



Brad Lemley's

# Natural Health Solutions

## Dial Back Diabetes

*“One of the first duties of the physician is to educate the masses not to take medicine.”*

— William Osler, MD, author of *The Principles and Practice of Medicine*

I have always enjoyed exposing scams and rooting out insanity in the world of health. I've dedicated my entire career to these pursuits.

And there's nothing more insane than the official attitudes and policies regarding Type 2 diabetes treatment.

If you poke around the American Diabetes Association website, you'll find warning after warning to choose foods *low in saturated fat*, and lots of love for carbohydrates. So if you have diabetes, remember this info from the ADA:<sup>1</sup>

- “Myth: Eating too much sugar causes diabetes.
- “Myth: If you have diabetes, you should only eat small amounts of starchy foods, such as bread, potatoes, and pasta.
- “Myth: People with diabetes can't eat sweets or chocolate.”

Got that?

The problem is these aren't “myths.” They represent the *truth* about what causes diabetes. So why is the ADA — the organization theoretically dedicated solely to the prevention and treatment of diabetes — saying otherwise?

And why does every other mainstream organization that deals with diabetes suggest — you guessed it — *moderating* carbs, and then go on and on about how crucial it is to cut dietary fat?

I need to be perfectly plain. *There is no credible evidence that fat consumption contributes in any significant way to diabetes.* Studies that purport to show this are invariably “confounded.” In other words, along with lowering fat consumption, the researchers conducting these studies changed many dietary and lifestyle variables at the same time. It's virtually impossible to perfectly filter out these confounding effects.

Worse, such studies are often *observational* — which means they happen outside of a lab and depend upon the subjects' ability to precisely remember and record what they ate, how much they exercised, etc. Such studies are notoriously unreliable.

On the flip side, evidence linking carbohydrate overconsumption to the development and worsening of diabetes is less likely to be compromised, coming as it does from every kind of scientific methodology: double-blind trials, animal models, large-scale cross-cultural studies... you name it.

It's worth noting that even researchers who contend that fat overconsumption fuels diabetes don't dispute that carbs are culprits as well — the contribution of carbohydrates to diabetes is simply incontrovertible.

Despite this, it was only *this month* that the journal *Nutrition*<sup>2</sup> had the guts to publish a paper with the daring idea that restricting carbohydrates should be the “first approach” in diabetes management.

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1. “Diabetes Myths.” American Diabetes Association. 17 Aug 2015.

2. Feinman, RD et al. “Dietary carbohydrate restriction as the first approach in diabetes management: Critical review and evidence base.” *Nutrition*. 15 Jul. 2014

The absurdity makes the mind reel. Eating fat is not the cause of diabetes; it's the cure for it, and the fact that a high-fat, low-carb diet has not been the primary intervention for the last century is beyond crazy.

Today, it's my goal to set the record straight when it comes to diabetes, in the hopes that you will benefit from the truth.

Best,



Brad Lemley  
Editor, *Natural Health Solutions*

## Chapter 1: Diabetes 101

What is diabetes?

Diabetes (diabetes mellitus) is a disease in which glucose, or blood sugar, levels are abnormally high. This happens because the body does not produce enough insulin to break down glucose. There are several different reasons why this can occur.

There are two types of diabetes, and it is absolutely crucial to differentiate between the two.

Type 1 diabetes is a condition that occurs naturally. It is a disease in which the pancreas becomes unable to create insulin. Researchers believe that this is caused either by environmental factors or by a genetically inherited condition.

Whatever the reason, most people develop Type 1 diabetes early, before the age of 30 (earning it the name “juvenile onset” diabetes). Type 1 diabetes cases make up 5–10 percent of the incidence of diabetes worldwide. Almost all Type 1 diabetes patients are insulin-dependent, meaning that they cannot survive without supplementing with insulin, usually via frequent injections or a wearable pump.

Type 2 diabetes is an entirely different disease. Rather than the pancreas failing to create insulin, the body simply stops reacting to it. This means that the body resists processing it. I'll get more into the details on that later, but Type 2 diabetes is generally caused by improper diet or lack of exercise — it develops as a result of lifestyle, rather than environment or disease.

This is a vital distinction. I want to take a moment to focus on what truly causes Type 2 diabetes. It's become an epidemic in modern America. The Centers for Disease Control (CDC)<sup>3</sup> released a 2014 report that 29.1 million people in the United States have diabetes. That's an astounding 9.3 percent of the population.

With almost one in 10 Americans living with Type 2 diabetes, it's become the norm for many of us. However, this was not always a case.

Let's take a look at the incidence of Type 2 diabetes in the U.S. over time...

As a nation, we've escalated from fewer than 6 million people suffering from diabetes in 1980 to 29.1 million people today. That's an astounding and frightening statistic.

