

## CONTENTS

Foreword *vii*  
Introduction 1

### **Part 1: The Epidemic**

Chapter 1: How Obesity Became an Epidemic 9  
Chapter 2: Inheriting Obesity 21

### **Part 2: The Calorie Deception**

Chapter 3: The Calorie-Reduction Error 29  
Chapter 4: The Exercise Myth 48  
Chapter 5: The Overfeeding Paradox 57

### **Part 3: A New Model of Obesity**

Chapter 6: A New Hope 69  
Chapter 7: Insulin 78  
Chapter 8: Cortisol 89  
Chapter 9: The Atkins Onslaught 96  
Chapter 10: Insulin Resistance: The Major Player 107

### **Part 4: The Social Phenomenon of Obesity**

Chapter 11: Big Food, More Food and the New Science of Diabetes 127  
Chapter 12: Poverty and Obesity 136  
Chapter 13: Childhood Obesity 145

**Part 5: What's Wrong with Our Diet?**

Chapter 14: The Deadly Effects of Fructose 157

Chapter 15: The Diet Soda Delusion 168

Chapter 16: Carbohydrates and Protective Fiber 175

Chapter 17: Protein 188

Chapter 18: Fat Phobia 201

**Part 6: The Solution**

Chapter 19: What to Eat 215

Chapter 20: When to Eat 235

Appendix A: Sample Meal Plans (with Fasting Protocols) 252

Appendix B: Fasting: A Practical Guide 256

Appendix C: Meditation and Sleep Hygiene to Reduce Cortisol 266

Endnotes 270

Index 303

## FOREWORD



**D**R. JASON FUNG is a Toronto physician specializing in the care of patients with kidney diseases. His key responsibility is to oversee the complex management of patients with end-stage kidney disease requiring renal (kidney) dialysis.

His credentials do not obviously explain why he should author a book titled *The Obesity Code* or why he blogs on the intensive dietary management of obesity and type 2 diabetes mellitus. To understand this apparent anomaly, we need first to appreciate who this man is and what makes him so unusual.

In treating patients with end-stage kidney disease, Dr. Fung learned two key lessons. First, that type 2 diabetes is the single commonest cause of kidney failure. Second, that renal dialysis, however sophisticated and even life prolonging, treats only the final symptoms of an underlying disease that has been present for twenty, thirty, forty or perhaps even fifty years. Gradually, it dawned on Dr. Fung that he was practicing medicine exactly as he had been taught: by reactively treating the symptoms of complex diseases without first trying to understand or correct their root causes.

He realized that to make a difference to his patients, he would have to start by acknowledging a bitter truth: that our venerated profession is no longer interested in addressing the causes of disease. Instead, it wastes much of its time and many of its resources attempting to treat symptoms.

He resolved to make a real difference to his patients (and his profession) by striving to understand the true causes that underlie disease.

Before December 2014, I was unaware of Dr. Jason Fung's existence. Then one day I chanced upon his two lectures—"The Two Big Lies of Type 2 Diabetes" and "How to Reverse Type 2 Diabetes Naturally"—on YouTube. As someone with a special interest in type 2 diabetes, not least because I have the condition myself, I was naturally intrigued. Who, I thought, is this bright young man? What gives him the certainty that type 2 diabetes can be reversed "naturally"? And how can he be brave enough to accuse his noble profession of lying? He will need to present a good argument, I thought.

It took only a few minutes to realize that Dr. Fung is not only legitimate, but also more than able to look after himself in any medical scrap. The argument he presented was one that had been bouncing around, unresolved, in my own mind for at least three years. But I had never been able to see it with the same clarity or to explain it with the same emphatic simplicity as had Dr. Fung. By the end of his two lectures, I knew that I had observed a young master at work. Finally, I understood what I had missed.

What Dr. Fung achieved in those two lectures was to utterly destroy the currently popular model for the medical management of type 2 diabetes—the model mandated by all the different diabetes associations around the world. Worse, he explained why this erroneous model of treatment must inevitably harm the health of all patients unfortunate enough to receive it.

viii According to Dr. Fung, the first big lie in the management of type 2 diabetes is the claim that it is a chronically progressive disease that simply gets worse with time, even in those who comply with the best treatments modern medicine offers. But, Dr. Fung argues, this is simply not true. Fifty percent of the patients on Dr. Fung's Intensive Dietary Management (IDM) program, which combines dietary carbohydrate restriction and fasting, are able to stop using insulin after a few months.

