

GROW HEALTHY BABIES

GROW HEALTHY BABIES

**The Evidence-Based Guide to a Healthy
Pregnancy and Reducing Your Child's
Risk of Asthma, Eczema, and Allergies**

**MICHELLE HENNING &
VICTOR HENNING, Ph.D.**

RUBINEN

COPYRIGHT © 2020 MICHELLE HENNING & DR. VICTOR HENNING

All rights reserved.

GROW HEALTHY BABIES

*The Evidence-Based Guide to a Healthy Pregnancy and Reducing
Your Child's Risk of Asthma, Eczema, and Allergies*

ISBN 978-1-5445-0780-4 *Hardcover*

978-1-5445-0779-8 *Paperback*

978-1-5445-0781-1 *Ebook*

FOR C.S.

CONTENTS

| | |
|--|-----|
| Introduction..... | 1 |
| Part I: Your Baby's Developing Immune System and the Microbiome | |
| 1. The Rise of Atopic Diseases and Allergies..... | 19 |
| 2. The Microbiome: How Gut Bacteria Shape Your Baby's Health.... | 29 |
| 3. Antibiotics: Why, When, and How to Avoid Them..... | 51 |
| Part II: Nutrition, Supplements, and Inflammation | |
| 4. Feeding Your Good Bacteria..... | 77 |
| 5. Good Fats, Bad Fats, and How to Tell the Difference | 85 |
| 6. How Sugar Causes Obesity and Chronic Disease | 107 |
| 7. Supplements Before, During, and After Pregnancy..... | 121 |
| Part III: Avoiding Chemicals: The Case for Organic and Eco Products | |
| 8. How Going Organic Benefits Your Baby..... | 147 |
| 9. Cleaning Products, Cosmetics, and Their Effects on Health..... | 161 |
| Part IV: Birth Choices and Post-Pregnancy | |
| 10. How Birth Choices Affect Your Baby's Health | 181 |
| 11. Breastfeeding: A Boost for Your Baby's Health..... | 197 |
| Summary: Bringing It All Together | 217 |
| Acknowledgements..... | 223 |
| Appendix 1..... | 225 |
| Appendix 2 | 229 |
| Appendix 3 | 233 |
| References | 245 |
| Index | 287 |

Disclaimer: The information contained in this book is provided for educational purposes only. It is not meant to replace professional medical advice, diagnosis, or treatment. Any attempt to diagnose and treat a medical condition should be done under the direction of a healthcare provider or physician. For any medical conditions, each individual is recommended to consult with a healthcare provider before using any information, idea, or products discussed. Neither the authors nor the publisher shall be liable or responsible for any loss or adverse effects allegedly arising from any information or suggestion in this book. While every effort has been made to ensure the accuracy of the information presented, neither the authors nor the publisher assumes any responsibility for errors. References are provided for information purposes and do not constitute endorsement of any websites or other sources. Readers should be aware that the websites listed in this book may change.

INTRODUCTION

HOW TO GROW HEALTHY BABIES

My husband and I truly complement each other—with our allergies.

Together, we manage to be allergic to almost everything. We're the dinner guests everybody fears. I get stomach cramps from gluten, oats, and almonds. A recent allergy test revealed that I'm also slightly allergic to eggs and dairy. I guess I'm lucky—if Victor accidentally eats eggs, his throat, tongue, and face swell up. Dairy gives him a stuffy nose and inflamed skin. Give him too much sugar, or deprive him of sleep, and he'll scratch his arms, legs, and neck until they're bloody. He has had eczema from birth: when he was a baby, his parents sometimes had to restrain his hands at night because he was scratching so much, and once had to call an ambulance because of a bad asthma attack. To this day, he has asthma, hay fever, and a dust allergy, which means he is never far from an inhaler or a sneeze.

If you looked at both Victor's and my history of chronic disease, you'd conclude that we're not the most likely candidates for having a healthy child. And yet, our daughter is now five years

old and doesn't show any signs of eczema, asthma, or allergies. As a baby, she never even suffered a single nappy rash, and she has been able to eat every food we've introduced without any problems. She has never needed or received antibiotics, and she's never had anything worse than a mild cold or vomiting bug (and thankfully, those never lasted longer than half a day and a dozen towels). She's as healthy a kid as we could wish for. With this book, we want to empower you to achieve the same for your child—by using simple, common-sense strategies that have been proven to work in thousands of scientific studies.

