Dr. Jason Shumard, DC

THE THYROID EPIDEMIC

A Guide to Restoring Thyroid Function

"Speaking as a health care practitioner with over 20 years of experience, this book is a must-read for anyone suffering from thyroid conditions. It finally gives hope to those who have been fed the wrong information and allows them to regain control over their lives."

—Dr. Yaniv Farbenbloom, DC

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Dedication

I dedicate this book to all of the people suffering from low thyroid function. If you are suffering from an underactive thyroid and not getting the help you deserve, this book is for you. There is no reason for you to continue to suffer and not receive any answers.

I hope this book shows you that you are not alone and that there is hope for you.

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Acknowledgements

I would like to thank my family for encouraging me to do what I love. Helping patients restore their health is a passion of mine, and my family continues to support me in this path.

I want to thank my children, Breck and Paige, who bring so much joy to my daily life. They are amazing souls, and I have learned so much from them. It has been a blessing to be their father.

I want to thank my wife who has been there for me throughout the years. You are amazing. Thank you for all that you do.

I feel blessed to be able to do what I love, and I am looking forward to the many years of continuing this work.

CHAPTER 1

Your Story

A Note from the Doctor:

As a doctor, I am privy to each of my patient's personal stories. Not only do I obtain their formal histories, but also I encourage my patients to create a timeline of their lives so I can better understand what has led them to me. They share the totality of their experiences with me in hopes that their perspective and background will shed light on the symptoms they've endured and the reasons they can't find relief. By the time they are sitting in my exam room, they have often suffered for years and sometimes even decades. Their stories are extensive and charged with frustration and disappointment. Despite their diligence and desire to heal, they have been failed time and again by a health care system that is supposed to provide solutions. Most of my patients are tapping into their "reserve tank" of energy and optimism when they finally walk into my practice.

While their stories contain similarities you may relate to, their unique experiences and histories are what lend direction to the individualized approach that will eventually allow them to heal. Each person's tale holds clues that highlight the root cause of the symptoms they tolerate. However, you will soon understand how individualized treatment is not the standard of care. Instead of being treated as a whole and unique person, patients' symptoms and lab results are often treated with a pharmaceutical response, often creating a cascade of new symptoms and prescriptions. This is the problem with treating a symptom instead of a person— the root of the problem is ignored while the symptom is merely hushed.

This approach to health care is not only reckless but also illogical. Symptoms are, in essence, the body's way of sounding an alarm. A symptom (i.e., weight gain, bloating, headaches, fatigue, temperature dysregulation, hair loss) is a siren working to warn you that something is imbalanced, and it wouldn't make much sense to quiet the alarm without uncovering the cause. However, today's health care model does just that and is the reason that chronic diseases such as hypothyroidism will not be effectively treated by way of standard methods.

There is another way to approach health care, and while it is not as easy as ordering a prescription, it has demonstrated more success in reversing long-standing chronic conditions. This option is available to you, just like it

was available to each person you will read about in this chapter. Every story describes my patients' experiences before learning how to correct the origin of their thyroid imbalance. As you follow these patients' stories throughout the book, you will have an opportunity to compare their initial accounts with their stories of recovery and healing. My hope for you, reader, is that by connecting with these stories, you will be inspired to take a new path. Relief from hypothyroid symptoms is possible. You can heal and regain optimal health.

Anna's Story
33-year-old female

I first remember feeling "off" after returning to college for my sophomore year. I had spent the whole summer relaxing because I felt worn out from my freshman year studying premed. By the time I was back at school, I did not feel recharged as I had after summers during high school. I was also steadily gaining weight despite an increase in my summer physical activities: hiking, swimming, and camping with friends. By the time I returned to school, I had gained about 8 pounds. My sleep patterns changed as well, and even after getting 10 hours of sleep per night, I was not feeling rested or clearheaded when I hit the books. I felt cold all the time, and by December, I had gained another five pounds.

My mother insisted on taking me to see my doctor when I came home for winter break. After a series of lab tests, he told me that everything was fine and that I was just exhausted from school and my social life. Over the next 6 months, I progressively felt worse. By the summer following my sophomore year, I was feeling foggy and tired all the time. My grades had slipped, and my stress was hitting an all-time high. Over summer break, my asthma flared up, my skin was dry and itchy, and my hair fell out in clumps when I showered.

