

Type 1 Diabetes
FOR
DUMMIES®

by Alan L. Rubin, MD



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About the Author

This is the fifth *For Dummies* book by **Alan L. Rubin, MD**. His previous books, *Diabetes For Dummies*, *Diabetes Cookbook For Dummies*, *Thyroid For Dummies*, and *High Blood Pressure For Dummies* (all of which are now in second editions), have been major successes. Letters of praise from numerous readers verify the important role that Dr. Rubin's books have played in their lives. The books have been translated into seven languages and adapted for readers in the United Kingdom, Canada, and Australia. Each of Dr. Rubin's *For Dummies* books provides the latest information on every aspect of its subject while being written in an easy-to-understand format that's full of humor and wisdom.

Dr. Rubin has practiced endocrinology in San Francisco since 1973. He teaches doctors, medical students, and nonprofessionals through classes, lectures, and articles. He has appeared on numerous radio and television shows to answer questions about diabetes, thyroid disease, and high blood pressure. He also serves as a consultant to many pharmaceutical companies and companies that make products for patients with high blood pressure.

Dr. Rubin discusses many health issues in audio "Healthcasts" that may be downloaded at his Web site, www.drrubin.com.

Dedication

This book is dedicated to my new granddaughter Eliana, the beautiful child of my daughter Renee and my son-in-law Marty, who was born on April 9, 2007, just as this book was being born. It is my fervent hope that she will never need the knowledge contained here, but if she should, I hope that it contains everything that she needs to know to live a long, healthy life free of the complications that make life difficult for so many people with diabetes. Eliana: Read this book carefully if you have to. I have tried to include all the available knowledge of this subject that you and your parents need. This book is the answer to the question, "If your granddaughter had diabetes, which book would you recommend?"

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I wish to thank the numerous people at Wiley Publishing who have made this and all my books such a pleasure to write. The wise people at Wiley understand that type 1 diabetes is, in many ways, a different disease from type 2. Hence the need for this book. It has always been a pleasure to work with my friend Kathy Nebenhaus, Vice President and Executive Publisher of Professional and Trade Publishing at Wiley. Vice President and Publisher Diane Steele has been a valuable resource for the writing of this and all my books. Acquisitions Editor Michael Lewis served as my advocate as we smoothed out the many details that have to be agreed upon before such a project can begin. Project Editor Georgette Beatty offered valuable suggestions and questions that hopefully make this book more understandable and useful to the reader. Copy Editor Elizabeth Rea made sure that my words, my sentences, and my paragraphs followed the rules of the English language. The Technical Editor for this book, Rattan Juneja, MD, checked everything that I wrote so that you, the reader, may be certain that you can trust everything you read to be consistent with modern medical practice. Many other unnamed people are involved from the people who publicize the book to those who take the orders to those who ship out the books. Finally, the booksellers who put the book in your hands deserve my major gratitude. Every one of you is an essential cog in a beautifully running machine.

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Introduction

Although they have the same names (but different numbers), type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM) are not the same disease. They share many features, especially the consequences of not controlling the blood glucose (sugar): microvascular complications like eye disease, kidney disease, and nerve disease; and macrovascular complications like heart disease, stroke, and obstruction of blood vessels, especially in the legs and feet.

The big difference is that T2DM is a lifestyle disease; T1DM is not. What exactly does that mean?

- ✔ Type 2 diabetes is very often preventable by maintaining a normal weight and doing lots of exercise. And diet and exercise go far in preventing complications of the disease.
- ✔ Diet and exercise can't prevent T1DM or its complications. The big difference can be summed up in a single word: *insulin*. This chemical, present in T2DM for long after the disease begins, is partially or completely absent in T1DM from the beginning. T1DM can be cured by restoring insulin so that it's available to the exact extent as in a person who doesn't have diabetes. (Not that food intake and exercise are unimportant in T1DM. But whereas most people with T2DM are middle-aged, heavy, and sedentary, most people with T1DM are young, lean, and active, at least at the time of diagnosis.)

One important fact is true of both types of diabetes: At the present time, although there's not a cure for either type, drugs and equipment are available to control the disease in such a way that your child need never suffer from long-term complications if you're willing to take the time and put forth the effort to make this happen. In fact, your child may grow up to be healthier than friends without diabetes if you follow the recommendations in this book.

About This Book

Each chapter in this book is self-contained, like a short story. That way you can go just where you want and read just what you want. This book isn't meant to be read from cover to cover, although I can't stop you if that's how you want to approach it. You may even want to do that the first time around,

and then use it as a reference whenever you want to brush up on a particular subject. If you feel there's an important issue that I haven't addressed or that needs more discussion, please e-mail me at diabetes@drrubin.com.

The subject of diabetes is vast and gets larger daily. Don't believe me? I have an automated update that brings me new articles about diabetes from the National Library of Medicine, and I get three to five new articles every day! This book contains the most important information available on the subject of T1DM, but it can't contain everything. For more on the subject, check the references that I supply at my Web site, www.drrubin.com, by clicking on Diabetes under Related Websites on the home page.