My own health troubles started early. I was born prematurely, contracted an infection at the hospital, and was pumped full of antibiotics. As a child, I was always sick. I had recurring ear infections and suffered from candida. My doctor kept feeding me antibiotics like it was candy. I was allergic to just about everything that touched me. Any sort of cream, spray, or cosmetics on my skin would make me explode with hives. As a teenager, I also developed hay fever and asthma, followed by a generous helping of severe acne. The acne spread all over my face, my chest, my back, and my arms. In strictly Catholic Ireland, where I grew up, you couldn't easily buy contraceptives, and I didn't need to: my acne did the trick. I wouldn't let boys get near me; I was too self-conscious and ashamed of my skin. I always covered up in the nightclub to hide any sign of spots. I struggled with my health, my skin, my schoolwork, and depression.

It didn't occur to me back then that my diet could have anything to do with my allergies and skin problems. I thought my diet was fine. After all, my dad is a chef—he used to let me sit in the kitchen of our seaside fish restaurant in rural Ireland and watch him cook. He taught me a love of good food. Even so,

in retrospect, I didn't always eat a very healthy diet at home. Money was always tight, and when my parents were working, my brother and I often had tinned spaghetti hoops and Angel Delight, a powdered ready-to-mix pudding, for dinner. I had a sweet tooth as well—our cupboard was always stocked with mini chocolate bars and cookies.

Then, in high school, we had to take a class on food science. To me, it felt like a revelation. I remember thinking: “So that’s it? All this junk food I’m eating is why I’m sick all the time.” It seems laughably obvious now, but everything suddenly clicked into place for me. I went to a nutritionist for more advice, and she put me on a sugar-free diet. Not knowing any better, I switched to using artificial sweeteners, but I still noticed a big difference in my acne when I cut out the sugar. That got me interested enough to keep reading and digging into the research.

I became the go-to person for my friends about healthy eating. Looking back, I realise I didn't have a clue! Well—at least I didn't hurt anyone. When I was in my early twenties, I went to college to study nutritional therapy at the Irish Institute of Nutrition and Health. Based on what I learned, I gradually changed my whole diet. I stopped having sugar or artificial sweeteners. If I wanted something sweet, I ate fruit. I ditched processed foods and switched to whole foods. I cut out gluten after finding out that it was linked to anxiety and mood swings in gluten-intolerant people. My acne cleared completely. My moods improved dramatically, and I went from being a volatile person, prone to anxiety and bursts of anger, to being more even-keeled.

I had additional good reasons to be thinking about diet and health. My mother was diagnosed with multiple sclerosis when

I was eleven. One of her brothers later died of the disease, and another developed Parkinson's disease. So did their mum—my grandmother. They all had grown up and lived on an idyllic farm in rural Ireland, playing outside while their father—unaware of the dangers—doused the field right next to them in pesticides. It was the 1950s, and pesticides were new; people had no idea about their long-term health risks. On my mother's side of the family, several of my cousins went on to suffer from ulcerative colitis and other health issues. Could it really just be genetics for this many members of the same family to develop autoimmune conditions? I doubted it.

After college, I went to live in Paris to pursue my dream of working as a singer-songwriter, but I also wrote a food blog and never lost my interest in nutrition. In October 2011, I was in Dublin to record a new album with my band. At the same time, my future husband, Victor, was there to attend a technology conference, and a mutual friend of ours invited me over to the nightclub where the conference afterparty was happening. That's where Victor and I met. We started talking, and I told him that I was working as a singer-songwriter but that I was a nutritionist by training. He quipped, "Oh, so what do you do—prescribe carrots?" I gave him a death stare. It dawned on him that we weren't off to a good start. The look of regret on his face was quite endearing, and we kept talking. Later, we left the nightclub and walked along St. Stephen's Green to meet a friend of mine. My skinny leather jacket was completely unsuitable for a cold November night, and I was freezing and rubbing my hands to warm them up. Victor noticed and, despite shivering himself, took off his gloves and offered them to me. I thought, "*Maybe this guy isn't so bad after all...*"

At the time, the stress of running his own company had made

his childhood eczema flare up badly. He had patches of raw, scaly skin on his arms and the backs of his knees, and his hands and neck would sometimes break out in blisters. While his stress and lack of sleep were bad, his diet was even worse. He lived on about fourteen microwave meals a week. He didn't have the faintest idea about how to cook anything and was completely ignorant of the link between diet and health. As we got to know each other, I told him he couldn't keep living like that—it was making his eczema worse, and it wasn't good for the rest of his health either. Because I still lived in Paris and he lived in London, I taught him how to cook over Skype. We started with really simple meals, like roasted chicken and sweet potatoes. He would text me pictures while cooking. Sometimes he was proudly showing off a green smoothie or a successfully cooked vegetable, but mostly it was “Is this what it's *supposed* to look like?”