Before I returned to school, I went to see a new doctor who tested my hormones again. This time, the doctor diagnosed me with subclinical hypothyroidism. I went back to school on a prescription called levothyroxine. The doctor explained that my thyroid was not making enough thyroid hormone; the prescription would increase my thyroid hormone levels, and

I would feel better.

At first, it seemed to work. By October, I felt clearer, I had more energy, and I dropped a few pounds. However, I still felt irritable, itchy, and my feet and hands were cold most of the time. I did not have a follow-up appointment until June after I had completed my junior year. The follow-up test and my symptoms prompted my doctor to increase my medication. Again, I felt a little better, but my weight was still up. I continued to experience allergies and asthma while also noticing regular spells of nausea and blinding headaches.

I managed to get through my senior year with bouts of depression, and I counted the days until I graduated. After college, many of my symptoms persisted, and my follow-up visits typically resulted in dosage increases and little relief for my symptoms. Although I had always planned to attend medical school, I could not imagine taking on such a responsibility with so little energy and an inability to focus.

For 10 years, I continued to live with these symptoms. My weight fluctuated but seemed totally unrelated to my diet or activity level. More recently, I have developed "adult onset acne," which has really shaken my confidence. My doctor assured me that my thyroid condition had stabilized and that my labs were normal. He told me that my condition was probably linked to my genetics and that my acne would eventually clear up. I couldn't understand how my labs were normal if I still felt so awful. The last time I saw my doctor, he referred me to a nutritionist and a personal trainer to help me get a handle on my diet and exercise. I vowed to give it a try, but I didn't see much room for improvement. I already focused on eating whole foods and staying active.

I spent 6 months with the nutritionist, cutting calories, cutting carbs, and doing multiple cleanses. The personal trainer also threw a litany of routines and plans at me during that time. Some of these solutions made a small difference in my weight, but the results never lasted, and none of my other symptoms improved. At times I feel really depressed, and I don't know if it is because I feel so bad about my weight and skin or if I have developed depression as well. My life is good in so many ways, but I just don't feel like I can enjoy it.

Derek's Story
29-year-old male

I have struggled with severe anxiety for as long as I can remember. Sometimes it was so strong that I would go days without eating. Even during months of rigorous soccer training throughout high school, I could manage to last 2–3 days without eating anything or drinking much water. During the first few months of my sophomore year, I lost 15 pounds. My parents were alarmed at my rapid weight loss, but I think they were also relieved because when I was younger, I had the opposite problem. Years prior, I couldn't lose weight—even though I ate what my siblings ate and played sports, the weight just stuck around.

My parents tried everything to help me with my anxiety: counseling, nutrition, supplements, doctors, meditation— you name it. I could not get a handle on it, and I assumed it was the reason I could not gain weight. When I entered my first year of college, my condition worsened. I started experiencing spells of depression, and by my senior year, I was trying to make sense of my emotions, which ping-ponged between depression and extreme euphoria. It was all or nothing. After graduating, I was diagnosed with bipolar disorder. I was given a prescription for a drug, lithium, and my emotions stabilized.

Over the next 5 years, I began putting on weight and found it hard to sleep or feel rested. I would fall asleep and then wake up in a heart-racing panic at 2 in the morning. Then I began experiencing heart palpitations and headaches. My doctor prescribed a medication for migraines but said that my heart was fine. A few years later during a physical exam, my thyroid-stimulating hormone (TSH) level came back high. My doctors diagnosed me with a low thyroid disorder and gave me an extra prescription for a med called Synthroid.

A friend took me to dinner shortly thereafter and told me she was worried about me. She noticed that I seemed unhappy and less motivated. She had been talking to her friend, a naturopath, and he told her how serious hypothyroidism can be and that a lot of doctors don't test for the right things. She suggested that I ask my doctor to test for a condition called Hashimoto's

thyroiditis, explaining that it could be causing my symptoms. After that encounter, I did some research, and it made a lot of sense. I scheduled an appointment with my doctor and asked to be tested, but he explained that my symptoms were not caused by Hashimoto's. He said that because the medication I was on normalized my labs, there was no point in further testing.