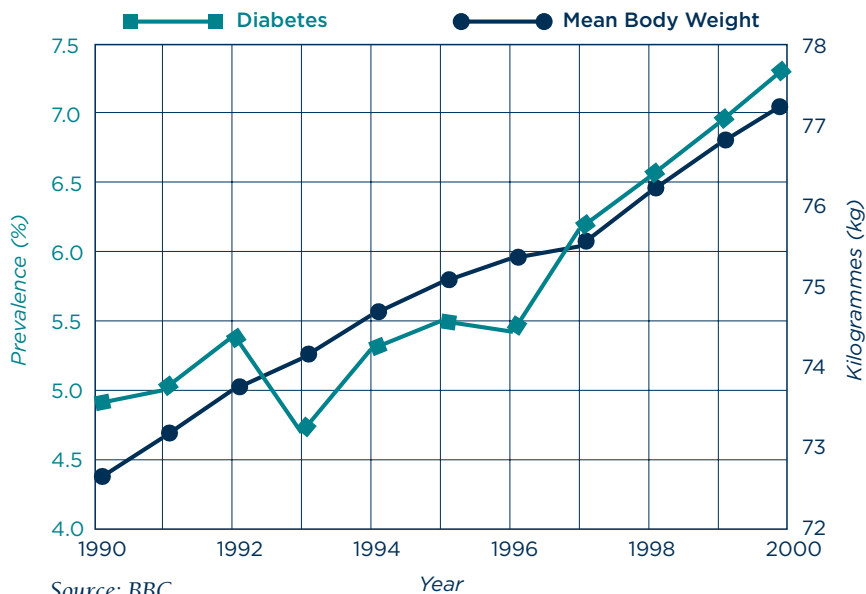
### How did this happen?

Well, to start, let's take a look at the comparative graph on the next page, looking at both diabetes and obesity rates in the U.K.

Notice anything happening there?

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3. “National Diabetes Statistics Report, 2014.” CDC. 2014.



There is a huge correlation between obesity and Type 2 diabetes. This isn't just a coincidence. It's a direct cause-and-effect relationship.

Type 2 diabetes leads to a long list of associated diseases, many of them fatal, and many of them truly horrific, slow, painful ways to die.

Type 2 diabetes puts you at risk of death from amputation, kidney, and liver failure, as well as cardiovascular disease.

Other less deadly but extremely painful secondary conditions include severe nerve damage and pain, skin complications such as infection, numbness in the extremities, and blindness.

We as a nation need to learn to take back control of our health. Just take a look at how rapidly the obesity and diabetes epidemics are overtaking us in the United States:

The rapid spread of these conditions is alarming. Both Florida and Virginia went from obesity rates of under 14 percent in 1994 to over 26 percent in 2010. That's not even a 20-year time frame!

## How did we get here?

Now that you've seen the numbers, let's dive into what actually causes Type 2 diabetes.<sup>4</sup>

In a way, it all starts with carbohydrates. Whenever you eat a type of carb, it's eventually converted to glucose in the body. Glucose is a simple sugar that, in appropriate amounts, is largely used up as it fuels our daily activity.

However, too much glucose in the blood is toxic.

That's where insulin comes into play. Insulin is the "key" that allows glucose to get into our liver and muscle cells, where it's used as fuel.

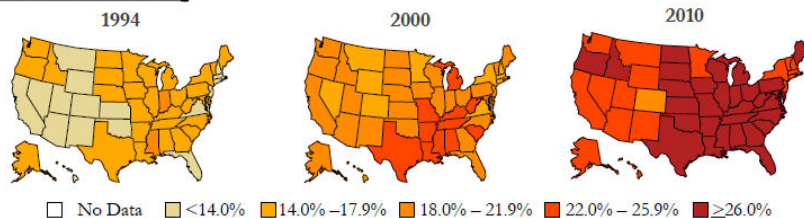
Unfortunately, if those cells become full, they put up a "no vacancy" sign and start to resist insulin. The cells no longer accept more glucose, and it remains in the bloodstream.

(Think about filling your car up with gas — once the tank's full, it automatically stops letting more fuel in. Your cells have the same automatic wall when it comes to glucose.)

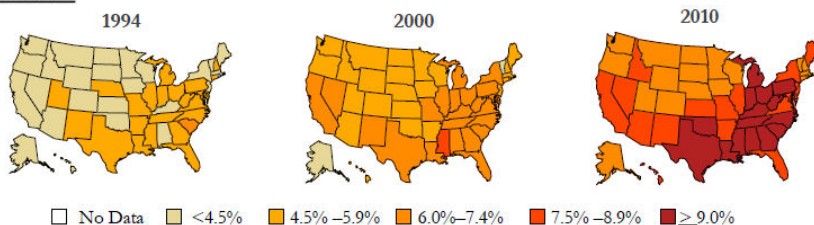
This sends the body into a panic — the pancreas pumps out more insulin, which creates even more insulin resistance in those overstuffed cells. Eventually, the insulin drives a process called lipogenesis — literally, fat-creating — as it turns to fat cells as a place to store the excess glucose, since it has nowhere else to go.

### Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among U.S. Adults Aged 18 years or older

#### Obesity (BMI ≥30 kg/m<sup>2</sup>)



#### Diabetes



CDC's Division of Diabetes Translation. National Diabetes Surveillance System available at <http://www.cdc.gov/diabetes/statistics>

Source: CDC



4. Sisson, Mark. "The Definitive Guide to Insulin, Blood Sugar & Type 2 Diabetes." Mark's Daily Apple. Web. Accessed 22 Dec. 2015.

