DANA CARPENDER

THE LOW-CARB DIABETES SOLUTION COOKBOOK

Prevent and Heal Type 2 Diabetes *with* 200 Ultra Low-Carb Recipes

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FOREWORD

It is my great pleasure to write this foreword for The Low-Carb Diabetes Solution Cookbook, by Dana Carpender. This book is a fundamental part of the HEAL Diabetes & Medical Weight Loss Clinics program, and will make the transition to an LCHF (low-carbohydrate, high-fat) lifestyle seem effortless! HEAL stands for "Healthier Eating and Living," and the HEAL Protocol integrates medical, dietary, psychological, and fitness interventions delivered at HEAL clinics and remotely, 24/7, using digital health and tele- medicine tools.

As director of the Duke Lifestyle Medicine Clinic since 2007, I have used the dietary basis of the HEAL Protocol as a natural extension of the research that had been done at Duke University and othe research centers around the world. My interest in LCHF began while I was an internal medicine specialist: Two of my patients used LCHF (Atkins Induction Diet) to lose weight in 1998. It clearly worked, but I was skeptical and concerned about the safety because of all the fat in the diet. But if it were safe, I knew that this could be an important lifestyle tool to treat obesity and diabetes. The research since that time has demonstrated the safety of this approach.

The past few years have shown a large shift in attitudes toward LCHF lifestyles. A 2014 Time magazine story, with the cover line "Eat Butter. Scientists labeled fat the enemy. Why they were wrong," helped advance the popularization of LCHF into mainstream U.S. culture. Additional researc studies have been published that confirm the positive effects of LCHF lifestyles on diabetes; LCHF continues to be popular in Sweden (www.dietdoctor.com); and the first Low Carb Health Summit wa held in February 2015 in Cape Town, South Africa. (Lectures are available for viewing at www.lchfconvention.com.) South Africa has become aware of LCHF through Professor Timothy Noakes, an exercise guru who changed his advice for athletes away from "carb loading" and toward carbohydrate restriction before athletic competition. More and more athletes are turning to LCHF for the benefits in their performance.

Despite the research, the most common concern that people have about the low-carbohydrate lifestyle is: "But what will happen to my blood cholesterol level by eating all that fat?" A whole generation of doctors, dietitians, and the general public was taught that eating fat and cholesterol would raise "bad" LDL blood cholesterol and cause heart disease. This "diet-heart hypothesis" was th theory that spawned the low-fat diet fad. I was privileged to be a part of the studies about the LCHF diet, and the predictions about how the LCHF diets would worsen the blood lipid profile didn't come true when they were actually studied. It turned out that the LCHF diet reduced health risks by loweri blood triglycerides and raising the "good" HDL cholesterol. At the time of publication, the revised 2015 USDA/NIH Dietary Guidelines for Americans are poised to take away the limitations on dietar fat and cholesterol.

At the HEAL clinics, the LCHF diet is used as a therapeutic tool to turn around and fix most of the chronic medical conditions that are seen today. But LCHF is also a healthy diet that prevents these same chronic medical conditions. LCHF is an excellent treatment for diabetes, high blood pressure, gastroesophageal reflux disorder, high blood triglycerides, low blood HDL cholesterol, polycystic ovarian syndrome, and irritable bowel disease. Often the improvement that we see is "unbelievable"- meaning that other doctors and experts don't believe it. Weight loss of 200 pounds (more than 90 kg) lowering of blood triglycerides by 900 mg/dL (10.2 mmol/L), increasing the "good" HDL cholestero by 50 mg/dL (1.3 mmol/L)—doctors often are in disbelief, and because the studies haven't been published, the researchers say the evidence "doesn't exist." However, these are the clinical outcomes

that we observe.

I'm excited to be a part of the HEAL Diabetes & Medical Weight Loss Clinics for those who need medical supervision during the treatment of diabetes and obesity. I am confident that this cookbook will be a great resource for you as you follow the HEAL Protocol.

—Eric C. Westman, M.D., M.H.

HEAL Diabetes & Medical Weight Loss Clini

Eric C. Westman is board certified in Internal Medicine and Obesity Medicine, with a master's degree in Clinical Research from Du University and over 90 peer-reviewed publications on his clinical research regarding treatments for obesity, diabetes, and tobacco dependence. He is a Co-Founder of HEAL Diabetes & Medical Weight Loss Clinics, Director of the Duke Lifestyle Medicine Clinic Past President of the Obesity Medicine Association, and is a Fellow of both The Obesity Society and the Obesity Medicine Association.

FOREWORD

If you have type 2 diabetes and are also overweight, you are faced with two chronic conditions. To b successful in managing your health, you need to make changes in the way you eat for a lifetime. If you don't stay in control with the proper lifestyle changes, both of these conditions will get worse over time. To help you succeed, you need knowledge and the proper tools.

The HEAL Protocol will give you the knowledge to help you understand how and why controlling both the quality and the quantity of carbohydrate foods can be so effective in putting diabetes into remission and losing those excess pounds. This cookbook is one of the tools that can keep you on trac by providing easy-to-make, fun, nourishing, and tasty meals.

Even if you don't cook, Dana Carpender will help you make your way around the kitchen. Eating out regularly can sabotage your weight loss efforts. If you have diabetes, it isn't likely you will achieve the best level of success by always eating out. Cooking whole foods does not have to be difficult or overwhelming.

At first, changing your food choices may seem difficult. But in my view, not making those change and suffering the consequences is more devastating. This cookbook is targeted especially to people with diabetes who are serious about controlling their weight and blood sugar levels without the use o potentially dangerous and expensive medications. It can be done. People do it all the time.

One surefire way to succeed is to ride the coattails of someone who has been successful. Do what they do. Dana has twenty years of personal experience living a low-carb lifestyle. I have been on low carb since 1974. I have a family history of type 2 diabetes on my father's side and morbid obesity on my mother's. As a nurse, I knew I had to be proactive if I was going to avoid these conditions. So far have been very successful at avoiding diabetes and managing my weight comfortably without hunger

Dana and I both know the pitfalls that can lead to failure in the long run. Major stumbling blocks include boredom with meals, facing hunger with no good food choices, or having to count calories. This book will offer you a wide range of ideas while keeping your carb intake at no more than 5 gram per meal.

I have enjoyed Dana's other cookbooks, which increased my menu choices, and look forward to more ideas in this one.

—Jacqueline A. Eberstein, R.N

Jacqueline A. Eberstein is one of the foremost authorities on the Atkins Lifestyle. In 1974 she began working with Dr. Robert Atkin as the Head Nurse in his weight-loss clinic. She later became the Director of Medical Education at The Atkins Center for Complementary Medicine, in New York City. After The Atkins Center closed in 2003, she became the Director of Nutrition Information for Atkins Health and Medical Information Services. While there she co-authored Atkins Diabetes Revolution. She is currently the Director of Protocol for HEAL.

CHAPTER 1

Diabetes: The Problem and How to Solve It

Welcome to this book, and to the HEAL family. We're sorry that your health has driven you to search for a solution, but we're glad to have you with us. You're in the right place.

HEAL Diabetes & Medical Weight Loss Clinics have a simple mission: to teach "Healthier Eating and Living," and by doing so, restore people to health. Eric C. Westman, M.D., M.H.S., our founder and president, and Jacqueline A. Eberstein, R.N., a medical advisor, have, between them, taught thousands of people with diabetes to not merely control the progression of their disease, but to put it into total remission.