A characteristic of the *For Dummies* series is the use of humor. Readers of my previous books, *Diabetes For Dummies*, *Diabetes Cookbook For Dummies*, *Thyroid For Dummies*, and *High Blood Pressure For Dummies*, know that I use humor to get my point across. You may think that there's nothing funny about diabetes, and you'd be wrong. Many patients have sent me humorous stories about their experiences, which I've included in previous books. If you have a funny experience associated with your diabetes, please e-mail it to me at diabetes@drrubin.com.

One important note about the use of this book: Please don't make any changes in your child's treatment (or your own, if you're the patient) based upon what you read in this book without discussing them with your doctor. He or she may have very good reasons, based upon your child's particular situation, for doing something different from what I recommend here. This is exactly the reason I never offer specific advice to people who e-mail me the details of their disease without giving me the opportunity to question them, examine them, and do the tests I feel are appropriate.

Conventions Used in This Book

This book is meant to be read and understood by the non-physician. Therefore, I try to keep scientific terminology to a minimum. Where I must use it, I explain it clearly, and you can also look it up in the glossary at the end of the book. I can't avoid the terminology completely because I want you and your doctor to speak the same language. You should clearly understand the reasons behind everything he recommends, so don't hesitate to ask questions and quote chapter and verse from this book.

In order to save keystrokes, I use some abbreviations throughout the book. The main ones are "T1DM" for "type 1 diabetes mellitus" and "T2DM" for "type 2 diabetes mellitus." You can find these and any others in the book in the glossary. How did these names come about? Good question! People used to refer to diabetes in young people as "juvenile diabetes." In the past, "juvenile diabetes" was understood to mean diabetes due to a lack of insulin, but

several years ago, the American Diabetes Association recognized that one result of the epidemic of obesity is the occurrence of T2DM in many juveniles. In addition, a lack of insulin often occurs in adults. Therefore, they changed the name from “juvenile diabetes” to “type 1 diabetes mellitus.” T1DM refers to the condition of any patient whose diabetes is due to insulin lack at the very beginning.

Because many T1DM patients are children and young adults, I’ve geared this book toward parents and caretakers; for the most part, when I say “you,” I’m speaking to someone who’s caring for a patient. However, adults with T1DM can still apply the information in this book to their own lives; in fact, several topics throughout the book are directed specifically toward adult patients (such as the work and driving information in Chapter 14).

Here are a few more conventions to guide you through this book:

- ✓ *Italic* points out defined terms and emphasizes certain words.
- ✓ **Boldface** highlights key words in bulleted lists and actions to take in numbered steps.
- ✓ `Monofont` indicates Web addresses.

When this book was printed, it may have been necessary to break some Web addresses across two lines of text. If that happened, rest assured that I haven’t put in any extra characters (such as hyphens) to indicate the break. So, when using one of these Web addresses, just type exactly what you see in this book, pretending that the line break doesn’t exist.

What You’re Not to Read

Shaded areas called sidebars contain material that’s interesting but not essential to your understanding. If you don’t care to go so deeply into a subject, skip the sidebars. You won’t be at any disadvantage.

Foolish Assumptions

In writing this book, I assumed that you know little or nothing about diabetes and T1DM in particular. Forgive me if some of the material is too basic for you, but many of the people who read this, especially the children and young adults, will be learning about diabetes for the first time. I want all my readers to have a sturdy foundation upon which to build a skyscraper of knowledge. If you already know a great deal about T1DM, you’ll find new information that adds to your knowledge.

You probably fall into one of the following categories:

- ✔ You're the parent of a child who's newly diagnosed with T1DM, or you just want an introduction to all that's new in this field.
- ✔ You're a child or young adult who's old enough to understand basic ideas about your T1DM.
- ✔ You're an adult who's been recently diagnosed with T1DM. (Don't worry; the information in this book applies to you, too!)
- ✔ You're a friend or family member of a person with T1DM, and you want to understand and help the person.

How This Book Is Organized

The book is divided into six parts to help you find out all that you want to know about T1DM.

Part I: Defining Type 1 Diabetes

In this part, you discover the central roles of glucose and insulin in T1DM and the way that one, insulin, controls the other. You find out what happens when this control doesn't take place. I also explain who typically gets T1DM, how it's diagnosed, and how to move forward after a diagnosis.

As I say in this introduction, there's more than one kind of diabetes. You find out how to tell them apart in this part. It's not always an easy task, especially when the patient is a child, so the info in this part is essential.

Part II: Considering the Consequences of Type 1 Diabetes

Uncontrolled T1DM has consequences, both short-term, which occur within days or even minutes of loss of control of blood glucose, and long-term, which occur after 10 to 15 years of poor glucose (sugar) control. This part goes in-depth on the topics of short- and long-term complications and also lets you know that your child doesn't have to suffer any of these consequences.