So why are we unable to acknowledge the truth? Dr. Fung's answer is simple: we doctors lie to ourselves. If type 2 diabetes is a curable

disease but all our patients are getting worse on the treatments we prescribe, then we must be bad doctors. And since we did not study for so long at such great cost to become bad doctors, this failure cannot be our fault. Instead, we must believe we are doing the best for our patients, who must unfortunately be suffering from a chronically progressive and incurable disease. It is not a deliberate lie, Dr. Fung concludes, but one of cognitive dissonance—the inability to accept a blatant truth because accepting it would be too emotionally devastating.

The second lie, according to Dr. Fung, is our belief that type 2 diabetes is a disease of abnormal blood glucose levels for which the only correct treatment is progressively increasing insulin dosages. He argues, instead, that type 2 diabetes is a disease of insulin resistance with *excessive* insulin secretion—in contrast to type 1 diabetes, a condition of true insulin *lack*. To treat both conditions the same way—by injecting insulin—makes no sense. Why treat a condition of insulin excess with yet more insulin, he asks? That is the equivalent of prescribing alcohol for the treatment of alcoholism.

Dr. Fung's novel contribution is his insight that treatment in type 2 diabetes focuses on the symptom of the disease—an elevated blood glucose concentration—rather than its root cause, insulin resistance. And the initial treatment for insulin resistance is to limit carbohydrate intake. Understanding this simple biology explains why this disease may be reversible in some cases—and, conversely, why the modern treatment of type 2 diabetes, which does not limit carbohydrate intake, worsens the outcome.

But how did Dr. Fung arrive at these outrageous conclusions? And how did they lead to his authorship of this book?

In addition to his realization, described above, of the long-term nature of disease and the illogic of treating a disease's symptoms rather than removing its cause, he also, almost by chance, in the early 2000s, became aware of the growing literature on the benefits of low-carbohydrate diets in those with obesity and other conditions of insulin resistance. Taught to believe that a carbohydrate-restricted, high-fat diet kills, he was shocked to discover the opposite: this dietary choice

produces a range of highly beneficial metabolic outcomes, especially in those with the worst insulin resistance.

And finally came the cherry on the top—a legion of hidden studies showing that for the reduction of body weight in those with obesity (and insulin resistance), this high-fat diet is at least as effective, and usually much more so, than other more conventional diets.

Eventually, he could bear it no longer. If everyone knows (but won't admit) that the low-fat calorie-restricted diet is utterly ineffective in controlling body weight or in treating obesity, surely it is time to tell the truth: the best hope for treating and preventing obesity, a disease of insulin resistance and excessive insulin production, must surely be the same low-carbohydrate, high-fat diet used for the management of the ultimate disease of insulin resistance, type 2 diabetes. And so this book was born.

In *The Obesity Code*, Dr. Fung has produced perhaps the most important popular book yet published on this topic of obesity.

Its strengths are that it is based on an irrefutable biology, the evidence for which is carefully presented; and it is written with the ease and confidence of a master communicator in an accessible, well-reasoned sequence so that its consecutive chapters systematically develop, layer by layer, an evidence-based biological model of obesity that makes complete sense in its logical simplicity. It includes just enough science to convince the skeptical scientist, but not so much that it confuses those without a background in biology. This feat in itself is a stunning achievement that few science writers ever accomplish.

By the end of the book, the careful reader will understand exactly the causes of the obesity epidemic, why our attempts to prevent both the obesity and diabetes epidemics were bound to fail, and what, more importantly, are the simple steps that those with a weight problem need to take to reverse their obesity.

The solution needed is that which Dr. Fung has now provided: "Obesity is . . . a multifactorial disease. What we need is a framework,

a structure, a coherent theory to understand how all its factors fit together. Too often, our current model of obesity assumes that there is only one single true cause, and that all others are pretenders to the throne. Endless debates ensue . . . They are all partially correct.”

In providing one such coherent framework that can account for most of what we currently know about the real causes of obesity, Dr. Fung has provided much, much more.

He has provided a blueprint for the reversal of the greatest medical epidemics facing modern society—epidemics that he shows are entirely preventable and potentially reversible, but only if we truly understand their biological causes—not just their symptoms.

The truth he expresses will one day be acknowledged as self-evident.