Me? I write low-carbohydrate cookbooks. I have eaten a low-carbohydrate diet for twenty years now. I was never diagnosed with diabetes, but have had a doctor, looking at my charts, say that I would surely be diabetic by now had I not changed my diet in 1995.

I know Dr. Westman and Jackie Eberstein because of my longtime involvement with the low-carb community. When Dr. Westman told me he was starting a chain of diabetes treatment centers, with the goal of teaching people to eat a low-carbohydrate diet, I knew I had to be involved. They deal wit the medical part and have vetted everything I say here. I'm the one who can help you figure out the question "What do I eat now?" I promise, the answer to that question is varied, delicious, and satisfying.

WHAT IS DIABETES?

There are two kinds of diabetes. They both involve problems with insulin, the hormone that ushers sugar out of the bloodstream and into the cells, and lead to high blood sugar. However, the causes of the problem are quite different.

Type 1, or juvenile-onset diabetes, is due to failure of the insulin-secreting beta cells in the pancreas. People with type 1 diabetes simply lack insulin. According to the American Diabetes Association (ADA) website, only 5 percent of people with diabetes have this form of the disease.

In type 2 diabetes, the pancreas makes insulin, but the insulin receptors, or the "doors" on the cell that insulin should open, are not working properly to move sugar out of the bloodstream, a condition called insulin resistance. Blood sugar levels start rising. The beta cells secrete more and more insulin trying to force the faulty insulin receptors to respond. Eventually, the beta cells start to fail, producin less and less insulin, and blood sugar rises inexorably.

It is type 2 diabetes that has been increasing at a frightening rate all over the world.

THE MODERN EPIDEMIC

The numbers are staggering. According to the Centers for Disease Control and Prevention (CDC), more than 29 million people in the United States are affected by diabetes, with one in four of those cases as yet undiagnosed. Another 86 million Americans —one in three adults—have pre-diabetes an are on their way to full-blown diabetes. Without intervention, somewhere between 15 and 30 percent of people with prediabetes will develop diabetes within five years. The CDC estimates that one in three Americans will develop diabetes at some point.

What does this mean for the lives of these people?

- The National Institutes of Health (NIH) states that 60 to 70 percent of those with diabetes eventually suffer diabetic neuropathy, a degenerative condition of the nerves that causes numbness, tingling, and/or pain in the extremities. It can also cause muscle wasting, indigestion, nausea, vomiting, diarrhea, constipation, dizziness on standing, problems with urination, and erectile dysfunction.
- The American Podiatric Medical Association estimates that between 15 and 24 percent of people with diabetes develop ulcerated wounds on their feet.
- Diabetes is a major cause of amputations, often due to those ulcerated wounds. According to the CDC's *2014 National Diabetes Statistics Report*, seventy-three thousand people with diabetes had a limb amputated in 2010. Sixty percent of amputations in people over age twenty are due to diabetes
- According to the National Eye Institute, 40 to 45 percent of those with diabetes develop diabetic retinopathy, the most common cause of new blindness in adults. The condition doubles the average person's risk of glaucoma and increases the risk of cataracts even more dramatically (two to five times the usual).
- The CDC's report also states that in 2011, because of diabetes, nearly fifty thousand people began treatment for kidney failure and more than a quarter of a million were living on dialysis or with a kidney transplant.
- Seventy-one percent of people with diabetes over the age of twenty-one have high blood pressure. People with diabetes have nearly double the risk of heart attack and one-and-a-half times the risk o stroke as those who do not have the disease.
- Diabetes increases susceptibility to other illnesses and can worsen their prognoses. For example, th CDC tells us that people with diabetes are more likely to die from pneumonia or influenza than people who do not have diabetes.
- The CDC's Diabetes Fact Sheet for 2011 tells us that people sixty or older with diabetes are two to three times more likely than those who do not have diabetes to report an inability to walk one-quarter of a mile, climb stairs, or do housework compared with people without diabetes in the same age group.
- The CDC also states that people with diabetes are twice as likely to have depression (which can complicate diabetes management) than people without diabetes. Interestingly, depression also appears to predispose sufferers to diabetes.
- According to the National Academy on an Aging Society, "The life expectancy of people with diabetes averages 15 years less than that of people without diabetes." That's nearly a 20 percent reduction in life span. The CDC concludes, "Overall, the risk for death among people with diabetes is about twice that of people of similar age but without diabetes."

Does this scare you? It should. Elevated blood sugar rots your body from the inside out, doing massive, global damage to both your body and your quality of life.

To add insult to genuine, crippling injury, diabetes threatens to bankrupt us. The rapidly escalating cost of medical care is among the greatest burdens facing the United States, and a frightening part of that cost is attributable to diabetes. In 2013, the journal *Diabetes Care* stated, "The total estimated cost of diagnosed diabetes in 2012 is $245 billion, including $176 billion in direct medical costs and $69 billion in reduced productivity."

What does that look like on an individual level? *Diabetes Care* breaks it down: “People with diagnosed diabetes incur average medical expend-itures of about $13,700 per year, of which about $7,900 is attributed to diabetes. People with diagnosed diabetes, on average, have medical expenditures approximately 2.3 times higher than what expenditures would be in the absence of diabetes.”

I’m sure you can think of more agreeable things to do with your money.

WHAT’S MAKING YOU SICK?

That diabetes is a disease of poor diet is not a new observation. Circa 600 BCE, the Indian physician Susruta said, “Madhumeha [honey urine] is a disease which the rich principally suffer from, and is brought on by their overindulgence in rice, flour and sugar.”

Overindulgence was harder before modern agriculture, grocery stores, fast-food joints, convenienc stores, and omnipresent soda machines. As indulgences of the rich became the staples of the middle class and then the impoverished, this disease of the affluent crossed cultural lines and is now ravagin the poor, who subsist on starches and sugar because they are cheap.

Yes, genetics appear to be involved as well; some people are more susceptible than others. But if genetics were the driving factor, diabetes would not have exploded, both here and worldwide. Geneti simply don’t change that quickly. Diet has.

In 1977, led by Senator George McGovern, the federal government issued its first dietary guidelines, recommending that all Americans reduce fat —especially saturated fat—and cholesterol intake. Those guidelines also recommended an increase in starch intake. Suddenly, Americans “knew that a healthy diet was based on grains, and that meat, butter, and eggs were the causes of heart disease.

We listened. According to the USDA’s Economic Research Service, between 1970 and 1993, annual per capita grain consumption increased by an average of 54 pounds (24.5 kg), added sugars by 23 pounds (10.5 kg), fruit by 48 pounds (21.5 kg), and vegetables by a remarkable 61 pounds (27.5 kg). Simultaneously, egg consumption dropped by 76 per person per year, and milk consumption by gallons (3.75 L) per year.

With low-fat, low-cholesterol diets being the new word in health, people with diabetes, at high ris of heart disease, were told to reduce fat and load up on “healthy whole grains.”

Unfortunately, the saturated fat and cholesterol hypothesis of heart disease was wrong. In 2010, a meta-analysis appeared in the *American Journal of Clinical Nutrition*. It looked at twenty-one studie regarding the effects of saturated fat on heart disease and found “no significant evidence for concluding that dietary saturated fat is associated with an increased risk of CHD [coronary heart disease] or CVD [cardiovascular disease].”