Now that the fat cells are storing this excess sugar (and remember, glucose is sugar — it's not eating high-fat foods that causes this problem), you begin to gain weight. Eventually, even your fat cells will develop insulin resistance, and more toxic glucose will remain in your bloodstream.

This is what leads to inflammation, as well as a rise in triglycerides and heart disease. It damages the nerves, damages the small blood vessels in organs like your kidneys and heart, and fosters atherosclerosis. It also often leads to severe dehydration, and in some cases, patients fall into a “diabetic coma.”

It's a horrible cycle, really. Insulin resistance, and eventually Type 2 diabetes, often comes as a result of overeating, an unhealthy diet, and inactivity. Then once someone develops Type 2 diabetes, they often find it increasingly difficult to burn fat or lose weight.

They continue to gain weight, adding to the overproduction of insulin, and the cycle continues.

Eventually, if the condition is left untreated and continues to become more severe, the pancreas essentially burns out. It can no longer produce insulin on its own, since it's been working overtime for so many years.

At that point, you become insulin dependent and require insulin injections to keep your blood sugar at a normal, nontoxic level.

There are many myths when it comes to diabetes. The ADA pushes many of them.

For example, there's a popular notion that red meat can increase your risk for Type 2 diabetes. Red meat is demonized for a number of reasons not based in fact, and this falls into that category.

In 2011, a study published in *The American Journal of Clinical Nutrition* linked red meat consumption to Type 2 diabetes.<sup>5</sup> They pulled the results from three huge studies— 37,083 men from the Health Professionals Follow-Up Study, 79,570 women from Nurses' Health Study I, and 87,504 from the Nurses' Health Study II.

From this population, they came to the conclusion that “red meat consumption, particularly processed red meat, is associated with an increased risk of T2D.”

However, if you read the details, it's not quite so simple. “For both men and women, red meat intake was negatively associated with physical activity, but positively associated with BMI and smoking.”

Uh-oh. Now it's not so simple. Those who eat red meat tend to have other “unhealthy habits.” Since we've all been told that red meat is bad for so long, only people who are willing to ignore health advice of all kinds still eat it in quantity.

Now, the funny thing is that red meat actually isn't something you should avoid. The other unhealthy habits, on the other hand, are a real issue.

Those people who ate the most red meat also smoked, were overweight, were the least active, drank the most alcohol, ate carbohydrates and processed foods... The list goes on and on.<sup>6</sup>

Furthermore, most people believe diabetes is not curable. While Type 1 might not be “curable” in the traditional sense, there is no reason that the symptoms of Type 2 cannot be kept at bay indefinitely — in other words, functionally cured. A study from the Joslin Diabetes Center, an academic affiliate of Harvard, revealed that there are five stages of beta cell (a special type of cell found in the pancreas that creates insulin) dysfunction, and that movement from one stage to another — in either direction — is possible, refuting the assertion that diabetes cannot be cured.<sup>7</sup>

But enough about facts and misconceptions. What can you do in your daily life to lower your risk of developing Type 2 diabetes? Or if you've already been diagnosed with it, what can you do to help keep it in check?

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5. Pan, A et al. “Red meat consumption and risk of type 2 diabetes: 3 cohorts of US adults and an updated meta-analysis.” *American Journal of Clinical Nutrition*. 2011.

6. Sisson, Mark. “Does Eating Red Meat Increase Type 2 Diabetes Risk?” *Mark's Daily Apple*. Accessed 22 Dec. 2015.

7. Weir, Gordon C. and Susan Bonner-Weir. “Five Stages of Evolving Beta-Cell Dysfunction During Progression to Diabetes.” *Diabetes Journals*. Dec. 2004

# Chapter 2: The No. 1 Trick to Lower Your Blood Sugar

It's not all bad news. There are a number of natural steps that you can take to help ward off your chance of developing Type 2 diabetes or keep your symptoms at bay if you've already developed it.

However, there's one major lifestyle change that you'll have to make in order for any of them to truly work. And oddly enough, an American scientist discovered it a century ago.

Let me introduce you to a man named Dr. Elliott Joslin. He founded Harvard's Joslin Diabetes Center. In 1916, he wrote a book called *Joslin's Diabetes Mellitus*, one of the earliest texts on the diagnosis, symptoms, and treatment of diabetes.

The text became something of a doctrine for medical practitioners in the early 20th century. In the 1921 edition of *The Principles and Practice of Medicine*, Dr. Joslin is given credit for the information on diabetes mellitus.

The very first line in that book regarding the treatment of diabetes reads, "In families with a marked predisposition to the disease, the use of starchy and saccharine articles of diet should be restricted."<sup>8</sup>

In other words, carbs and sugars should be strictly avoided if you're at risk for developing diabetes. The book goes on to recommend a high-meat diet as well, advice that dates back even further, to 1797.