Besides using inhalers for his asthma and hay fever, he had also been slathering himself in corticosteroid cream to manage his eczema. Changing his diet has made a huge difference—he has mostly stopped using the corticosteroid cream, his skin has cleared up, and his other allergies have also improved significantly. As a bonus, after eight years of practice, he has now become a really good chef, particularly cooking yummy Korean food.

Of course, food isn't the answer to everything. I suspected that his and my health problems were at least partly genetic. After we were married and thinking about starting a family, my doctor told me that—since we both had chronic health issues—our baby also had a 75 percent chance of developing eczema or allergies.¹ I thought, “There's no way I'm accepting this. There *has to be* a way to prevent our baby from inheriting our health problems.”

Again, Victor and I truly complemented each other, but this time more productively than by making life difficult for dinner hosts. I had studied nutritional therapy but had spent the past five years working in music—so my scientific training and understanding of statistics had become a bit rusty. Victor knew nothing about nutrition and health, but he had just completed his PhD on the role of emotions in decision-making, had co-authored chapters in statistics textbooks, and published in leading academic journals. During his PhD studies, he had also founded a company called Mendelej. By the time we met, Mendelej had become the world’s largest scientific collaboration platform, connecting millions of researchers around the globe.

Together, we started researching the link between diet, lifestyle, and chronic illness. We systematically combed the medical literature, determined to find out what we could do to *really* make a difference in our future child’s health. In this book, I’ll share with you what we found.

HOW THIS BOOK IS ORGANISED

In the remainder of this introduction, I want to briefly explain how the science of medicine generates the knowledge this book is based on. How do medical studies determine what “works” and really makes a difference to patients’ health? If we talk about “reducing the risk” of a chronic disease, what do we mean?

In chapter 1, we’ll begin by reviewing the chronic conditions this book aims to prevent: asthma, eczema, and allergies. What are they, what causes them, and how are they linked? Why are they on such an alarming rise all over the world?

Next, in chapter 2, we’ll learn about the microbiome—the

friendly bacteria living in and on our bodies. We'll see how, beginning from birth, they shape your child's developing immune system and play a central role in the prevention of inflammation and chronic diseases. Understanding this is the key to unlocking the full potential of this book, because it underpins much of the science described in the subsequent chapters.

In chapter 3, we'll tackle the biggest threat to a healthy microbiome: antibiotics. As lifesaving as they can be, they are generally overprescribed and often unnecessary. We'll discuss why, when, and how to avoid them and possible alternatives before you resort to antibiotic treatment.

In chapter 4, we'll see how your diet is the steering wheel for your microbiome. What you eat influences the composition of bacteria in your gut—directly and immediately. We'll answer the question: which foods lead to a healthy microbiome? Chapters 5 and 6 zoom in on the subject of dietary fats and sugars—these dramatically impact the level of inflammation in your body, your overall health, and your child's development. Chapter 7 will show you the key nutrients for a healthy pregnancy and healthy baby. Many women are deficient in these nutrients, and we'll discuss the foods or supplements from which you can get them.

In the two chapters thereafter, you will see how certain purchasing and lifestyle choices affect your health and that of your child. Chapter 8 lays out the health benefits of choosing organic foods, and chapter 9 reveals the health risks associated with many cleaning products, cosmetics, and baby-care items. All too often, these are laden with chemicals linked to the development of chronic diseases, but you will see how to find healthier alternatives.

The last two chapters focus on birth and post-pregnancy choices.

Chapter 10 shows you the surprising ways in which the way your baby is born impacts its health—via birth hormones and the microbiome. In chapter 11, you will learn how breastfeeding shapes your child’s health and cognitive development, and how it helps to prevent not just allergies but many other serious childhood diseases. We will also review how to get help if you are struggling with breastfeeding—like I did—or what formulas to choose if you are unable to breastfeed.

Finally, the summary chapter will pull it all together. Perhaps you are eager to know what you can do right away and what to prioritise. In that case, feel free to skip right to the end and read the summary—you can always go back and dive deeper into the previous chapters to learn more.

GAINING MEDICAL KNOWLEDGE

There are few things that are more confusing and frustrating than googling for health advice. The internet is full of contradictory anecdotes, conflicting advice, and weird wonder cures. If you want to find out how to prevent your baby from having chronic diseases, what can you do to cut through all of this noise?