At that point, I had to force myself to get out of bed in the morning. I couldn't even remember what it was like to feel good. Between the weight gain, low energy, emotional numbness, low motivation, and headaches, I felt like giving up. It seemed crazy to me that I was on all these meds before even reaching 30 years old. But my labs appeared normal, so my doctor was convinced my problems were solved. If the problems were solved, why did I still feel horrible?

Stephanie's Story
48-year-old female

I grew up as a typical latchkey kid— two working parents, middle class, suburban neighborhood. I spent a lot of time alone watching TV and eating cereal after school. For the most part, I was healthy aside from my chronic ear infections, which I eventually outgrew by late elementary school. I was active and never had a problem with my weight. In fact, I could eat as much junk food as I liked, and I easily remained thin up until my early 40s.

I had the time of my life in my 30s. I was a rising star in my law firm, I ran a couple of marathons around the country each year, and I was building an exciting life with my husband. After we had two kids in our late 30s, I started to feel like I was slowing down a bit. It was hard to keep up with my career and active lifestyle with two small kids, but the fatigue felt normal. I dropped my pregnancy weight easily after my first child, but after my second, 5–10 pounds just clung to me despite continuing my normal running routine. According to my doctor and all my friends, everything I was going through was normal.

Then everything changed. My mom was diagnosed with cancer, and I took a break from my law firm to care for her and spend more time with

my kids. The emotional stress was mounting, but I pushed through by staying involved with my kids and running about 30 miles a week. I began to struggle with sleep, and my weight was creeping up little by little. By then I was 44, and my doctors explained that I was perimenopausal. They said the way I was feeling was normal given my stage of life and stress over my mom's condition. Because I had irregular and heavy periods, they tested me for anemia and prescribed iron and B12 supplements. It helped a little with my running, but nothing else changed. In the back of my mind, I just knew that what I was feeling was not normal. They ran a series of labs just to rule out any irregularities, and they found that my thyroid was running a little low, but they did not think it was severe enough for medication. However, they prescribed a sleep aid to help me sleep through the night.

Throughout that following year, my sleep quality ebbed and flowed, but I hated the way I felt after I took the sleep aid, so I used it irregularly. I felt tired all the time, and I slacked off on my exercise routines, especially my yoga practice. I constantly craved sugar, and I needed to eat every couple of hours to keep from feeling faint. Later in the year, my wrists and knees started to ache. I assumed it was just a reaction to the physical demands of helping my mom and my kids. At an annual follow-up visit with my doctor, I described my symptoms including the worsening menstrual symptoms. Again, he assured me that it was normal, but after interpreting my labs, he reported that my T3 had fallen, and my TSH was elevated. He put me on a thyroid hormone replacement medication and offered to give me prescription-strength ibuprofen for the joint pain, which I started taking 2–3 times a day.

My weight continued to rise, and I lost all interest in being intimate with my husband. I felt irritable most days, and the joint pain and lack of sleep did not help. I noticed that my outer eyebrow hair was all but gone, and the hair on my head was brittle and thinning. My self-confidence was nonexistent; my emotions felt like a confusing storm of grief, physical symptoms, poor self-image, and an increasingly strained relationship with my husband. Even my kids started to avoid me. I had hit rock bottom, so I went back to my doctor and asked for an antidepressant. I just needed some support to help me deal with all of the problems that, at this point, felt out of control. He

prescribed Prozac and encouraged me to start exercising again to bring my weight down. I had gained 30 pounds in 3 years.

I felt trapped! I was hungry all of the time; I didn't have time to exercise, and I didn't have the energy to spend even if I had made time. I just accepted that I would never lose the weight and that this was my new norm. I chalked it up to stress and aging. I was still miserable, but I surrendered.

Kenny's Story
64-year-old male

I have always been healthy. I grew up in a small town in Nebraska known for its agriculture and canning factories. I worked farming jobs spraying crops and helping with livestock throughout my childhood. It kept me strong and kept money in my pocket. Eventually, I enlisted in the Air Force and spent 4 years abroad learning how to be part of a team. Those first 4 years paid for my college tuition, and I was able to get a degree in engineering. I loved the military— even after graduating, I reenlisted to serve my country.