Overall, according to researchers from Duke University, the recommended diet for diabetes patients in 1923 was "75 percent fat, 17 percent protein, 6 percent alcohol and only 2 percent carbohydrate."

One hundred years later, it seems that the Joslin Center has lost its way. The most recent book put out by their medical director recommended that carbs make up 40 percent of daily caloric intake, with a minimum of 130 grams of carbs every day.<sup>9</sup>

After the discovery and implementation of insulin medications, experts started adding carbs back into the diabetic diet. The reasoning was simple — if the medications can keep blood sugar under control, why not eat carbs and use the drugs to correct it?

Following that logic, if there's a fire hydrant outside of your house, why not set the house on fire? A "solution" is readily available, after all.

Now, I am not by any means trying to make the argument that all medical practices and treatments in 1916 were valid. In fact, some of them were downright horrifying.

But Dr. Joslin had it exactly right. What's also horrifying is that the professionals are now recommending a carb-filled diet to those suffering from diabetes, which is essentially poisoning them.

This is not a new idea.

In 1994, researchers at the University of Texas Southwestern Medical Center studied the effects of a high-carbohydrate diet (55 percent carbs, 30 percent fats) versus a fairly high-fat diet (40 percent carbs, 45 percent fats).<sup>10</sup> The participants were all diabetes patients who were not insulin dependent.

Although the group of patients on the lower-carb diet did still have carbs in their diet, they had much better results. Those patients eating a high-carb diet saw a deterioration of blood sugar control, a spike in hyperinsulinemia (when there's too much insulin in the bloodstream), as well as higher triglyceride and LDL cholesterol levels, both of which are precursors to heart disease.

Cutting carbs has had historically proven success when it comes to diabetes treatment.

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8. Joslin, Elliot. "The Principles and Practice of Medicine." Osler and McCrae. 1921.

9. "Clinical Nutrition Guide for Overweight and Obese Adults with Type 2 Diabetes." Joslin Diabetes Center. 29 Mar. 2007.

10. Garg, A et al. "Effects of varying carbohydrate content of diet in patients with non-insulin-dependent diabetes mellitus." JAMA. May 1994.

In 2005, researchers from the Duke University Medical Center and the Department of Veterans Affairs Medical Center in Durham put 28 overweight, diabetic patients on a low-carb ketogenic diet for 16 weeks.

A ketogenic diet, if you're not familiar with it, is a diet that's high-fat, moderate-protein, and low-carb. It essentially eliminates the carbs that are normally turned to glucose and forces the body to burn fats instead of carbs. The liver begins to turn fat into ketone bodies, which serve as an energy source for the brain, rather than glucose.

But I digress. Back to the study... 21 of 28 participants completed the study, which is a very high retention rate considering what a pain in the butt it is to cut carbs. (I'm not overlooking the fact that it's a challenge, trust me.)

The results, however, spoke for themselves — and more than made up for the “inconvenience.”

After 16 weeks:

- Medication was discontinued in seven patients
- Medication use was reduced in 10 participants
- Medication use was unchanged in only 4
- The participants lost an average of over 19 pounds!
- Fasting serum triglyceride decreased 42 percent overall.

Seems like reason enough to bring back Dr. Joslin's guidelines, doesn't it?

That's just the beginning. Recently, the NIH Action to Control Cardiovascular Risk in Diabetes had to shut down one branch of their study.<sup>11</sup> One group of their participants was undergoing an intensive treatment to try to lower their blood glucose below recommended levels.

They found that there was a spike in mortality in that group — 257 deaths, compared with 203 deaths in the standard treatment group.

Researchers at Duke University suggest that this is a result of trying to mask and medicate an issue without addressing the root cause — in this case, a high-carb diet was allowed to continue, and excessive medications and insulin were given to lower blood sugars.<sup>12</sup>

As Dr. Eric Westman of Duke wrote in a 2008 study:

We believe that it is unlikely that the increased mortality was due to the tight glucose control but rather due to the particular method for trying to achieve it. When *high-carbohydrate diets* are consumed and intensive medication therapy is used to ‘cover the carbohydrate,’ it is very difficult to achieve normal glycemic control *without hypoglycemic reactions*.

Dr. Westman and his colleague Dr. Mary Vernon set out to see whether a return to low-carb dietary treatment would have a more positive effect on diabetes patients.

They found that the beneficial effects of a low-carb diet in diabetes patients happen quickly. Drs. Westman and Vernon found that by reducing carbs in the diets of their patients, they were able to “taper patients off as much as 150 units of insulin per day in eight days.”

With such immediate and dramatically positive results, it's no wonder that they explain in the study:

At the end of our clinic day, we go home thinking, “The clinical improvements are so large and obvious, why don't other doctors understand?”

This is perhaps the simplest and best way to put it.

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11. “For Safety, NHLBI Changes Intensive Blood Sugar Treatment Strategy in Clinical Trial of Diabetes and Cardiovascular Disease.” NIH. 6 Feb. 2008.

12. Westman, Eric C. and Mary C. Vernon. “Has carbohydrate-restriction been forgotten as a treatment for diabetes mellitus? A perspective on the ACCORD study design.” *Nutrition & Metabolism*. 9 Apr. 2008.