Despite numerous articles debunking the dan-gers of saturated fat and cholesterol in the past decade—heck, the story made the cover of *Time* magazine in 2014—Americans are still being told to limit saturated fats and cholesterol and load up on starches. The USDA 2010 Dietary Guidelines for Americans recommend that adults get 45 to 65 percent of their calories from carbohydrates. Assumin a 2,000-calorie-per-day diet, that would be anywhere from 225 to 325 grams of carbohydrate per day One hopes this will be amended in the guidelines due out by the end of 2015.

That’s for ostensibly healthy people. What about diabetics, people with broken carbohydrate metabolisms? Unfortunately, many dietitians follow the old advice and recommend a carb-heavy die for people with diabetes. Too many people trying to manage diabetes are still being told to eat carbs and use medication to “cover” the resultant blood sugar spikes.

Although the ADA has recently said that there is no one ideal diabetic diet, at the time of

publication, the organization recommends starting at 45 to 60 grams of carbohydrate per meal. That' up to three times the carbohydrate we recommend in an entire day—and the ADA is also suggesting another 15 to 20 grams of carbohydrate in each snack. Whole grains appear among the group's list of "Diabetic Super Foods."

The ADA also continues to warn against saturated fats, saying, "To cut risk of heart disease and stroke, look at saturated and trans fats. Look for products with the lowest amount of saturated and trans fats per serving." (We agree with this advice about trans fats.)

The National Institutes of Health, at the time of publication, still recommends that people with diabetes eat six to ten servings of starches per day and two to four fruits, depending on body size and activity. The agency still recommends limiting meat and eggs to just 4 to 7 ounces (115 to 200 g) per day, and still shows the Food Pyramid, long since abandoned by the USDA, with the foundation still resting on starches. The NIH states: "Eat some starches at each meal. Eating starches is healthy for everyone, including people with diabetes." It does not elaborate.

The NIH recommendations lump fats in with sugars as foods to be carefully limited. What is said specifically about sweets? "Sweets can be high in carbohydrate and fat. Some contain saturated fats, trans fats, and cholesterol that increase your risk of heart disease." Saturated fats, not carbohydrates, are still the official bogeyman.

While pushing starches, the NIH recommends, "Eat fewer fried and high-fat starches such as regular tortilla chips and potato chips, french fries, pastries, or biscuits. Try pretzels, fat-free popcorn baked tortilla chips or potato chips, baked potatoes, or low-fat muffins."

Yet fat does not raise your blood sugar. Carbohydrates do. The commonly recommended "diabetic diet" depends on medication, usually in increasing doses. Even then, it generally does not create normal blood sugar, and the "control" achieved still leads too often to crippling, even life-threatening complications.

What is truly normal blood sugar? Diabetes Education Online, a resource from the University of California, San Francisco, tells us that "overnight and between meals, the normal, non-diabetic blood sugar ranges between 60 and 100 mg/dL [3.3 and 5.5 mmol/L] and 140 mg/dL [7.8 mmol/L] or less after meals and snacks."

Yet the target blood sugar ranges for people with diabetes listed by both the Joslin Diabetes Center and the American Diabetes Association go as high as 130 mg/dL (7.2 mmol/L) for fasting blood sugar and up to 180 mg/dL (10 mmol/L) after meals or snacks. It is these levels that lead to widespread damage in people with "controlled" diabetes.

There is a depressing assumption in the medical community that people with diabetes will inevitably end up with at least some complications. This is because they do. The illnesses listed earlier are occurring in people with diabetes treated according to current guidelines. One frightening example: The National Institute of Diabetes and Digestive and Kidney Diseases states, "Even when diabetes is controlled, the disease can lead to CKD [chronic kidney disease] and kidney failure." That's a frightening definition of "controlled," because—and be clear on this—these debilitating, life altering repercussions are expected in people with diabetes who are being treated according to the current standards.

Richard K. Bernstein, M.D., a physician with type 1 diabetes and a longtime advocate of carbohydrate restriction for glucose control, nailed it when he said, "The ADA (American Diabetes Association) has repeatedly advocated by their blood sugar and A1c guidelines that DIABETICS ARE NOT ENTITLED TO THE SAME BLOOD SUGARS AS NON-DIABETICS [Bernstein's emphasis] and thus should be destined to suffer the morbidity and mortality caused by high blood sugars. They ensure this sad outcome by advocating high carbohydrate diets and industrial doses of medication to

cover the carbs and thereby cause both very high and very low (not normal) blood sugars."

HOW CAN I AVOID THIS FATE?

You must normalize your blood sugar. Not just control it, normalize it. Despite what you may have been told, this is not only possible, but simpler than most people—including most doctors—imagine.

If you have been diagnosed with diabetes or prediabetes, you are profoundly carbohydrate intolerant. This is what diabetes is: an inability to safely metabolize carbohydrates. It is bewildering to us that so many authorities recommend a low-fat diet rich in carbohydrates for people with diabetes, prescribing medication to "cover" the carbohydrate intake. We see this as akin to giving a peanut-allergic child a peanut butter sandwich and then injecting him with epinephrine and giving hi steroids. It makes no sense. It is a losing game.

We at HEAL have a simpler, more elegant solution: Stop eating what's making you sick.

HEAL patients achieve actual, normal blood glucose levels—and with them, the cessation of that "inevitable" damage.

ABOUT HEAL

HEAL president Eric C. Westman, M.D., M.H.S., is America's top researcher in the study of the effects of carbohydrate restriction and a ketogenic diet (more on that later) on type 2 diabetes, havin run Duke University's Lifestyle Medicine Clinic for nearly ten years after spending ten years doing clinical research. From his extensive experience comes one simple principle, which is the core of the HEAL Protocol: Axe the carbohydrates from the diet, and blood sugar normalizes, drastically reduci or even eliminating the chances of long-term complications.

HEAL Diabetes & Medical Weight Loss Clinics are the outgrowth of Dr. Westman's research and clinical experience, and his determination to bring his simple but profound low-carbohydrate protoc to people across the United States.

HEAL also draws on the vast experience of Jacqueline Eberstein, R.N. For thirty years, she was th director of medical education at the Atkins Center for Complementary Medicine. During that time, she supervised the treatment of thousands of people with diabetes by slashing their carbohydrate intake to 20 grams per day.

Dr. Westman first saw carbohydrate restriction used in a clinical setting when he visited the Atki Center in 1999, after observing its success in a few of his patients. It changed the course of his care He met Robert C. Atkins, M.D., and Jackie Eberstein and persuaded Dr. Atkins to fund clinical research on low-carbohydrate diets. That research led to the HEAL Protocol.

According to Dr. Westman, the link is a no-brainer: "It's taught in Physiology 101 that what raise blood sugar is carbohydrates in the diet. There's no controversy about that." Accordingly, Dr. Westman started putting people with diabetes on a very low-carbohydrate diet—with a daily maximum of just 20 grams of carbohydrate.

The result? To date, 95 percent of people with diabetes who stick to the protocol achieve *normal* blood sugar, 100 mg/dL (5.5 mmol/L) or less, while reducing or eliminating the need for medication; 75 percent eliminate medication entirely.

You don't have to wince at every step. You don't have to go blind. You don't have to wind up on dialysis, undergo a foot amputation, or die young. You don't. You can be well—free of the constant worry and the medical treadmill. You can have normal blood sugar.