Being in the military kept me mentally engaged, fit, and challenged. I loved seeing the world and getting to live somewhere new every few years. When I was almost 40, I met my wife, and we had our only son shortly thereafter. For years, we moved around to many countries and spent our time exploring the world as a family. I can't recall ever having felt tired, sick, or even having to miss a day of work. When I took leave, it was to travel and spend more time with my family but never to rest.

I was in my late 40s when I experienced my first real illness. I was sent to a country called Kyrgyzstan near the northwestern border of China for a 3-month project. It was the first time I had to leave my wife and son behind. Soon after completing the project, I returned home and began feeling sharp pains in my stomach. My doctors initially diagnosed me with GERD and put me on Prilosec. The medication didn't ease my stomach pains, but the doctor told me to give it time. Six months later, I was still in pain, so they agreed to dig deeper and eventually realized I had a stomach ulcer. I stayed on Prilosec for 2 more years while avoiding any "irritating" foods. On a trip back to the States, my wife pushed me to see a specialist that tested me for something

called H. pylori, a bacteria that causes ulcers. I tested positive, and the specialist put me on an antibiotic regimen that he called the "trifecta!" I had to take the antibiotics for quite a long time, but eventually, I tested negative for H. pylori, and my stomach pain resolved.

After the H. pylori, I never felt the same. Even though the pain resolved, I didn't have as much energy and gained a little weight. My doctors said it was normal given my age, but my activity level was the same. I was still hitting the gym 5 days a week and watching my diet. Over the next few years, my weight went up consistently, and my sleep was restless. I felt my strength diminishing, and getting through my normal gym routine became increasingly difficult. I felt bloated, puffy, and hungry all the time.

I was probably 55 when I finally asked my doctor to test my testosterone. He agreed but decided to add on a thyroid panel at the last minute. My testosterone was okay, but my thyroid panel was low, and I began a medication called levothyroxine. For at least a year or more, we increased the meds during each visit until my numbers came back into a normal range. After 2 years on the meds, I didn't feel great but just accepted it as my new normal. However, during my annual physical just before I turned 58, my doctor diagnosed me with high cholesterol and put me on a statin. He said he wanted me to get my "bad" cholesterol below 100 and told me to cut out red meat, dairy, and butter.

I am pretty good at following doctors' orders—a skill I learned after over 30 years in the military. I cut out all the foods he suggested I get rid of and soon found my cholesterol levels within the desired range. My thyroid was looking good, too. Unfortunately, by 60, my libido was all but gone. I suppose it was normal, but I was disappointed and feeling a little depressed about it. Later that year, I described what I was feeling to my doctor, and he also agreed that it was a normal part of aging. To help, he offered me a low-dose antidepressant called Zoloft and something to help with my libido.

It's been over 3 years, and I am still plugging along. I feel like I have a pharmacy in my medicine cabinet, but my labs look good, so I do my part and take my meds every day. I am frustrated, on occasion, because I remember what it felt like to feel "good," and I have a hard time accepting that I will never feel that way again. I know it is probably unrelated, but until the H.

pylori infection, I felt great. In fact, aside from an aspirin here and there, it was the first time I had ever taken medication. It may be a coincidence, but everything just went downhill from there.

Erin's Story
57-year-old female

When I look back, I really can't remember a time when I had a lot of energy. I used to blame it on my stressful childhood. Between the divorces and moving all over the place, I never felt calm or rested. Though it wasn't until my 20s that my doctor tested my hormones after I complained I could not lose weight. When the tests came back, a few levels were low, but the main problem was my thyroid. I was so excited to have an answer to my bloating, weight gain, fatigue, and completely irregular periods. I immediately started taking a thyroid hormone and felt better in no time.

For at least 10 years, the meds would work for a while, and then I would need to go in for an adjustment. This went on as I got married, had kids, gained and lost weight, gained and lost employment, felt better, and then felt worse. Each time, the doctor would assure me that we just needed to change the dosage. It wasn't until I was in my mid-30s that the medication seemed to stop working altogether. By then, I was holding at least 25 extra pounds, constantly feeling exhausted, having heavy periods that wiped me out, and suffering from paralyzing migraines.