## Low-Carb vs. Low-Glycemic: A Look at the Glycemic Index

Sticking to a very low-carb diet works better than eating a low-glycemic one, much to the chagrin of carb apologists.

Let's take a step back and go over the basics of a low-glycemic diet, or glycemic index diet. The main principle of this diet is the simple fact that all carbohydrates raise blood sugar.

The answer seems simple, right? Simply cut carbs. Problem solved.

However, as you probably know from personal experience, that's easier said than done. People are very hesitant to cut carbs. Admittedly, it's a challenge. Pasta, bread, rice, and other grains have become the building blocks of our meals. Some researchers have even shown evidence that carbohydrates can have an addictive quality, activating brain centers similar to those that drive addictions to opiates.

But even tenacious addictions can be beaten.

Anyway, hesitant to recommend cutting carbs entirely, some experts formed something called the glycemic index. Its purpose is to rate carbohydrates on a scale of 1–100, based on how drastically they raise your blood sugar.

So along with animal foods such as milk, meat, and eggs, low on the GI scale would be nuts, legumes, and green leafy vegetables. Medium-GI foods include bananas, corn, and whole grains. High-GI foods, which are the worst for you, are what you would expect — white bread, white rice, white potatoes, and sugary drinks.

I feel it necessary to point out that not only is a low-carb diet more effective — it's also much simpler. Who has time to remember what category each and every food item goes into?

The problem with whole grains is that they are still carbohydrates. So although they might spike your blood sugar somewhat less than milled grains would, they still do spike it.

A 2008 study published in *Nutrition & Metabolism* compared the effects of a low-carb ketogenic diet with those of a low-glycemic diet. They observed obese participants suffering from Type 2 diabetes over a 24-week period.

Both groups did see improvements. However, the low-carb group saw greater improvements in blood sugar, weight loss, and cholesterol levels.

Most astoundingly, 95.2 percent of folks doing the low-carb ketogenic diet threw their medication in the trash, or at least reduced it.

The freedom from diabetes medications and insulin injections is a much greater convenience, in my opinion, than the ability to eat the carbs that are killing us.

## How Does Paleo Compare?

The Paleo, or “primal” diet seems to be all the rage these days. With good reason.

It challenges us to eliminate the modern diet atrocities and eat the way that humans ate, and thrived, for millennia. Admittedly, prehistoric human beings ate a wide variety of diets — a jungle-dweller's dinner was significantly different from an Inuit's — but all such diets featured unprocessed foods and vigorous efforts to obtain animal or fish fat as a vital contributor to health.

There have been a few research studies on Paleo diets (which are also low-carb) that have shown success with patients who have diabetes and/or impaired glucose tolerance.

In 2007, researchers at the Lund University in Sweden set out to accomplish something a bit different with their study on glucose tolerance.<sup>13</sup>

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13. Lindeberg S. et al. “A Palaeolithic diet improves glucose tolerance more than a Mediterranean-like diet in individuals with ischemic heart disease.” *Diabetologia*. Sep. 2007.

They explained that:

Most studies of diet in glucose intolerance and Type 2 diabetes have focused on intakes of fat, carbohydrate, fiber, fruits, and vegetables. Instead, we aimed to compare diets that were available during human evolution with more recently introduced ones.

In many ways, this sort of “big picture” look at Type 2 diabetes makes sense. Look back to the maps in Chapter 1 and how rapidly Type 2 diabetes has spread in the past two decades alone. It makes sense to assume that it’s our modern lifestyle and diet that is causing our bodies to fail, not our bodies themselves.

Lund University compared a Paleolithic diet with a program based on the Mediterranean diet: whole grains, low-fat dairy products, vegetables, fruits, fish, and oils.

They found that there was a 26 percent decrease of AUC glucose in the Paleolithic group over 12 weeks, compared with a 7 percent decrease in the Mediterranean group. AUC stands for “area under the curve,” and “the curve” is a graph line describing the body’s typical ability to metabolize pure sugar. The greater AUC decrease with Paleo means subjects’ blood sugar moved closer to a healthy range.

Also, the Paleolithic group lost an average of 5.6 cm in waist circumference, while the Mediterranean group lost an average of 2.9 cm.

As an added bonus, the Paleo diet increased satiety. In comparison to the Mediterranean diet, participants felt fuller and more satisfied with their meals.

Another study from the University of San Francisco School of Medicine sought to see whether a Paleolithic diet could play a role in lowering the risk of the “diseases of civilization,” such as Type 2 diabetes, hypertension, and obesity.<sup>14</sup>

Over the course of just a few weeks, they determined that “a Paleolithic-type diet improves blood pressure and glucose tolerance, decreases insulin secretion, increases insulin sensitivity and improves lipid profiles without weight loss in healthy, sedentary humans.”

It’s becoming more and more clear that returning to our ancestral roots when it comes to the way we eat is the only sensible dietary course of action to take against these modern chronic conditions.