All you have to do is stop eating what's making you sick.

THE HEAL PROTOCOL IN A NUTSHELL

At HEAL Diabetes & Medical Weight Loss Clinics, people with diabetes are prescribed a diet containing only 20 grams of carbohydrate per day. This means no starches and no sugars—those 20 grams come from just a couple of cups of salad or nonstarchy vegetables per day.

At the same time, HEAL medical advisors dramatically cut medication, because dosages of diabetes medications are based on the assumption that patients will be eating carbs. It is HEAL's aim to have people with diabetes completely medication free, with normal blood sugar. Not controlled blood sugar. Normal blood sugar.

AREN'T CARBS ESSENTIAL?

The short-form answer is no. But I'll elaborate.

In nutrition, "essential" has a specific meaning: Your body must have it *and* cannot make it itself no matter what other nutrients you eat. Your body needs a little bit of glucose (the simple sugar we mean when we say "blood sugar"), it's true, but only a very little bit; a healthy person should have only 5 grams of glucose in his or her bloodstream at any time. That's just over a teaspoon. Your body can easily make this much glucose in your liver, a process called gluconeogenesis. (Indeed, many people with diabetes are all too good at gluconeogenesis; this is what causes elevated blood sugar on rising, often called the "dawn effect.")

On the HEAL program, you will shift from being a sugar-burner to being a fat-burner, converting free fatty acids and ketones into energy. The medical term for this dietary approach is "ketogenic diet."

WHAT IS A KETOGENIC DIET?

A ketogenic diet is a diet that causes an increase in ketones, a.k.a. ketone bodies, in the bloodstream. So what are ketones? The Joslin Diabetes Center uses this definition: "Ketones are produced when th body burns fat for energy or fuel."

A ketogenic diet shifts the body to burning fat for fuel. We do this by removing carbohydrates, which are overwhelmingly the main source of glucose. You've read that various exercise programs will put you in your "fat-burning zone"? There's a more direct route: Stop giving your body carbohydrates, and it will adjust and start burning fat for fuel. Ketones are a breakdown product of th process and are also a form of fuel.

However, many people misguidedly believe that ketones are dangerous and even poisonous becau they are usually discussed in the context of insulin-dependent diabetes, in the form of *ketoacidosis*. For example, the Joslin Diabetes Center states: "Without enough insulin, glucose builds up in the blood. Since the body is unable to use glucose for energy, it breaks down fat instead. When this occurs, ketones form in the blood and spill into the urine. These ketones can make you very sick." In this condition, not only are ketone levels elevated far beyond levels induced by carbohydrate restriction, but blood glucose levels are also dangerously elevated. In addition, the blood becomes acidic.

Nutritional or dietary ketosis is a distinct con-dition. Because carbohydrates are strictly limited, blood sugar cannot rise dangerously. There is no runaway buildup of ketones, sugar, or acids in the blood.

Because modern diets revolve around grains and sugars, there has been an assumption that glucose is the "normal" fuel of the body. But ketones are produced any time you burn fat for fuel, and any tin you fast, even just overnight. If you are burning fat, you are producing ketones. The more of your fue

you derive from fat, the more ketones you will create. The Joslin Diabetes Center also advises, "Positive ketones are not a problem when blood glucose levels are within range and you are trying to lose weight." This is exactly the condition you want.

In the *Journal of the International Society of Sports Nutrition*, we find this useful description: "During very low carbohydrate intake, the regulated and controlled production of ketone bodies caus a harmless physiological state known as dietary ketosis. Ketone bodies flow from the liver to extra-hepatic tissues (e.g., brain) for use as a fuel; this spares glucose metabolism via a mechanism similar to the sparing of glucose by oxidation of fatty acids as an alternative fuel. In comparison with glucos the ketone bodies are actually a very good respiratory fuel. *Indeed, there is no clear requirement for dietary carbohydrates for human adults*." (My italics.)

One more thing about ketones, and a cheerful thing it is: They suppress appetite, often to a remarkable degree. Sure makes it easier to walk past the doughnuts.

WARNING: YOU NEED A DOCTOR'S SUPERVISION

If you have been diagnosed with diabetes, do not just jump in and start following the HEAL Protocol on your own. This diet is powerful medicine, and it will profoundly affect your metabolism—for the good—but it is still a major change.

If you are managing your diabetes with medication, your dosages have been prescribed based on the assumption that you will eat a certain quantity of carbohydrate foods with each meal. If you simply stop eating carbohydrates while continuing medication, you risk severe hypoglycemia (abnormally low blood sugar), even insulin shock. This is potentially fatal. For this reason, *it is imperative that you be under a doctor's supervision while making this transition.*

At HEAL Clinics, it is standard to both discontinue oral hypoglycemic drugs and halve insulin dosages from the first day. From there, blood sugar is closely monitored, and drugs adjusted up or down as needed. A doctor's supervision is essential during this process.

If you are not on medication, and do not yet have true diabetes, go ahead and cut out carbs. It's a wonderfully healthful way to eat. And no, you won't wind up "carb deficient."

WILL I LOSE WEIGHT?

Almost certainly. Repeated clinical trials have shown that very low-carbohydrate diets cause weight loss and—even better—get results at a higher calorie intake than necessary for weight loss with a lov fat diet.

In 1956, a pair of British researchers named Kekwick and Pawan published in *The Lancet* their groundbreaking study of the effect of the kind of calories eaten—carbohydrate, protein, or fat—on weight loss. They found that patients could gain a little weight on 1,000 calories per day of carbohydrate, while losing a bit on 1,000 calories per day of protein, and losing far more on 1,000 calories per day of fat. The same patients, when the diet was liberalized, would maintain or even gain weight on 2,000 calories per day of a "mixed" or "balanced" diet, but would lose weight easily on 2,600 calories per day of a protein and fat diet, with very little carbohydrate. For those of you who have struggled miserably to lose weight on 1,200 calories per day, this is very good news indeed.

In 1971, the *American Journal of Clinical Nutrition* published a study of moderately obese college men assigned to diets that had the same calorie count—1,800 per day—and the same amount of protein. However, one group got 104 grams of carbohydrate per day, another 60 grams, and the third 30 grams. The result? "Weight loss, fat loss, and percent weight lost as fat appeared to be inversely related to the level of carbohydrate in the isocaloric, isoprotein diets. No adequate explanation can be

given for weight loss differences." In other words, with calorie and protein intakes kept identical, the lower the carbohydrate intake, the greater the weight and fat loss—and the researchers did not know why.

In a 2003 study of obese adolescents at Schneider's Children's Hospital in New York, kids were given either a low-fat diet or a low-carbohydrate diet for twelve weeks. The low-carb eaters lost twic as much weight as those in the low-fat group, while eating, on average, 60 percent more calories. Kid have an edge, since they're growing, but that's still a heck of a difference.

Despite the old refrain of "a calorie is a calorie is a calorie," we have ample evidence that the bod being a complex living system, reacts differently to different kinds of calories, and that carbohydrate restriction gives a metabolic edge.

Add to this three other things:

You'll be getting access to all that stored fuel you've been carrying around. As your insulin levels drop, your body will relearn how to use that fuel and will finally start to burn it.