I was diagnosed with chronic fatigue syndrome, and the doctors told me there was nothing they could do for me. From there, I developed joint pain and severe allergies. I was taking an antidepressant called Synthroid, an antihistamine, and painkillers every day. I just couldn't understand it. In my mind, a voice kept telling me that there was something missing. Why was my body crumbling from the inside out? What added to my frustration was that each time I saw my doctor, she would tell me that exercise and a Mediterranean diet were methods that might improve my conditions. How was I supposed to go to the gym or cook elaborate meals when I felt this way? I could barely get out of bed and care for my kids.

I became self-conscious and realized that most of my friends had stopped

calling. I understood. I was either too tired, in too much pain, or too depressed to accept their invitations. Plus, my contributions to any conversation were centered around my kids or my doctor visits. At that point, I had stopped working as a teacher and was on disability. I saw my friends living their lives: managing work, kids, marriages, and even making time for yoga and cocktail hours; I just couldn't relate anymore.

Finally, when I turned 40, I joined a support group for people suffering from chronic fatigue syndrome. It was my birthday gift to myself and a resolution. I needed to figure out my issues and get some support along the way. It was during one of those meetings that someone suggested going gluten-free. It felt like a giant hurdle, but he had experienced relief from some of his pain and fatigue, so I gave it a try. I was inspired! After only 2 weeks, I had lost a few pounds and was feeling slightly more energized. I thought, "This is my ticket!!!"

I improved for a while, but then I hit a wall. After a few months, I wasn't getting worse, but I also wasn't getting any better. I could barely stand to look at myself: my hair was thin, my face and ankles were bloated, I had bags under my eyes. To make matters worse, I was constipated, which left me feeling discomfort in my abdomen all day. I just wanted to escape myself.

Since then, I have just been in a constant state of medical management. My doctors try to help, but they never really seem to know what to do. A few years ago, one of my doctors gave me a medical marijuana prescription, which has helped with the pain and the restless nights. When I ask if there are any new answers, they say they've been doing everything the current research recommends. The desperation I had turned to hopelessness. This was my life.

Sharon's Story
66-year-old female

I come from a family of overweight people. It's in my genes, and as far as my parents were concerned, there was not much to be done about it. Until my early 40s, I was never terribly overweight, but I also can't remember a time when I wasn't battling my weight with the newest diet pill or nutrition

fad. Around age 42, I lost control, and diets stopped working altogether. This was the same year my doctor diagnosed me with high cholesterol and high blood pressure. With all the dieting I had done, it made no sense to me. My weight was a little high, but I certainly ate a pretty healthy diet, so I could not understand how I had developed high cholesterol or high blood pressure.

She told me I needed to lose about 10–15 pounds and that I also needed to start taking a statin and another medication to reduce my blood pressure. She referred me to a dietitian at the clinic to help me improve my diet and reduce my cholesterol. The dietitian gave me a nutrition plan that cut out most of the salt and fat from my diet. I was supposed to focus on carbohydrates and substitute butter with margarine. I followed this diet for 6 months. It was awful. I never felt full, and I actually started feeling worse. Not only was I NOT losing weight, but also I was depressed and had no sex drive. However, after my follow-up appointment, my physician said my numbers had dropped and that the meds were working. Everything else in my labs looked normal, but after telling her about my depression, she suggested that I try Prozac.

This is when everything really went downhill. During the following 3 months, I struggled to sleep, and I would wake up having had bizarre and disturbing dreams. I had to drink 2 cups of coffee just to get going in the mornings, and then I would get headaches and feel foggy in the afternoons. I wasn't really feeling depressed anymore, but I started having periods of severe anxiety and nervousness. I was concerned and went back to my doctor. She thought I was having an adverse reaction to the Prozac, and she lowered the dosage.

It felt like my life was spinning out of control. I could not trust my own emotions. I was angry with my husband all the time, but I could never quite articulate why. I remember complaining a lot, but I was just so miserable, I wanted him to validate my feelings. He tried to comfort me, but he eventually stopped listening. After months of fighting, he told me he wanted a divorce; he was tired of living with someone who was never happy. I was devastated, angry, and resentful, but somewhere deep inside, I understood why he was leaving. Our kids were in college by then, and I found myself alone and more frustrated than ever. I could not bring my stress level down, and my sleep,

depression, and anxiety just got worse.

