weight gain.

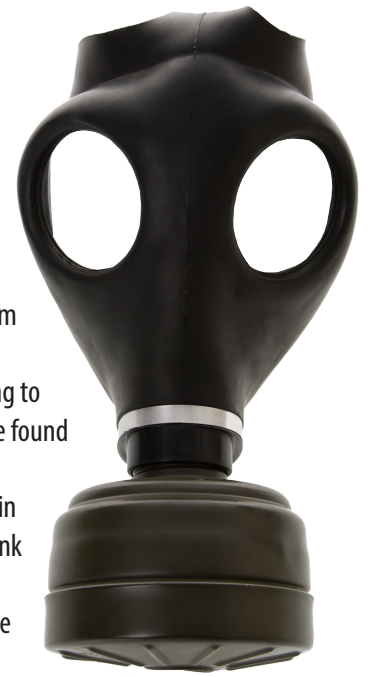
Stress causes your liver to raise your blood sugar - This is your body's way of increasing energy to handle a stressful situation. Imagine a lion chasing you as a stressor. With a chronic stressor, your body is constantly reacting the same way as if a lion is chasing you. It is a predictable response in every human being that is hard-wired into our physiology. Since we can't change the response we must change, eliminate, or learn to better cope with the stressor.



Stress can come in a variety of forms, but they all raise your blood sugar and therefore raise your body's need for insulin. It is important for one to recognize and address the stressors in their life and develop a strategy to remove them.

4 Toxins

We come in contact with 84,000 chemicals a year, and only 1% of those have been tested for safety. Of those tested, only 5 chemicals have been banned in the last 34 years! Not only are we in danger from man-made chemicals, but our food supply is so toxic that it is contributing to the pollution of our bodies. Toxins are found in lotions, creams, plastics, make-up, toothpaste, etc. Things that we come in contact with daily and don't even think about. Be careful what you put on your skin, the water you drink and the air you breathe, it all ends up inside your body.



Toxins increase liver stress and reduce toxin breakdown and elimination - If you have trouble reading words on a food label, so does your body. Your liver doesn't know what to do with all these toxic food additives and it gets overworked. This means that you cannot effectively regulate blood sugar or get rid of excess hormones and toxins. Many times the liver requires nutritional support to clear these toxins from your body.

Toxins cause inflammation and increase insulin resistance - all these foreign substances increase inflammation in the body, which shuts down insulin receptor sites, which in turn requires that your body make more insulin.

Chronic toxic threats to your health come in many forms. The personal care products we use, the cleaning agents we use, the air we breathe and water we drink.



5 Essential Nutrients

There are certain substances that everyone needs for their body to function normally. In diabetics, required nutrients are often missing. Over fifty percent of Americans take a nutritional supplement, but the majority of people don't know why they are taking them.

Here are some of the main nutrient deficiencies that we see in clinical practice with patients that have blood sugar issues. We suggest that you consult with a Functional Medicine practitioner to determine your nutrient needs through the appropriate lab work.

Alpha-lipoic acid (ALA) – ALA is one of the main nutrients responsible for turning sugar into energy in your cells. It is also an anti-inflammatory and anti-oxidant so it can assist with reducing insulin resistance and slow down aging.

Magnesium – Diabetics usually have a tendency to utilize magnesium faster than a non-diabetic. This mineral is responsible for making energy and helps muscles and nerves fire. Low amounts of magnesium can contribute to constipation, depression and high blood pressure, to name a few. Magnesium is responsible for over 300 biochemical processes in your body. It is estimated that 50% of the US population is deficient in magnesium according to the American Medical Association.

Zinc – Excess inflammation causes a person to use more zinc than they normally would. Since diabetes is a disease rooted in inflammation, a lot of diabetics are also low in zinc. Zinc is also an important nutrient to the pancreas and required for normal function. Zinc plays a role in almost 300 reactions in the body.

B-vitamins – All of the B-vitamins combined play a role in almost every process that occurs in your cells, including carbohydrate metabolism. These vitamins can also become depleted by taking diabetic medications.

Chromium – All the other nutrients we have talked about have multiple functions in the body. There is only one thing that we know that chromium helps with in the human body and that is to make insulin receptor sites more sensitive to insulin.

The PrimeLife Approach

Nothing can fix your body better than it can fix itself. We must provide it with the right environment, nutrition, and reduction of stress. Your lifestyle and nutrient status have a profound impact on insulin and consequently blood sugar levels.

After reading this article, please spend time to review it and implement at least one change that you will make today with this new knowledge. We want you to write down this goal and review it daily. Do your best to eventually address all of the factors discussed.

Our mission is to address the root cause of your health issues and restore your health and vitality. Through partnering and education, you will receive the tools and direction to live an extraordinary life. You now have information to make better choices and, more importantly, have a better understanding of how your body works on the inside.

Diabetes is truly an insulin related disorder; fortunately, insulin is one of the easiest hormones to manage and can have a dramatic impact in many aspects of your health besides blood sugar. We encourage that you work with a Functional Medicine provider who understands your unique needs and helps you develop an action plan towards restoring your health and vitality.



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