If you have genuine, physical addictions to some carbohydrate foods, most commonly sugar and wheat, consuming the addictive substance only drives further cravings. Cut the addictive substance out, and physical sanity will reinstate itself.

And you will be less hungry. Between the satiating effects of protein and fat, the stabilization of your blood sugar so you no longer are battling crashes, and the appetite-killing effects of ketones, yo are likely to find that you are automatically eating the right quantity of food for your body. Combine that with the metabolic advantage of a low-carbohydrate diet, and the weight will start coming off.

NOT JUST SUGAR

Because of the term "blood sugar," many believe that sugar is the enemy. It is, but not the only one. All carbohydrates are composed of sugar. Starches—potatoes, bread, cereal, and the like—are simply a lot of sugar molecules strung together. Digestion quickly converts them to glucose. Starches raise your blood sugar as much as any sugar. Doubt it? The journal *Diabetes Care* states that whole-wheat bread will raise your blood sugar more rapidly than an equivalent quantity of table sugar. Yikes.

This means that many foods you have considered healthful are not. The starches suggested by the National Institutes of Health in their booklet *What I Need to Know about Eating and Diabetes* — including bread, potatoes, tortillas, pasta, rice, corn, crackers, yams, pretzels, and cereal—all will spike your blood sugar as much as, or more than, an equivalent quantity of table sugar.

How about fruit, juice, honey, and natural sugars? They're still sugars. No matter the source, a glucose molecule is a glucose molecule.

KEEP YOUR EYE ON THE BALL

There is so much nutritional advice coming at us —"Eat organic!, "Gluten-free is a fad!" "Don't eat anything with a list of ingredients!" "Only local, grass-fed meat and dairy!" Et cetera, ad confusionem.

For the moment, ignore it all. You have just one job: Keep your total carb intake to 20 grams per day or fewer. That's it.

I'm not saying that none of that endless advice has merit. I, by way of example, buy grass-fed butter, raise my eggs in my backyard, and don't eat gluten.

But I have been eating this way for twenty years now. I'm comfortable with it. I'm clear on what i and is not loaded with carbs. You, on the other hand, are a newbie. Focus on carbs. Just carbs.

Do not let yourself be fooled into thinking that apple juice is better than diet soda, because "it's

natural!” Just 1 cup (240 ml) of apple juice contains 29 grams of sugar. Organic sugar from a natural source is still sugar and will still raise your blood glucose and worsen insulin resistance. Don’t buy gluten-free bread, figuring that gluten-free also means low carbohydrate. It does not. Agave nectar is not better than sucralose (Splenda) because it’s “natural” and “low glycemic” (meaning it raises bloc sugar slowly). It is full of fructose (fruit sugar), which worsens insulin resistance.

Remember: 20 grams of total carbs per day. That is your metric, your focus, your goal. If you do this, your blood sugar will drop like pine needles the week after Christmas, we promise.

WHAT ABOUT NET CARBS?

You’ll see a lot written about “net carbs.” What does this mean?

As first proposed by Michael Eades, M.D., and Mary Dan Eades, M.D., in their book *Protein Power*, the idea was simple: Because fiber is a carbohydrate, but one that the human gut can neither digest nor absorb, dieters could subtract the grams of fiber in a food from the total carb count to get the number of grams of carbohydrate that actually wind up in the bloodstream. This was a way to let their patients eat more vegetables, and maybe a few berries or a little melon.

But you know how it is: Give people an exception to the rule, and they start working out ways to game the system. Pretty soon food processors were subtracting all sorts of things from the total carb count: maltitol, low-glycemic-index sugars, glycerin, resistant starch, you name it. This led to an explosion of foods with “net carb” counts that can best be described as dubious. Many people embraced these products only to find they were not losing weight or getting any of the other benefits of a low-carbohydrate diet.

Also to be considered is that even if, as the Eades intended, you get your carbohydrates from vegetables and low-sugar fruit, you still get more digestible, absorbable carbohydrate than when counting total carbs. Since the Eades were concerned with weight loss, this was not of great concern.

But we are talking about diabetes, end-stage carbohydrate intolerance. We are not talking about looking better at the high school reunion (although you will). We’re talking about reversing very serious illness. We’re talking about avoiding painful nerve damage, amputated limbs, blindness, hear disease, kidney failure, and early death. We’re talking about your life.

It is common for diet plans to make allowances for “cheating.” And the ads on television give testament to all the ways people try to fool themselves into thinking that there is some “healthy” way to continue their addiction, from sugar-loaded “fiber bars” to sugar-loaded “fruit” punch with a few added vitamins. You cannot afford this. Every time your blood sugar goes above 120 mg/dL (6.7 mmol/L) your body sustains irreversible damage, and that damage adds up. Every time you fall for this nonsense, you will move a little closer to disastrous consequences.

This is scary stuff. We have no wiggle room. This is why, at HEAL, we count total carbs, not net carbs. There may come a day when you can afford to loosen up a tiny bit and count net carbs, but unt and unless your doctor gives you the green light, that day has not arrived.

Ignore net carb counts. Count total carbs.

However, for those of you who do not have diabetes and are simply restricting carbs for weight lo and health, we’ve included fiber counts along with total carb counts. Simple subtraction will give you the net carb counts.

ISN’T SUCH AN UNBALANCED DIET SHORT ON VITAMINS AND MINERALS?

In a word, no, though we certainly suggest you eat a wide variety of the allowed foods.

Animal products and vegetables are among the most nutrient-dense foods. There is no vitamin or

mineral in starchy foods that cannot be found in low-carbohydrate foods.

Brown rice, long a darling of the health food set, is a great example. One-half cup of cooked brown rice has 109 calories, with 23 grams of carbohydrate. How nutritious is it? It will contain:

- 0% of the daily value of vitamin A
- 6% of the daily value of vitamin B_1 (thiamine)
- 1% of the daily value of vitamin B_2 (riboflavin)
- 6% of the daily value of vitamin B_3 (niacin)
- 7% of the daily value of vitamin B_6 (pyridoxine)
- 0% of the daily value of vitamin B_{12}
- 1% of the daily value of folacin
- 0% of the daily value of vitamin C
- 1% of the daily value of calcium
- 3% of the daily value of iron (in a poorly absorbed form)
- 1% of the daily value of potassium
- 4% of the daily value of zinc

One cup of **romaine lettuce** has a mere 8 calories, with 1 gram of carbohydrate. Yet it contains:

- 29% of the daily value of vitamin A
- 4% of the daily value of vitamin B_1
- 3% of the daily value of vitamin B_2
- 1% of the daily value of vitamin B_3
- 1% of the daily value of vitamin B_6
- 0% of the daily value of vitamin B_{12}
- 19% of the daily value of folacin
- 22% of the daily value of vitamin C
- 2% of the daily value of calcium
- 3% of the daily value of iron
- 5% of the daily value of potassium
- 1% of the daily value of zinc

How about **whole-wheat pasta**? Three-quarters of a cup (66 g) of dry whole-wheat pasta—about 1 1/ cups (210 g) cooked—will have 274 calories and 59 grams of carbohydrate. It will provide:

- 0% of the daily value of vitamin A
- 26% of the daily value of vitamin B_1
- 7% of the daily value of vitamin B_2
- 20% of the daily value of vitamin B_3
- 9% of the daily value of vitamin B_6
- 0% of the daily value of vitamin B_{12}