The sooner that day dawns, the better for us all.

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## INTRODUCTION



**T**HE ART OF medicine is quite peculiar. Once in a while, medical treatments become established that don't really work. Through sheer inertia, these treatments get handed down from one generation of doctors to the next and survive for a surprisingly long time, despite their lack of effectiveness. Consider the medicinal use of leeches (bleeding) or, say, routine tonsillectomy.

Unfortunately, the treatment of obesity is also one such example. Obesity is defined in terms of a person's body mass index, calculated as a person's weight in kilograms divided by the square of their height in meters. A body mass index greater than 30 is defined as obese. For more than thirty years, doctors have recommended a low-fat, calorie-reduced diet as the treatment of choice for obesity. Yet the obesity epidemic accelerates. From 1985 to 2011, the prevalence of obesity in Canada tripled, from 6 percent to 18 percent.<sup>1</sup> This phenomenon is not unique to North America, but involves most of the nations of the world.

Virtually every person who has used caloric reduction for weight loss has failed. And, really, who hasn't tried it? By every objective measure, this treatment is completely and utterly ineffective. Yet it remains the treatment of choice, defended vigorously by nutritional authorities.

As a nephrologist, I specialize in kidney disease, the most common cause of which is type 2 diabetes with its associated obesity. I've often watched patients start insulin treatment for their diabetes, knowing that most will gain weight. Patients are rightly concerned. "Doctor,"

they say, “you’ve always told me to lose weight. But the insulin you gave me makes me gain so much weight. How is this helpful?” For a long time, I didn’t have a good answer for them.

That nagging unease grew. Like many doctors, I believed that weight gain was a caloric imbalance—eating too much and moving too little. But if that were so, why did the medication I prescribed—insulin—cause such relentless weight gain?

Everybody, health professionals and patients alike, understood that the root cause of type 2 diabetes lay in weight gain. There were rare cases of highly motivated patients who had lost significant amounts of weight. Their type 2 diabetes would also reverse course. Logically, since weight was the underlying problem, it deserved significant attention. Still, it seemed that the health profession was not even the least bit interested in treating it. I was guilty as charged. Despite having worked for more than twenty years in medicine, I found that my own nutritional knowledge was rudimentary, at best.

Treatment of this terrible disease—obesity—was left to large corporations like Weight Watchers, as well as various hucksters and charlatans mostly interested in peddling the latest weight-loss “miracle.” Doctors were not even remotely interested in nutrition. Instead, the medical profession seemed obsessed with finding and prescribing the next new drug:

- You have type 2 diabetes? Here, let me give you a pill.
- You have high blood pressure? Here, let me give you a pill.
- You have high cholesterol? Here, let me give you a pill.
- You have kidney disease? Here, let me give you a pill.

But all along, *we needed to treat obesity*. We were trying to treat the problems caused by obesity rather than obesity itself. In trying to understand the underlying cause of obesity, I eventually established

2 the Intensive Dietary Management Clinic in Toronto, Canada.

The conventional view of obesity as a caloric imbalance did not make sense. Caloric reduction had been prescribed for the last fifty years with startling ineffectiveness.

Reading books on nutrition was no help. That was mostly a game of “he said, she said,” with many quoting “authoritative” doctors. For example, Dr. Dean Ornish says that dietary fat is bad and carbohydrates are good. He is a respected doctor, so we should listen to him. But Dr. Robert Atkins said dietary fat is good and carbohydrates are bad. He was also a respected doctor, so we should listen to him. Who is right? Who is wrong? In the science of nutrition, there is rarely any consensus about *anything*:

- Dietary fat is bad. No, dietary fat is good. There are good fats and bad fats.
- Carbohydrates are bad. No, carbohydrates are good. There are good carbs and bad carbs.
- You should eat more meals a day. No, you should eat fewer meals a day.
- Count your calories. No, calories don’t count.
- Milk is good for you. No, milk is bad for you.
- Meat is good for you. No, meat is bad for you.

To discover the answers, we need to turn to evidence-based medicine rather than vague opinion.

Literally thousands of books are devoted to dieting and weight loss, usually written by doctors, nutritionists, personal trainers and other “health experts.” However, with a few exceptions, rarely is more than a cursory thought spared for the actual *causes* of obesity. What *makes* us gain weight? Why do we get fat?