Perhaps no study illustrates this more effectively than a study surrounding Australian aborigines in 1984.<sup>15</sup> Researchers selected a group of 10 middle-aged, overweight aborigines who had developed diabetes as a result of urbanization. They had them live a traditional hunter-gatherer lifestyle for seven weeks.

All 10 men experienced an urbanization reversal of sorts — the metabolic issues causing their Type 2 diabetes either ceased completely or drastically improved, and they lost weight.

By returning to the way their people lived for thousands of years, they rid themselves of their modern health issues.

## Get Enough Sleep

An exciting new study published by the University of Chicago Medical Center in February 2015 revealed a connection between sleep deprivation and diabetes.<sup>16</sup>

According to the researchers,

Lack of sleep can elevate levels of free fatty acids in the blood, accompanied by temporary pre-diabetic

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14. Frassetto, LA et al. “Metabolic and physiologic improvements from consuming a paleolithic, hunter-gatherer type diet.” *European Journal of Clinical Nutrition*. 11 Feb. 2009.

15. O’dea Kerin. “Marked Improvement in Carbohydrate and Lipid Metabolism in Diabetic Australian Aborigines After Temporary Reversion to Traditional Lifestyle.” *American Diabetes Association*. Jun. 1984.

16. “Link between sleep loss, diabetes explained.” *University of Chicago Medical Center*. 19 Feb. 2015.



conditions in healthy young men. Getting enough sleep could help counteract the current epidemics of diabetes and obesity.

In other words, not logging enough hours of sleep at night was enough to impact the insulin, glucose, and stress levels of otherwise healthy young men. They saw a 15–30 percent increase in early-morning fatty acid levels, as well as an increase in insulin resistance that lasted up to five hours.

Overall, “the ability of available insulin to regulate blood glucose levels decreased by about 23 percent after a short sleep,” suggesting what the authors note as an “insulin-resistant state.”

Getting enough sleep at night is something that’s sorely lacking in many of our lives. However, it’s one of the easiest things to correct — and does the body good in so many ways.

Increased blood sugar regulation and insulin sensitivity are just the tip of the iceberg. Sleep heals the body and helps to keep us healthy.

Another overlooked piece of the diabetes puzzle is stress. Stress causes the release of cortisol into the bloodstream, which in turn raises blood glucose.

Under stress, only cells used in the fight-or-flight response are open to insulin. Other cells become insulin resistant to preserve energy for the cells needed to fight or run away. While this is useful if you’re being chased by a bear, it’s not so useful with everyday stress we all have.

Remaining aware of your stress levels is vital when it comes to keeping your blood sugar in check.

## Chapter 3: Diabetes Boosters to Cut From Your Diet

There are a number of external factors that contribute to the development of Type 2 diabetes.

Let’s get right into what foods you actually should be avoiding to not only lower your risk of developing diabetes but also live a healthier life overall.

### High Fructose Corn Syrup

At this point, there’s no reason that you should still be eating high fructose corn syrup. It’s a processed food that is absolutely catastrophic for the human body. It’s a cause of obesity, heart disease, cancer, dementia, tooth decay, and a host of other evils.

The worst part is this is not new news. A study published back in 1980 in *The American Journal of Clinical Nutrition* found that high-fructose products caused a reduction in insulin sensitivity in healthy young men in just one week.<sup>17</sup>

One week was long enough to essentially prep these otherwise healthy individuals for Type 2 diabetes. It all starts with insulin resistance.

A study from the University of Florida’s Division of Nephrology also found that high fructose corn syrup causes metabolic syndrome far more than regular sugar.<sup>18</sup>

Unfortunately, since we’ve been ignoring this information for over 30 years now, the average American is currently consuming more than 60 pounds of HFCS per year, largely as a result of artificially sweetened drinks and processed foods.<sup>19</sup> Just another reason to eliminate that junk from your diet.

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17. Beck-Nielsen H et al. “Impaired cellular insulin binding and insulin sensitivity induced by high-fructose feeding in normal subjects.” *The American Journal of Clinical Nutrition*. 1980.

18. Johnson, R. et al. “Hypothesis: Could Excessive Fructose Intake and Uric Acid Cause Type 2 Diabetes?” *The Endocrine Society*. Feb 2009.

19. Hyman, Mark. “The Not-So-Sweet Truth About High Fructose Corn Syrup.” *Huffington Post*. 13 May 2011.

## Artificial Sweeteners

This one surprises many people, including diabetics, who are typically heavy users of artificial sweeteners. We tend to assume that Splenda, Equal, and the like are better for us than real sugar. But a recent study in the journal *Nature* found that “artificial sweeteners induce glucose intolerance by altering the gut microbiota.”<sup>20</sup>

What that means in English is that artificial sweeteners kill the good gut bacteria — the kind that aids our digestion. This allows the bad gut bacteria to run wild. Researchers linked this to the development of metabolic disease in mice and maintained that the massive artificial sweetener consumption worldwide should be reassessed.

## Statins

After a relentless 40-year campaign, the drug industry has largely succeeded in persuading most people that the best indicator of heart disease risk is their level of LDL — or “bad” — cholesterol.