11% of the daily value of folacin

0% of the daily value of vitamin C

3% of the daily value of calcium

16% of the daily value of iron

5% of the daily value of potassium

12% of the daily value of zinc

Compare this with a 6-ounce (170 g) **salmon fillet** sautéed in a little butter. It will have 299 calories and a mere trace of carbohydrate. With it you will get:

17% of the daily value of vitamin A

23% of the daily value of vitamin B_1

13% of the daily value of vitamin B_2

43% of the daily value of vitamin B_3

17% of the daily value of vitamin B_6

85% of the daily value of vitamin B_{12}

2% of the daily value of folacin

3% of the daily value of calcium

7% of the daily value of iron

16% of the daily value of potassium

6% of the daily value of zinc

Need a snack? You could have an **apple**, for 81 cal-ories and 21 grams of carbohydrate. It will provide:

1% of the daily value of vitamin A

1% of the daily value of vitamin B_1

1% of the daily value of vitamin B_2

1% of the daily value of vitamin B_3

3% of the daily value of vitamin B_6

0% of the daily value of vitamin B_{12}

1% of the daily value of folacin

1% of the daily value of calcium

1% of the daily value of iron

5% of the daily value of potassium

0% of the daily value of zinc

Or you could have an "**unsandwich**" of a slice each of ham and cheese, with a little mustard or mayo or both in between. Exclusive of condiments, you'll get 166 calories and 1 gram of carbohydrate, along with:

9% of the daily value of vitamin A

17% of the daily value of vitamin B_1

10% of the daily value of vitamin B_2

8% of the daily value of vitamin B_3

6% of the daily value of vitamin B_6

8% of the daily value of vitamin B_{12}

2% of the daily value of folacin

21% of the daily value of calcium

3% of the daily value of iron

3% of the daily value of potassium

10% of the daily value of zinc

(I'm going to insert this, because it's such a persistent myth: You don't need to eat bananas— 28 grams of carbohydrate apiece—to get potassium. One banana has 13 percent of your potassium for th day. A 6-ounce [170 g] pork chop will provide 14 percent; 6 ounces [170 g] of sole fillet will provide 18 percent; 6 [170 g] ounces of beef chuck provides 13 percent; half an avocado provides 17 percent. can only assume that bananas have a good press agent.)

This isn't even considering outright junk—chips, candy, etc. You know that stuff doesn't add to your daily nutrition. In fact, it can dilute it by displacing nutritious foods.

There is no essential vitamin or mineral yet identified that is not available from low-carbohydrate sources—and many grain foods only appear to have a good nutritional profile because they've been enriched at the factory. Enrichment was instituted when it became clear that people whose diets depended on milled grains were developing nutritional deficiency diseases.

It is likely that your nutritional profile will improve. That said, we do recommend taking a well-formulated, iron-free multivitamin daily.

WHAT ABOUT "GOOD CARBS"?

No doubt you've heard that there are "good carbs." It may come as a shock, then, to learn that once they are digested and absorbed there is chemically no difference between one source of sugar and another. A molecule of glucose derived from brown rice is identical to a molecule of glucose derived from a convenience store slushy. The brown rice brings a few vitamins along with it, but the glucose the same. It all will do the same thing to your blood sugar. It all will cause the same damage.

Nonstarchy vegetables are "good carbs" largely because they actually contain very little carbohydrate along with their substantial amounts of vitamins, minerals, and antioxidants.

AREN'T CARBS ENERGY FOOD?

This is the very opposite of the truth, so wrongheaded as to be funny if it weren't making so many lives miserable. Americans are practically bathing in carbs, yet fatigue is one of the most common medical complaints.

Perhaps you have heard that carbs are "quick energy." This is exactly what is wrong with them. Consider an analogy: Gasoline is quick energy, so quick that if you were to check your gas tank by match light, you'd be lucky to live to tell about it. That's why your car has fuel injectors or a carburetor—to give it a way to use that explosively quick energy gradually. Without it? *Ka-boom.*

Your body doesn't have a carburetor. It has no way to use carbohydrates gradually. When you eat carb-heavy meal, it is rapidly converted into glucose and rushes into your bloodstream. Your blood

sugar shoots up. Your body knows that this is dangerous, so it cranks out lots of insulin to bring your blood sugar down. It converts that sugar to fats known as triglycerides, and stuffs them into your fat cells.

A few things happen: You have some new fat around your waist, and possibly in your liver. Your triglycerides have gone up. And your blood sugar has crashed as quickly as it rose, leaving you tired, cranky, and *hungry*.

Your body should be able to use that new fat for fuel. Storage fat should be your steady fuel suppl so that when you burn through the calories in your last meal, you shift over to burning stored fuel wit no drop in energy or efficiency. But falling insulin levels are the body's signal to let that stored fat o into the bloodstream, and those carbs you are eating ensure that your insulin is going nowhere but up

So you eat carbs, and your blood sugar rises sharply. Your body sends out insulin to get your bloo sugar back down, shunting most of the fuel you just ate into storage as fat and locking it up. Your blood sugar falls, and you get tired, foggy-headed, irritable, and hungry. You grab a muffin, and the whole process starts over.

As this cycle is endlessly repeated, the insulin receptors—the little "doors" on your cells that the insulin "opens" to usher the sugar out of your bloodstream—start to wear out. You make more and more insulin, and yet it gets harder and harder for your body to get your blood sugar down. Cue the diagnosis of diabetes.

Here's the irony of "energy food": You're carrying around all the fuel you need to get you through weeks, possibly months, but because of high insulin levels you can't get to it. Yet you still have to lu it around everywhere you go. No wonder you're tired and hungry all the time.

Fat is the real energy food. That 1 teaspoon of sugar in a healthy bloodstream should be the tinder Fat is the big darned logs that burn for hours and hours. And since you carry a supply of fat around with you, once your insulin levels drop and you get access to the "tank," you'll have steady, near inexhaustible energy. When you burn through the fat in your last meal, you'll shift smoothly over to burning body fat with no mid-morning slump. That's how the system is supposed to work. With acce to all that stored fuel, and no more blood sugar roller coaster, you'll find that you are less hungry. Yo may be shocked at how much your appetite is reduced.

All you have to do is stop the cycle. Breaking it won't make you tired and hungry. Instead, you wi have more energy and less hunger that you ever imagined possible.

This is how your body evolved to work: Store fuel when it's plentiful and then tap into those reserves in between times. How else do you think your hunter-gatherer ancestors tracked a mammoth when they hadn't eaten in a couple of days? It's an elegant system.

KETO FLU

You may, however, have a few days of "keto flu." What is keto flu? It's analogous to drug with-drawal. Here's the deal.

Your body knows that high blood sugar is dangerous. If your blood sugar is elevated, so is your insulin, because your body is trying like heck to get rid of that sugar. This means that your body will always burn glucose before it gets around to burning fat for fuel. (This is how so many people got the mistaken idea that glucose is the primary fuel of the body.)

If you've been giving your body carbohydrate every few hours—cereal for breakfast, a doughnut o break, fries with your lunch, etc.—your body rarely gets around to burning fat. According to an articl in the *Journal of Lipid Research*, insulin signals your body to reduce production of the enzyme neede to release fat from cells to be burned. Since you rarely use it, you make less of the stuff.