The major problem is the complete lack of a theoretical framework for understanding obesity. Current theories are ridiculously simplistic, often taking only one factor into account:

- Excess calories cause obesity.
- Excess carbohydrates cause obesity.
- Excess meat consumption causes obesity.
- Excess dietary fat causes obesity.
- Too little exercise causes obesity.

But all chronic diseases are multifactorial, and these factors are not mutually exclusive. They may all contribute to varying degrees. For example, heart disease has numerous contributing factors—family history, gender, smoking, diabetes, high cholesterol, high blood pressure and a lack of physical activity, to name only a few—and that fact is well accepted. But such is not the case in obesity research.

The other major barrier to understanding is the focus on short-term studies. Obesity usually takes decades to fully develop. Yet we often rely on information about it from studies that are only of several weeks' duration. If we study how rust develops, we would need to observe metal over a period of weeks to months, not hours. Obesity, similarly, is a long-term disease. Short-term studies may not be informative.

While I understand that the research is not always conclusive, I hope this book, which draws on what I've learned over twenty years of helping patients with type 2 diabetes lose weight permanently to manage their disease, will provide a structure to build upon.

Evidence-based medicine does not mean taking every piece of low-quality evidence at face value. I often read statements such as "low-fat diets proven to completely reverse heart disease." The reference will be a study of five rats. That hardly qualifies as evidence. I will reference only studies done on humans, and mostly only those that have been published in high-quality, peer-reviewed journals. No animal studies will be discussed in this book. The reason for this decision can be illustrated in "The Parable of the Cow":

Two cows were discussing the latest nutritional research, which had been done on lions. One cow says to the other, "Did you hear that we've been wrong these last 200 years? The latest research shows that eating grass is bad for you and eating meat is good." So the two cows began eating meat. Shortly afterward, they got sick and they died.

4 One year later, two lions were discussing the latest nutritional research, which was done on cows. One lion said to the other that the latest research showed that eating meat kills you and eating grass is good. So, the two lions started eating grass, and they died.

What's the moral of the story? We are not mice. We are not rats. We are not chimpanzees or spider monkeys. We are human beings, and therefore we should consider only human studies. I am interested in obesity in humans, not obesity in mice. As much as possible, I try to focus on causal factors rather than association studies. It is dangerous to assume that because two factors are associated, one is the cause of the other. Witness the hormone replacement therapy disaster in post-menopausal women. Hormone replacement therapy was *associated* with lower heart disease, but that did not mean that it was the *cause* of lower heart disease. However, in nutritional research, it is not always possible to avoid association studies, as they are often the best available evidence.

Part 1 of this book, "The Epidemic," explores the timeline of the obesity epidemic and the contribution of the patient's family history, and shows how both shed light on the underlying causes.

Part 2, "The Calorie Deception," reviews the current caloric theory in depth, including exercise and overfeeding studies. The shortcomings of the current understanding of obesity are highlighted.

Part 3, "A New Model of Obesity," introduces the hormonal theory of obesity, a robust explanation of obesity as a medical problem. These chapters explain the central role of insulin in regulating body weight and describe the vitally important role of insulin resistance.

Part 4, "The Social Phenomenon of Obesity," considers how hormonal obesity theory explains some of the associations of obesity. Why is obesity associated with poverty? What can we do about childhood obesity?

Part 5, "What's Wrong with Our Diet?," explores the role of fat, protein and carbohydrates, the three macronutrients, in weight gain. In addition, we examine one of the main culprits in weight gain—fructose—and the effects of artificial sweeteners.

Part 6, "The Solution," provides guidelines for lasting treatment of obesity by addressing the hormonal imbalance of high blood insulin. Dietary guidelines for reducing insulin levels include reducing added

sugar and refined grains, keeping protein consumption moderate, and adding healthy fat and fiber. Intermittent fasting is an effective way to treat insulin resistance without incurring the negative effects of calorie reduction diets. Stress management and sleep improvement can reduce cortisol levels and control insulin.

*The Obesity Code* will set forth a framework for understanding the condition of human obesity. While obesity shares many important similarities and differences with type 2 diabetes, this is primarily a book about obesity.

The process of challenging current nutritional dogma is, at times, unsettling, but the health consequences are too important to ignore. What actually causes weight gain and what can we do about it? This question is the overall theme of this book. A fresh framework for the understanding and treatment of obesity represents a new hope for a healthier future.

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