

Perspectives on  
Type 2  
Diabetes

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## DEDICATION

I wrote most of the content for this book after the death of my brother in April 2013. He died of complications stemming from Type 2 diabetes and it was a cathartic experience to put together general information and publish it on a wix.com site. I dedicate this book to his memory and to those people who, for a variety of reasons, are not able to access vital information to manage a treatable condition.

## DISCLAIMER

This resource guide is sold with the understanding that the author had no ties to the organizations or therapies described at the time of publication and that the information summarized herein does not imply endorsement by the author. All medical information should be verified with professional organizations and discussed with a healthcare provider.

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Thank you to all the people who supported me....



## 1 PREFACE

Google the word, “diabetes,” and at least 268 million hits appear to describe various features and management of a chronic condition that alters the body’s ability to metabolize blood sugar. What do we know about a disease that was absent in our forager forebears, but speculated to have arisen when accelerated cultural changes left our bodies out of tune with the environment?

Approximately 5% of diabetics have juvenile or Type 1 diabetes (pancreas secretes little or no insulin) and this condition can also manifest itself during pregnancy (gestational diabetes) — usually during the 24<sup>th</sup> week — in many women. Type 2 diabetes, the most common form of the disease, is characterized by high blood sugar levels due to the body’s inability to utilize insulin in a proper manner.<sup>1</sup> Whatever causes one attributes to the insulin insufficiency or resistance that are hallmarks of this disease, the inexorable global rise in all forms of diabetes is a public health crisis. Worldwide, 387 million people are estimated to have diabetes and

this number is anticipated to rise to 592 million by 2035.<sup>2</sup> According to a 2014 report, 29.1 million diabetics live in the USA alone, representing 9.3% of the country's population.<sup>3</sup> The International Diabetes Federation (IDF) estimates that the other economic superpower, China, is home to 96 million diabetics, also equivalent to 9.3% of the local population.<sup>4</sup> In regions already experiencing the twin hardships of fractured economies and war, such as the Middle East and North Africa (MENA), one in ten people have been diagnosed with diabetes. Overall, 76% of African deaths due to diabetes are in people under the age of 60.<sup>2</sup> Moreover, the proportions of regional Type 1 diabetes (highest in children residing in Europe) and high number of global live births affected by gestational diabetes in 2013 (21 million) contribute to a grim global health and socioeconomic forecast.

I have chosen to focus on Type 2 diabetes in four countries/regions, the United States of America (USA), China, MENA, and South Africa, as a matter of personal preference and for the sake of brevity. Statistics painstakingly accumulated by the IDF and other organizations about the prevalence of the disease in Australia, Russia, South America, and other areas not mentioned in this book is just a few Google clicks away.

I was raised in a loving family in a small town, Paarl, located in the Western Cape Province in

South Africa. This story is boringly similar to many others reenacted around the globe. Growing up, love, laughter, and lots of good food washed down by sugary beverages were the order of the day. Today, as a middle-aged scientist, I realize that there may be a genetic component combined with lifestyle factors that make my branch of the family prone to Type 2 diabetes. During the intervening years I have eaten my way across the globe, watching my waistline shrink and expand, and met many interesting people whose diets and personalities varied, but who shared my passion for connections fostered over a good meal. Over time, routine annual physicals revealed that a sedentary and caloric-laden lifestyle were contributing to abnormal blood work and my primary care physician solicitously advised taking steps towards a healthier lifestyle, lest I fall victim to a disease known to occur in my family i.e., Type 2 diabetes. It was time for my inner nerd to take over and to study the condition. Hence, a new patient-friendly resource guide pooling pertinent information from public sources was born.

My first stop was checking out resources from a country that counts the late-Dr. Frederick Banting, co-discoverer of insulin, among its iconic citizens. What did the Canadians have to say about risk factors for diabetes? Interested readers are referred to the 2013 Canadian Clinical Practice Guidelines

pertaining to Diabetes<sup>5</sup> for the complete list e.g., “age  $\geq 40$  years, first-degree relative with Type 2 diabetes; member of high-risk population (e.g. people of Aboriginal, African, Asian Hispanic, or South Asian descent); history of pre-diabetes ([impaired glucose tolerance test] IGT or [impaired fasting glucose] IFG or [glycated hemoglobin] A1c 6.0 to 6.4%); history of gestational diabetes mellitus; history of delivery of a macrosomic infant; presence of end organ damage associated with diabetes, microvascular (retinopathy, neuropathy, nephropathy); macrovascular (coronary, cerebrovascular, peripheral); presence of vascular risk factors ([high-density lipoprotein] HDL cholesterol level  $< 1.0$  mmol/L in males,  $< 1.3$  mmol/L in females triglycerides  $\geq 1.7$  mmol/L, hypertension, overweight, abdominal obesity); presence of associated diseases (polycystic ovary syndrome, acanthosis nigricans; psychiatric disorders [bipolar disorder, depression, schizophrenia]; human immunodeficiency virus (HIV) infection; obstructive sleep apnea [OSA]); use of drugs associated with diabetes (glucocorticoids, atypical antipsychotics; Highly Active Antiretroviral Therapy [HAART])<sup>5</sup>

I am writing based on anecdotal experience, heavily influenced by the deaths of relatives and celebrities I admired due to complications associated with a treatable condition e.g., the singer, Luther Vandross. Much of the risk factors and clinical symptoms suggestive of diabetes mentioned in the ensuing chapters are simply checklists readily available from a local physician or a patient’s

independent research. However, by infusing the facts with stories demonstrating ongoing struggles to integrate different streams of information and live up to evolving expectations, I hope to contribute to a dialogue aimed at encouragement instead of shame and punishment.

The second half of the book is for a general audience, in that it deals with a rejuvenated pipeline of antidiabetic therapies that may aid the management of diabetes and related complications (Chapter 5). These complications include cardiovascular conditions; kidney, nerve or eye diseases (diabetic nephropathy, neuropathy or retinopathy); increased risk of non-traumatic lower limb amputation; potential cognitive decline. If anyone has ever personally experienced any of these complications or cared for a loved one coping with diabetes, these chapters will resonate with them. I have provided a brief overview of key diabetic therapies, with the proviso that the information is not prescriptive and should always be evaluated with a qualified healthcare professional.

In addition, Chapter 6 focuses on the reality that most patients arrive at their doctors' offices with diabetes and other comorbidities. Infections, whether due to an aberrant microbiome or the presence of known pathogens, such as HIV, tuberculosis (TB), or the hepatitis C virus (HCV), can confound even the most carefully-crafted

treatment plan. I have included a section on the microbiome and diabetes in Chapter 6. Should any of these tantalizing associations hold up under rigorous clinical scrutiny, future treatment developments may include excluding or “overwhelming” pathogens by repopulating the gut with bacteria from a healthy individual, such as has been done in the case of managing *Clostridium difficile* infections. Finally I have prefaced the last chapter (Chapter 7) on patient education with a story illustrating how we all tend to fall off the dietary wagon over the holidays, before discussing some key approaches in the public and private sector to facilitate patient education.