As you find out in this part, in an effort to control glucose, it's possible to overcompensate with insulin, leading to a condition of low blood sugar called hypoglycemia, a significant short-term complication. The long-term

consequences or complications can all be detected early in the course of their development. With both short- and long-term complications, it's important to know what they are and what the symptoms are in order to catch them early on and prevent further progression if they do occur.

In this part, I also cover the emotional and psychological difficulties associated with a chronic disease such as diabetes, telling you what they are and how to deal with them.

Part III: Treating Type 1 Diabetes

Treating T1DM requires a lot of effort, as you find out in this part, but I know you and your child can do it. What's involved? For starters, you have to do a great deal of monitoring, which at this time still requires sticking your child's finger four or more times a day. He also has to get certain laboratory tests on a regular basis and go to the doctor for regular checkups.

What your child eats and when he eats is a big part of managing his diabetes. Unlike the person without diabetes, your child needs to arrange his meals and his insulin so that the insulin is in his body when the food is. Then there's exercise, an important part of treatment that lowers the blood glucose because the muscles need sugar to work. As I explain in this part, many patients use exercise in place of insulin and end up taking very few units of insulin.

The subject of insulin requires two chapters in this part. One chapter tells you what insulin is and how to use it properly. The other discusses a new and important device that supplies insulin 24 hours a day, the insulin pump.

Recently, other drugs have become available for treating T1DM. In this part, I make sure that you know about these and the role they can play in controlling your child's blood glucose as well as the effect of drugs that interact with his insulin. I also address other methods of treating diabetes that involve attempts to replace the cells that make insulin and therefore cure the disease.

Part IV: Living with Type 1 Diabetes

The chapters in this part delve into a number of special considerations for the person with T1DM. If he goes to school, his teachers need to know some basic management strategies, such as how to deal with low blood glucose. At work, there are still some jobs for which the person with T1DM isn't welcome. And there are insurance issues that a person with a chronic disease needs to consider.

In addition to these considerations, this part also tells you about how minor illnesses like colds may throw off diabetic control and how to accommodate the special needs of the traveler with T1DM.

Women and the elderly are two special populations when it comes to living with T1DM. In this part, I discuss how women can control their diabetes during menstruation, how a woman with T1DM should be in excellent control of her T1DM prior to conceiving a baby and throughout her pregnancy, and how menopause brings new considerations including whether or not to use hormone replacement therapy. I close this part with a chapter on the elderly population with T1DM and the unique problems that they face in treating their condition.

Part V: The Part of Tens

The Part of Tens is a staple in all *For Dummies* books; in this book, it provides an opportunity to emphasize some of the key points that I make throughout the book and to provide some material that you may not have found there, including the following:

- ✔ T1DM is a disease mostly diagnosed in children, but after a while, the child must take over his complete care. The chapter on ten ways to involve kids in their T1DM management offers suggestions on how to start this process.
- ✔ A number of management ideas are essential to good diabetes care. In this part, I point out the ones I consider the top ten.
- ✔ Myths about diagnosis and treatment tend to develop around any disease, particularly a chronic disease like T1DM. In this part, I dispel ten of those myths. If you know of any that I don't cover, please e-mail them to me.
- ✔ I provide information on the latest and greatest discoveries on T1DM in this part so that you can stay on the cutting edge of treatment.

Part VI: Appendixes

If you come upon a term in the text that you don't understand, turn to the glossary in Appendix A for a definition. And if you want new or extended information on any subject, go to Appendix B, where you can find resources for the latest information and numerous suggestions to further your education.

Icons Used in This Book

Books in the *For Dummies* series feature icons, which direct you toward information that may be of particular interest or importance. Here's an explanation of what each icon in this book signifies:



When you find this alongside information, it's time to dial the doctor for help.



When you see this icon, it means the information is essential. Make sure you understand it.



This icon points out important information that can save you time and energy.



This icon warns against potential problems.

Where to Go from Here

Where you go from here depends on your needs. If you want a basic understanding of what T1DM is and isn't, head to Part I. If you or someone you know has a complication due to T1DM, skip to Part II. For help in treating T1DM using every available tool, turn to Part III. If you're thinking of becoming pregnant, are going into menopause, are elderly, or have a parent with T1DM, Part IV is your next stop. Likewise, go there if you want to know what your options are for school, work, and other activities, or if you want to know how to manage travel or illness. For a bird's-eye view of getting kids involved, key treatment strategies, the mythology that surrounds T1DM, and the latest discoveries, check Part V.

In any case, as my mother used to say when she gave me a present, use this book in good health.

Part I

Defining Type 1 Diabetes

The 5th Wave

By Rich Tennant



"No, diabetes is not fatal, it's not contagious, and it doesn't mean you'll always get half my desserts."

In this part . . .

This part introduces you to type 1 diabetes mellitus. You start with a grand overview of this distinct disease's development. Then you get into the precise symptoms and the diagnosis process followed by an introduction to the diseases commonly confused with type 1 diabetes, especially type 2 diabetes. Luckily, the information in this part helps ensure that you never confuse them again.