So when you stop eating carbs, your body may be confused for a few days—you're not giving it glucose, and it's having trouble releasing fat. You may be tired, achy, or have trouble concentrating. Do not panic. Do not give up. If you quit a two-pack-a-day cigarette habit and felt bad for a few days would you assume it meant that giving up smoking was a bad idea? Same thing here. Your body *will* step up production of the enzymes needed to burn fat for fuel.

SODIUM

Another reason people can feel a little off in the first week or two is dehydration from salt and water loss. Salt has been so demonized that you may be unaware that it is—unlike carbohydrate—an essential nutrient.

The *American Journal of Physiology* tells us that high insulin levels signal the kidneys to hang on to sodium, and with it water, even to the point of causing high blood pressure. When you go low carb and your insulin levels drop, your kidneys get the signal to let that sodium go, along with the water it holds. This is why most people drop several pounds of water weight in the first few days, and high blood pressure comes down quickly.

Because of this, it is possible to wind up with dehydration and low sodium levels, especially as you'll also be cutting out most high-sodium processed food. The symptoms of dehydration include light-headedness, fatigue, headaches, muscle aches, and possibly cramps.

It's easy to prevent this. Don't hesitate to use salt in cooking and at the table, and if you feel weak dizzy, or achy, add a cup or two of bouillon or heavily salted broth per day. The salt and water in the bouillon will replace some of the salt and water that you have lost, and you'll feel better in just 10 minutes.

DO I NEED TO EXERCISE?

If you want to exercise, great. But we're not going to push you. Until you shift over to a fat- and ketone-burning metabolism and get access to the tank, you're likely to be tired. You should feel your energy level rise as your body adjusts. If you find yourself wanting to go for a walk, go dancing, take yoga class, or lift weights—we're all for it. But don't make yourself miserable.

And remember: You cannot exercise your way out of a lousy diet.

WON'T A HIGH-FAT DIET GIVE ME HEART DISEASE?

First, know this: Diabetes will give you heart disease. Remember, people with diabetes have double the risk of heart disease compared with those who do not have the condition. That includes all those people who are "controlling" their diabetes according to current standards.

BUT WHAT ABOUT CHOLESTEROL? TRIGLYCERIDES?

The issue of triglycerides is clear-cut: High levels of triglycerides, widely accepted as an important marker of heart disease, are driven not by fat intake, but by carbohydrate intake. In *Current Opinion Lipidology*, we find this clear statement: "High-carbohydrate/low-fat, isocaloric [neither high nor low calorie] diets have repeatedly been shown to increase plasma triglyceride concentrations. Indeed, there is a medical term for this: carbohydrate-induced hypertriglyceridemia."

Knowing this, it is no surprise that triglyceride levels drop, often precipitously, on a low-carbohydrate diet.

HOW ABOUT CHOLESTEROL?

We trust that by now you've gathered that the cholesterol issue is more complicated than your total cholesterol number. You've likely heard of LDL cholesterol, often called "bad" cholesterol, and HDL considered "good" cholesterol. Most doctors look at the ratios of these to one another, to total cholesterol, and to triglycerides. What does a low-carbohydrate, high-fat diet do to these ratios?

A 2014 study at Tulane University in New Orleans compared a low-carbohydrate diet with a low-fat diet in a yearlong trial. The low-carb dieters were to eat 40 grams or fewer of carbohydrate per da while the low-fat dieters were told to get 30 percent or less of their calories from fat. What happened

The low-carbohydrate group had greater improvements in HDL cholesterol and triglyceride levels and in the ratio of total cholesterol to HDL. Their estimated ten-year heart disease risk declined.

But these were nonobese, nondiabetic subjects. What about people who are already ill?

A 2007 study of a ketogenic diet—very low carbohydrate and high fat—looked at the effects on both obese yet healthy subjects and obese subjects with high blood sugar. After fifty-six weeks, the study showed that total cholesterol, LDL, and triglycerides all showed a "significant decrease," while HDL increased significantly. The researchers noted that these changes were actually more significant in subjects who started with high blood glucose.

The kicker? There were also reductions in blood sugar, along with body weight and body mass index.

But the implications are far wider. Low-carb, high-fat ketogenic diets, first used medically for diabetes control in 1797 by John Rollo, a Scottish military surgeon, and for seizure control in the ear twentieth century, are showing promise for treating many health problems.

- A study published in 2011 in the scientific journal *PLOS One* looked at the effects of a ketogenic diet on diabetic nephropathy—the most common cause of kidney failure—in diabetic mice. The result? Two months on a ketogenic diet actually reversed kidney damage. This has hitherto been virtually unheard of.
- In August 2013, the *Clinical Journal of the American Society of Nephrology* published the results o a small human trial, again showing an improvement in kidney function in people with type 2 diabetes with nephropathy after twelve weeks on a ketogenic diet.
- In 2012, in the journal *Nutrition*, Richard D. Feinman, M.D., and Eugene Fine, M.D., published groundbreaking work regarding the effectiveness of such diets in inhibiting cancer growth by reducing insulin signaling.
- A 2014 article in *BioMed Research International* states: "[The] ketogenic diet is recognized as an effective treatment for pharmacoresistant epilepsy but emerging data suggests that ketogenic diets could be also useful in amyotrophic lateral sclerosis, Alzheimer, Parkinson's disease, and some mitochondriopathies [disorders of the mitochondria, the energy-producing power-houses of the cells]."
- A 2014 article in the *Journal of Child Neurology* looked at the power of ketogenic diets to reduce pain, finding a long-term reduction in pain in rats. The article states that "many types of pain and painful or progressive conditions involve chronic inflammation" and "several mechanistic threads support the hypothesis that a ketogenic diet will reduce inflammation." Because inflammation is implicated in many illnesses, from heart disease to cancer, this is exciting news.
- In 2005, *Nutrition & Metabolism* published an article regarding a pilot study of a ketogenic diet for treatment of polycystic ovarian syndrome (PCOS), the leading cause of female infertility. The stud found that the diet not only caused "significant" weight loss but also improved hormone balance ar

lowered fasting insulin.

- In a 2010 interview for the Cureality blog, Michael Fox, M.D., a reproductive endocrinologist specializing in fertility problems, states, “We now recommend the VLCD [very low-carbohydrate diet] to all fertility patients and their spouses. The pregnancy rates do seem much better overall, as well as seeing a reduction in miscarriage rates.”

CHAPTER 2

So What Can I Eat?

It's all well and good to tell you to eat 20 grams or fewer of carbohydrate per day. But what does th mean? What can you eat?

First, divide up those carbs: You're shooting for 5 grams per meal, plus 5 grams in a snack. Do not eat all 20 grams at one meal. Five grams will barely budge your blood sugar. Twenty all together will probably raise it.

Eat at least three meals per day. Feeling full helps you resist the junk food that crosses your path and prevents you from stressing your body, which can cause an adrenaline release that can raise your blood sugar.

The heart of your diet will be meat, fish, poultry, eggs, cheese, nonstarchy vegetables, and natural fats—those that come along with your protein foods, such as the fat on steaks or the skin on chicken, plus butter, olive oil, coconut oil, peanut oil, lard, tallow, chicken fat, and the like. Let's dolly in for close-up.