Conventional medicine suggests you’ve got to watch your bad cholesterol like a hawk and gulp down pills to get it into the right ratio.

When your cholesterol ratio is skewed — too much LDL, too little HDL — you often get talked into taking cholesterol drugs called statins. They’ve become so common in the U.S. that most people probably don’t think twice about the prescription.

Unfortunately, statins come with a dirty laundry list of problems.

That’s because not only do they inhibit production of cholesterol, they interfere with other intermediary substances which have important biochemical functions.

For example, they deplete the body of coenzyme Q10 (CoQ10), which is vital to heart health and muscle function.

Most doctors aren’t really up to speed on the true dangers of statins.

Too many times, patients came down with fatigue, muscle weakness, soreness, and, in some cases, heart failure (after all, since muscle weakness is a known side effect, why would the heart — which is a concentrated mass of muscle tissue — be immune?).

Furthermore, Type 2 diabetes rates go up when people go on statins. A recent study in *BMJ* evaluated 136,966 patients over the age of 40 being treated with statins.<sup>21</sup> They evaluated them over a 14-year period.

The researchers found that within the first two years of statin use, there was a significant increase in the risk of Type 2 diabetes onset. This risk was particularly increased with high-potency statins. Lower-potency agents had less of a correlation.

Shockingly, the risk for diabetes onset was highest in the first four months of statin use. Overall, statins increased the risk of diabetes by about 9–12 percent.

*The American Journal of Cardiology* published similar results in 2014.<sup>22</sup> They found that “statin use increases the risk of incident Type 2 diabetes mellitus in patients with clinically manifest vascular disease.”

These results happened overall, regardless of whether or not the patients had other determining factors for diabetes. However, it was even more pronounced in those patients with low glucose levels to begin with.

Statin use was also found to increase the incidence of Type 2 diabetes in postmenopausal women as a part of the

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20. Suez, J et al. “Artificial sweeteners induce glucose intolerance by altering the gut microbiota.” *Nature*. 17 Sept. 2014.

21. Dormuth, CR et al. “Higher potency statins and the risk of new diabetes: multicentre, observational study of administrative databases.” *The British Medical Journal*. 29 May 2014.

22. Van de Woestijne, AP et al. “Effect of Statin Therapy on Incident Type 2 Diabetes Mellitus in Patients With Clinically Manifest Vascular Disease.” *American Journal of Cardiology*. 15 Feb. 2015.

Women's Health Initiative.<sup>23</sup> This study was conducted because women had been underrepresented in previous studies and clinical trials on the subject.

## And the GMO connection

GMOs are a topic of hot debate. Scientists, politicians, and the general public are staunchly divided into two camps: those who claim that GMO foods and glyphosate are completely safe for human consumption and those who believe they are the cause of a host of ills.

Count me as part of the latter.

In 2013, two scientists published a review in the journal *Entropy* that took a strong stand for my side of the debate.<sup>24</sup> The study describes how glyphosate, the main ingredient in Roundup, disrupts synthesis of sulfate, which is crucial to blood sugar control as well as arterial health.

According to the study, “Negative impact on the body is insidious and manifests slowly over time as inflammation damages cellular systems throughout the body.”

The researchers argue that these long-term results include most Western diseases, such as obesity, diabetes, heart disease, infertility, cancer, autism, and more.

The fact of the matter is more GMO crops mean more glyphosate because they're designed to withstand Roundup spraying. In fact, 80 percent of genetically modified crops are designed to resist glyphosate, something called the “Roundup Ready” feature. This study shows how glyphosate is making its way into our bodies.

Studies have also indicated that consuming produce treated by glyphosate negatively affects the gut microbiota. This phenomenon could be contributing to the fact that inflammatory bowel diseases like Crohn's disease have recently increased substantially.

Research is still preliminary, and few scientists will touch the topic with a 10-foot pole because this is so controversial. But the solution is very simple:

Minimize, or completely avoid, GMO foods.

## Chapter 4: The Best Kind of Exercise for Eliminating Type 2 Diabetes

I hate to break it to those of you who thought you'd get off easy, but exercise is a much bigger component of managing diabetes than most people realize.

Here, we actually will turn to the ADA for a moment — although their dietary guidelines for Type 2 diabetics miss the mark by a mile, they do occasionally get it right.

In 2010, they released a joint position statement with the American College of Sports Medicine regarding the importance of exercise for those at risk for or diagnosed with Type 2 diabetes.<sup>25</sup>

They found that a combination of physical activity and modest weight loss can decrease the risk of developing Type 2 diabetes by a whopping 58 percent in those who are already at high risk. With those odds, it's simply irresponsible not to incorporate exercise into your routine.

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23. Culver, A et al. “Statin Use and Risk of Diabetes Mellitus in Postmenopausal Women in the Women's Health Initiative.” *JAMA Internal Medicine*. 23 Jan. 2012.

24. Samsel, Anthony and Stephanie Seneff. “Glyphosate's Suppression of Cytochrome P450 Enzymes and Amino Acid Biosynthesis by the Gut Microbiome: Pathways to Modern Diseases.” *Entropy*. 15 Jan. 2013.