Asking your family doctor or general practitioner (GP) for advice is certainly a good first step. Even better, there is a growing number of doctors who specialise in “integrative medicine”—that’s the approach to medicine which takes into account a patient’s lifestyle factors like nutrition, wellness, exercise, sleep, relationships, and mental health. You could also seek out a doctor who specialises in allergies (called an allergist).

Your next option is to go straight to the source of medical knowl-

edge. New research is constantly advancing our understanding of how our child's immune system develops, how it interacts with the world around us, and what we can do to influence it in the right direction. You might be surprised to learn that much of this knowledge is freely available to the public in medical research databases. However, deciphering it requires traversing a maze of hard-to-understand "medicalese," surrounded by a thorny shrubbery of statistics. That's what Victor and I did, with the scrapes on our faces to prove it—you'll find more than 700 references to research papers in the appendix. The goal of this book is to take the latest medical evidence on how to prevent chronic diseases in children and summarise it in a way that's accessible and easy to understand, even if you have no medical or scientific training whatsoever.

Not all medical evidence is created equal, however. Some research papers are merely a collection of hypotheses that haven't yet been tested, others are anecdotal case studies based on a single patient, and yet others are rigorous experiments involving hundreds of patients. So let's take a moment to understand the three kinds of medical studies on which the information in this book is based: *observational studies*, *randomised controlled trials*, and *meta-analyses*.

What these three kinds of studies have in common is that the researchers compare *groups* of people, not just individual patients. Usually, the larger the number of people involved in the study (also called the "sample size"), and the larger the groups of people being compared, the better. What researchers are interested in when studying these groups are differences in health *outcomes*: whether the people in one group stayed healthy while the people in the other group got sick. More importantly, if there are differences in health outcomes, the

researchers want to identify the underlying causes. These could be just about anything: something that one group does that the other group doesn't do (e.g., take a certain vitamin, breastfeed, smoke), or something that one group is exposed to that the other group isn't exposed to (e.g., a medical treatment, pesticides, environmental chemicals). These are the so-called risk factors (if they increase the risk of illness) or protective factors (if they lower the risk of illness).

If researchers design a study where they can control and manipulate these risk factors or protective factors, it's called a *randomised controlled trial* or *RCT*. The participants in the study are split into two groups. One group gets a treatment (or "intervention"), the other one doesn't. At the end of the study, the researchers compare the health outcomes between the two groups to see whether the treatment had an effect.

However, sometimes researchers aren't able to design such RCTs because it would be unethical, impractical (e.g., too expensive, too time-consuming), or impossible (e.g., due to limitations in medical technology). For example, it would clearly be very unethical—if not to say evil—to intentionally expose pregnant women to pesticides to see whether it harms their babies' health. In such a case, researchers instead identify pregnant women who were *coincidentally* exposed to pesticides by living near pesticide-sprayed fields, versus women who weren't. The women who were exposed to pesticides are called the "case group," and the women who weren't exposed are called the "control group." At the end of the study, the researchers compare the two groups to see whether the pesticide exposure made a difference to the babies' health. Studies like these are called *observational studies* and come in different flavours, like "cohort studies" or "case-control studies." The example above is a cohort

study, which looks forward in time: the researchers start with a risk factor (e.g., exposure to pesticides), then compare the different health outcomes in the future. Case-control studies, on the other hand, look backwards in time: researchers start with a health outcome we see today (e.g., babies that developed asthma vs babies that didn't), then comb through the risk factors or protective factors in the past which could have caused this difference in health.

Both RCTs and observational studies have their respective strengths. RCTs are considered to produce stronger evidence than observational studies because researchers have greater control over the risk factors and protective factors. This makes it easier to demonstrate “causality,” meaning whether a treatment or exposure actually causes a health outcome. Let's say you randomly assign people into two groups, A and B. If you then give a treatment to group A but only a placebo to group B, and group A is healthier than group B at the end of the study, you can be reasonably confident that it was your treatment that caused the difference. It's not that simple with observational studies: maybe any difference that you observed between groups was caused by a hidden risk or protective factor that you weren't aware of. But observational studies have a key advantage: they can involve a much larger number of people, over a much longer period of time—e.g., you could compare the medical records of everyone born in a country over the last century. Generally, the more people you can observe, the stronger your evidence.