Over the next few years, I developed hot flashes, cold hands and feet, muscle pain and weakness, and my hair started falling out. My doctor took me off Prozac and switched me to Zoloft. Again, I saw some improvements, but I felt like I was sliding down an icy hill. I was so exhausted but would wake up with heart palpitations, which would keep me up the rest of the night. I am sure drinking coffee all day was making it worse, but without sleep, I just felt like it was the only thing I could do to keep moving. Without my husband's support, I had to work full-time, and falling asleep on the job was not an option.

My hunger increased as well, and I found myself snacking on crackers, popcorn, and chips every afternoon. I always tried to buy the low-calorie, low-fat snacks, but my weight was really creeping up. By the time I turned 50, I physically felt like I was 85. My hair was thin and brittle, I was at least 50 pounds overweight, I had no energy, my mood was unpredictable, and I just wanted to sleep. I found myself back in the doctor's office, but this time she referred me to a specialist. I saw an endocrinologist about a month later, and she diagnosed me with Hashimoto's thyroiditis. She explained that it was an autoimmune disorder attacking my thyroid and was part of the reason I felt so poorly. She put me on a thyroid replacement medication, which I have now been on for about 15 years.

I can't say that it fixed everything, but it did slightly improve my energy level, and my sleep was more consistent. Initially, I lost about 10 pounds, but then my weight leveled out, and I never lost anymore. Over the past few years, Paleo has been the new diet trend, so I tried to reduce my carbs and eat gluten-free. I also heard that eggs and butter are okay, again. These days, it is impossible to keep up with what is and isn't healthy—it changes too often, so I just do my best. At my age, I don't think there is any hope that I'll lose weight. It is too late.

Nicole's Story
20-year-old female

I began dancing when I was 3 years old, and I've never wanted to do

anything else since. By elementary school, I was dancing 8 hours per week. By high school, I was spending 4–5 hours each night at the studio and up to 16 hours on weekends. I had one goal: to dance on Broadway. I planned to apply to NYU and Julliard, then plant myself in New York for as long as it took to earn my place on the stage.

Dancing was my passion, but it also came with pressure. The first time I realized I needed to lose a few pounds was when I was 13. I was gaining weight, and my body seemed foreign to me. I had never worried about my eating habits before then, but suddenly, my hips were getting bigger, and I had a pouch of fat on my stomach. At one point, my dance instructor made a comment about cutting back on sugar, and I realized that if I wanted to dance, I needed to look like a dancer. So, I cut out breakfast and sweets and drank coffee instead. After less than a month, it worked, and I looked like my old self again.

Throughout high school, there were times when I had to cut back even more on calories to maintain my weight. I tried to focus on eating vegetables and fruits and avoided fat and sugar. I often felt tired, but it made sense with how much I was dancing each week not to mention the hours of homework. I was usually getting 5–6 hours of sleep each night, but that was normal, and my friends seemed to be getting the same amount of rest. I kept caffeine pills at hand in case I needed a boost.

By the end of my junior year of high school, I felt good about my capabilities as a dancer and my grades. I knew I had a shot at NYU, my first choice. I danced every day that summer, and by the time school started again, I was wiped out. I had to try harder than ever to find the energy to dance and study. My parents and friends started commenting on how thin I looked, and I did not feel like myself.

By winter break, I was barely hanging onto my 4.0 GPA, and I spent the entire two weeks of vacation on the couch. It didn't matter because competition season was over, and I had already sent in all of my college applications. Still, I couldn't help but feel something was wrong. It didn't feel like exhaustion; it felt like I was stuck in wet cement. On New Year's Day, I took a selfie with my sister, and I barely recognized myself. My hair was thin and frizzy, and I had giant bags under my eyes. My mom suggested that I

might have mono, a viral infection, so we went to my physician.

I had a bunch of bloodwork done and found out that I was severely anemic, deficient in vitamin D, and had a low thyroid disorder. She put me on a thyroid replacement as well as vitamin D and iron supplements. She also sent me to a nutritionist who made me write down everything I ate each day for 3 days. The nutritionist told me I was only eating 800 calories per day and that I had to double that to get enough nutrients and produce the energy I needed to dance. I was worried about gaining weight, but I agreed. I needed to feel better so I could finish out the year and go to college feeling strong.