25. Colberg, SR et al. “Exercise and Type 2 Diabetes.” *The American College of Sports Medicine and the American Diabetes Association*. Dec. 2010.

Let's take a look at some of the impact exercise can have on Type 2 diabetes patients:

- improves blood glucose control
- positively affects lipids
- has a positive impact on blood pressure
- lowers the risk of cardiovascular events
- lowers the risk of mortality
- improves the quality of life
- can prevent or delay Type 2 diabetes.

The bottom line is most of the complications of Type 2 diabetes, as well as the condition itself, can be avoided if you simply engage in the proper nutrition program, exercise, and work to maintain a healthy weight.

Medications and insulin use may very well be necessary, but they should be used as supplements to your overall lifestyle rather than as the only solution.

## What Kind of Exercise Is Best for Those With Type 2 Diabetes?

If you're not regularly exercising, it's absolutely fine to start small — walking, hiking, leisurely bike rides. The most important thing is to get moving every single day. Stretching and other activities that will improve your flexibility and balance are also extremely beneficial.

However, aerobic routines like running, jogging, or biking are not the only options to optimize health. In fact, there are other methods of exercise that could provide better results for those at risk for or living with Type 2 diabetes.

For example, a study out of the Division of Gerontology at the Baltimore Veterans Affairs Medical Center (right in the same town as our Maryland headquarters) showed resistance training — like lifting weights — was just as effective in improving insulin sensitivity.<sup>26</sup>

This is not surprising. Stronger muscles mean more proper storage of glycogen (sugar) and improved insulin sensitivity. These two key factors make the difference between a Type 2 diabetic and a normal, healthy person.

High-intensity interval training (HIIT) can also be very effective. Researchers in Canada found that six out of nine of their volunteers improved insulin resistance just two weeks after participating in an HIIT program.<sup>27</sup> Furthermore, blood glucose was reduced immediately after each session.

A study published in the *Journal of Clinical Endocrinology & Metabolism* reiterated HIIT's benefits for Type 2 diabetics, and added another bonus.<sup>28</sup> In their words:

Intermittent exercise, if proven to be effective in lowering blood glucose concentrations, may provide a more palatable alternative to potentially laborious, time-consuming continuous exercise.

In other words, HIIT could provide an alternative for those who don't seem to have enough time to participate in long runs or sessions at the gym. You can get similar if not better results in less time, and improve your blood sugar.

Finally, it turns out that exercise has a bigger impact for those people with worse health. Researchers at the University of Queensland conducted three years of studies on exercise and blood glucose levels.<sup>29</sup>

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26. Ryan AS. "Insulin resistance with aging: effects of diet and exercise". *Sports Medicine*. Nov. 2000.

27. Shaban N et al. "The effects of a 2 week modified high intensity interval training program on the homeostatic model of insulin resistance in adults with type 2 diabetes. *Journal of Sports Medicine and Physical Fitness*. Apr. 2014.

28. Mackenzie R. et al. "Intermittent Exercise with and without Hypoxia Improves Insulin Sensitivity in Individuals with Type 2 Diabetes." *The Journal of Clinical Endocrinology & Metabolism*. 25 Jan. 2012.

29. Hodern, MD et al. "Determinants of changes in blood glucose response to short-term exercise training in patients with Type 2 diabetes." *Clinical Science*. 1 Nov. 2008.

The study, broken down into a four-week session for each group of 15–20 participants, did not show any statistically significant improvement in blood glucose or insulin sensitivity overall.

However, when scientists looked deeper and examined the results of volunteers with the worst levels blood sugar and insulin resistance, they *did* see an improvement. They found, essentially, that the worse your health is, the more important it is to begin exercise and the more dramatic your rebound will be.

If you're a diabetic, there are a few things you need to be cautious of when introducing exercise into your routine.

Exercise can sometimes cause what's referred to as "liver dumps" — instead of blood glucose (BG) levels decreasing, the liver will release glucose into the blood, causing a temporary rise in BG levels. Basically, since working out lowers your blood sugar levels, the liver panics and dumps extra insulin into your bloodstream to combat what it thinks is a problem.

Eating carbs based on pre-exercise levels helps with this. While I don't normally recommend carbs, some before a rigorous workout could be beneficial if you already have diabetes — it's the fuel the body recognizes the quickest, and can therefore combat a liver dump.

But this should be only a short-term strategy. As your body becomes accustomed to fueling itself from fat rather than carbs, you should find it easier and easier to maintain energy during a workout without carb-loading beforehand.

## Conclusion

I want to make one last vital point about Type 2 diabetes before signing off. The truth of the matter is virtually everyone in America is somewhere on the metabolic syndrome/Type 2 diabetes spectrum.

In other words, almost no one in this culture has a level of blood sugar associated with optimal health. Our sedentary lifestyles, high stress levels, and consumption of heavily processed foods make that almost impossible, even for those of us with the best intentions.

Even if you've never been diagnosed with Type 2 diabetes, it is in your best interest to take steps to lower your blood sugar.

Prevention is the key to good health.