WHEN YOU ARE HUNGRY, YOU MAY EAT AS MUCH AS YOU WANT OF THESE

- Any unprocessed meat: Beef (ground beef, steak, etc.), pork, lamb, veal, or other meats. If you have a hunter in the family, feel free to eat any kind of game.
- These processed meats: Breakfast sausage, bacon, pepperoni, hot dogs, many cold cuts, and ham. These generally have a small quantity of sugar added. Read the labels and choose those with the lowest sugar content. There are hot dogs with 1 gram of carbohydrate and hot dogs with 4 grams of carbohydrate (same thing with ham). Choose the lowest carb brands you can find.
- Poultry: Chicken, turkey, duck, Cornish game hen, or any other fowl. Again, if you have a hunter in the family, feel free to eat any game bird.
- Fish and shellfish: Any fish, including tuna, salmon, catfish, cod, flounder, sole, red snapper, mahimahi, bass, and trout, as well as shrimp, scallops, crab, and lobster. Clams, oysters, and mussels have some naturally occurring carbohydrate in them, so choose them only occasionally.
- Eggs: Whole eggs are permitted without restriction. Eat the yolks!

ADD THESE FOODS

Vegetables

You will add to these core foods a couple of moderate portions of salad greens and/or nonstarchy vegetables per day.

Your choice of greens includes, but is not limited to: Arugula, bok choy, cabbage (all varieties), chard, chives, endive, greens (all varieties including beet, collards, mustard, and turnip), kale, lettuce (all var-ieties), parsley, spinach, radicchio, radishes, scallions, and watercress. If it is a leaf, you can eat it.

Nonstarchy vegetables include: Artichokes, asparagus, broccoli, Brussels sprouts, cauliflower,

celery, cucumber, eggplant, green beans (string beans), jicama, leeks, mushrooms, okra, onions, ~~peppers, pumpkin, shallots, snow peas, sprouts (bean and alfalfa), sugar-snap peas, summer squash~~, tomatoes, rhubarb, wax beans, zucchini.

Quantities of vegetables will vary a bit, since they contain differing quantities of carbohydrate. Th recipes in this book take this into account. If you're simply making a salad, figure on 1 cup of loosely packed leaves; if you're having sautéed, roasted, or steamed vegetables, figure 1/2 to 1 cup of nonstarchy vegetables.

Fats—Yes, Fats

All fats and oils, even butter, are allowed. Olive oil and peanut oil are especially healthy oils and are encouraged in cooking. Natural fats that come with your food are allowed, along with coconut oil and lard (avoid hydrogenated lard).

Avoid margarine and other hydrogenated oils. It is best to minimize soy, corn, canola, and safflower oils. For salad dressings, use oil and vinegar, blue cheese, ranch, Caesar, or Italian. Avoid "lite" dressings, as these commonly have more carbohydrate. Chopped eggs, bacon, and grated chees may also be included in salads.

Fats, in general, are important because they add flavor and make you feel full. Do not attempt to follow a low-fat diet!

It's common for people to refer to low-carbohydrate diets as "high protein," but you are actually shooting for a low-carbohydrate/moderate-protein /high-fat diet. Fat should be what makes up the calories you've subtracted by cutting carbo-hydrates. Understand that natural fats are not just "not bad," they're healthful. Eat the fat on your steaks and chops, egg yolks, and poultry skin. Feel free to eat delicious, fatty meats such as rib-eye steaks, spareribs, bacon, and duck. Fry or scramble your egg in butter or bacon grease, sauté or roast your vegetables with plenty of fat, and be generous with olive oil on your salads.

If you choose one of the lower fat recipes in this book—one calling for, say, boneless, skinless chicken breast or a lean white fish—pair it with a higher-fat side dish.

ADD THESE, TOO

In addition to animal proteins, vegetables, and fats, you may have:

- Avocado: Up to one-half Hass avocado (the little pebbly-skinned black ones) per day. This is the on exception to the only-5-grams-at-a-time rule. Half a Hass avocado will have about 7 grams of carbohydrate, but they are so healthful—loaded with good fats, fiber, and potassium—and so satisfying, that we encourage you to eat them.
- Cheese: Up to 4 ounces (115 g) per day of cheeses such as Swiss, Cheddar, Brie, Camembert, blue cheese, mozzarella, and Gruyère. Also cream cheese and goat cheeses. Check the carbohydrate counts.
- Cream: Up to 3 tablespoons (45 ml) per day of heavy cream or sour cream.
- Mayonnaise
- Olives: Black or green, up to 10 per day.
- Pickles: Dill or sugar-free, up to 2 per day.
- Soy sauce: Up to 2 tablespoons (28 ml) a day.

After the second week you may add up to 1 ounce (28 g) per day of walnuts, pecans, Brazil nuts, pine nuts, or macadamias.

Allowable seasonings include:

- All individual spices and herbs
- Spice blends that contain no sugar; a dismaying number of them do, so read the labels.
- Horseradish: Read the labels and choose one with no sugar.
- Lemon and lime juice
- Mustard: Dijon, spicy brown, or yellow mustard. (No honey mustard, and check the labels on other mustards.)

Do not use ketchup (although eating 1 or 2 tablespoons (15 to 28 g) of Heinz Reduced Sugar Ketchup per day is allowed), steak sauce, barbecue sauce, or cocktail sauce.

Food may be baked, boiled, stir-fried, sautéed, roasted, fried (with no flour, breading, or cornmeal grilled, or microwaved.

As mentioned, some people become dehydrated in the first few weeks of eating low carb and need extra sodium. Unless directed otherwise by your physician, you can have bouillon or broth with extra salt stirred in up to twice a day as needed during the first few weeks of the diet to minimize headache or fatigue. If you're tired, achy, or dizzy, this is the first thing to try.

DO NOT EAT

On this diet, no sugars (simple carbohydrates) and no starches (complex carbohydrates) are eaten. Th only carbohydrates we encourage are the nutritionally dense, fiber-rich vegetables previously listed. Sugars are simple carbohydrates. Avoid: White sugar, brown sugar, honey, maple syrup, agave necta molasses, corn syrup, beer (contains barley malt), milk (contains lactose), yogurt, dairy substitutes, fruit juice, fruit, canned soups, ketchup, and other sweet condiments and relishes.

Starches are complex carbohydrates that break down into sugars. Avoid: Grains (even whole grains), rice, cereals, flour and flour-containing items, cornstarch, breads, pastas, muffins, bagels, crackers, starchy vegetables such as legumes (pinto, lima, black beans, etc.), carrots, parsnips, corn, peas, potatoes, french fries, and potato chips etc.

BE WARY OF

Beware of fat-free or "lite" diet products; all too often the fat has been replaced with sugars, starches or both. Anyway, you're not limiting your fat intake, remember? Also avoid sugar-free cookies and cakes—"sugar-free" does not mean "carb-free." Be careful of prepared dishes such as coleslaw; they often have sugar. At the deli or restaurant, ask questions, and remember, if it tastes sweet, and you don't know for certain it's from carb-free sweeteners, it's sugary.

Check the labels of liquid medications, cough syrups, cough drops, and other over-the-counter medications that may contain sugar. Most pharmacies carry "diabetic cough syrup" and cold-and-flu relief products in capsule, rather than liquid, form.

Avoid products that are labeled "Great for Low-Carb Diets!" and ignore "net carb counts." It's astonishing the garbage food processors try to rationalize.

Become an obsessive label reader. It is often bewildering the places sugar sneaks in. I once made the mistake of buying canned clams without reading the label, only to notice later they had added

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