There's yet another type of study that's interesting for us. What if you could combine the data from dozens, maybe even hundreds, of RCTs and observational studies into a single result? That's what a *meta-analysis* does. Researchers trawl through medical databases to find all previous studies on a given subject, identify

the ones that are suitable for inclusion in the meta-analysis, then combine them into a single result using clever statistical methods. Many researchers consider meta-analyses to be the gold standard of medical evidence.

Yet, beyond the strength of the evidence, there is one more thing we need to consider: what the evidence actually tells us. Knowing that something is a risk factor, or a protective factor, is interesting. But what we really want to know is, *how big of a difference does it actually make?* In other words, *do I really need to care?* In medical research papers, this question is answered using the concept of “relative risk,” and it’s central to understanding the recommendations in this book. Let’s look at a simple example.

Say we are interested in finding out whether taking antibiotics during pregnancy raises a child’s risk of developing asthma later in life. Imagine a study finds that 25 percent of children exposed to antibiotics in the womb go on to develop asthma. The study also finds that when children are *not exposed* to antibiotics in the womb, the rate of asthma is only 12.5 percent. In other words, exposure to antibiotics in the womb *doubles* a child’s risk of developing asthma. This ratio, which compares the risk between two groups, is what researchers call relative risk.^a

Throughout this book, when we say “X increases the risk of asthma by 200 percent” or “Y decreases the risk of allergies by 50 percent,” we are always referring to relative risk. If you

a Depending on the type of study, the difference in risk can also be reported as an “odds ratio” or “hazard ratio.” Those are technical details which we’ll ignore in this book. For our purposes, it’s enough to understand that hazard ratios are reasonably similar to relative risk, and that we can estimate relative risk from odds ratios using a bit of math.² Whenever a study reported odds ratios, we converted it to relative risk using the ClinCalc.com converter tool.³

are interested in diving deeper into the concept of relative risk, there is a detailed example calculation in “Appendix 1: Understanding the Concept of Relative Risk and Absolute Risk.”

A final note on wording before we move on. In everyday language, “risk,” “probability,” “chance,” “odds,” and “likelihood” are often used interchangeably. We’ll do the same in this book. They don’t mean the same thing in statistics, but—with due apologies to the statisticians among our readers—we’ll go with the colloquial use and treat them as synonyms to make for less repetitive reading.

TAKING IT STEP BY STEP

Health is rarely all or nothing—it’s a spectrum. Children aren’t either just healthy or chronically ill. Even within chronic illness, there is a wide range of health outcomes. It makes a big difference whether your child suffers from occasional wheezing versus severe, life-threatening asthma; a mild food intolerance versus a severe allergy which will trigger anaphylactic shocks; being allergic to only one food versus a dozen different ones; and occasional dry, itchy skin patches versus constantly red-raw, inflamed skin all over your face and body.

As you will see in this book, you can influence where your child lands within this spectrum of health—and to a surprisingly large degree. However, some factors will remain outside of your control: genetics, economic and environmental circumstances, and pure luck. This small element of randomness means that your chain-smoking, fast-food eating friend could do everything “wrong” and still end up having a healthy baby. It’s possible, but it’s not very likely! It also means that you could be doing everything “right,” and your child could still end up

with an allergy. That's *also* possible, but fortunately it's *also* not very likely.

If you make healthy choices, your baby has a very good chance of being healthy. The medical evidence presented in this book suggests that you can reduce your child's risk of asthma, eczema, and allergies by as much as 90 percent, and those are pretty good odds.

What I hope you take away from this book is that every little bit helps. Whatever you can do for your child's health, given your circumstances, is worth doing. It doesn't matter when you start—before, early, or late in the pregnancy, even thereafter. It's never too late to make healthier choices. They will always be beneficial. If you think of health as a spectrum, each positive step you take will nudge your child's chances just a little bit further towards good health.

This also means that *if* you do make a few less-than-optimal choices, they are at worst a few steps backwards, not a catastrophe. Whether it's circumstances, a temporary lapse of willpower, or things in your past which you didn't know were harmful to your health—don't be too hard on yourself. It's not helpful to spiral into doomsday scenarios, as I'm sometimes guilty of doing, and worry that you might have blown your child's chances for good health. Dust yourself off and make healthier choices again the next day. It's a journey and a lifestyle, not something you do for a while until you're "done." I've studied nutrition and health since college, yet I'm still learning about and discovering things that could improve my health all the time.

Equally important, don't get overwhelmed by trying to do

everything at once. Just focus on an area where you feel you can make the biggest difference to your health and start there. It's not about perfection but making progress towards a healthier lifestyle for yourself and your children. Don't let the perfect be the enemy of the good. Every little bit helps.

Now, let's get started!