I started eating a healthy diet, but it felt like mountains of food, and within a month, I had gained 5 pounds. I panicked but stayed on track until I went back in for a checkup in March. I had gained a total of 10 pounds despite perfectly following the nutritionist's plan. Even worse, I was feeling even more tired and stressed. The next round of tests showed that my lab tests had normalized, so it didn't make sense as to why I felt so awful.

Around the same time, I found out NYU had accepted my application, and I started planning my move across the country. Everyone was supportive, and my parents assured me that by the time I left, I would be feeling better. My doctor played around with the dosage of my thyroid replacement medication, and each time, I would feel better for a week and then spiral down again. I was hopeful that we would find the right dose, but it didn't matter because I was finally going to the school I had been dreaming about for my entire life.

When I made it to NYU, I was thrilled, but I soon realized that the level of commitment to both dance and academics was higher than what I was used to. I needed endless energy and focus. It did not take long for me to feel like I was barely holding on. I felt foggy and exhausted most of the time. Coffee lost its power and was making me more tired. I made an appointment to see the on-campus doctor, and he changed my levothyroxine dose again. Nothing changed, and throughout my freshman year, I had to constantly drag myself through each day. I made it, but I was far from the dancer that I used to be.

I saw my doctor at home that summer and told her that I did not think we were on the right path. She took my labs once more and assured me that

everything had leveled out, and I was doing well. I had put on 15 pounds by then despite the hours of dance practice each day. I did not recognize the person in the mirror. Something was not right, and if my doctor was not going to dig in, I was determined to find the answers on my own. I was days away from my 20th birthday when I returned to NYU. I put my game face on and promised myself that I would find someone who could help me. That is where my real journey began.

CHAPTER 2

I Share Your Frustration

For most doctors—myself included—the choice to become a doctor was motivated by the desire to help heal people. Although I didn't expect every patient's case to be simple, I naively presumed that I would be able to diagnose the source of each patient's ailment and create a successful treatment plan. However, soon after entering practice, I noticed a trend that mirrored the cultural rise in chronic disease, which complicated the care I was trained to provide. Most of my patients were prompted to visit me because they were suffering from conditions beyond primary complaints. Chronic pain or discomfort may have motivated a patient's visit, but I quickly realized that his or her source of pain was not always something I was prepared to treat.

Time and again, my patients reported having a history of low thyroid function and associated symptoms. I started to realize there was something going on beneath the surface that I had to address if I was going to relieve their suffering. After months of frustration and feeling like my toolbox was only half-full, I decided to search for answers. I knew that if my patients were not armed with the information they needed to correct their hidden physiological imbalances, our work together would not be successful.

As I began to investigate my patients' histories, I realized that most of them had suffered from thyroid-related symptoms for years, and more often, for decades. They had seen countless physicians and had received prescriptions that treated every symptom but never resolved their conditions or repaired their health. My patients were exhausted, frustrated, and hopeless. In most cases, their previous practitioners had trained them to see each symptom as a separate issue. Upon seeking my care, they were unaware that their discomfort could have been related to their previous low thyroid function diagnosis. My patients' perspectives were products of the drug-therapy approach to health and the physicians who were trained under that system.

Today, chronic disease such as cardiovascular disease, cancer, autoimmunity, diabetes, and the like is our health care system's number one burden. In fact, 78% of health care spending is allocated to chronic disease.[1] However, the current medical education system has not caught up with either present-day research or the demand for healing. Instead of focusing on healing the person suffering from disease, physicians are trained to manage the disease and its symptoms. Of course, there are areas of medicine where

this is precisely the type of education a doctor needs. Specialists in infectious diseases, for example, have no other choice but to be in the business of disease management, and acute care physicians are charged with fixing broken bones or performing lifesaving surgeries. However, many physicians in the field of chronic disease graduate from school with a vast understanding of how to use pharmaceuticals to manage and suppress symptoms instead of how to heal the patient and the underlying cause of his or her disease. Now do not get me wrong, I am no crusader against drug therapy, as it certainly has its place. However, I think we can all agree that we live in a time when prescription medication is overused, and in many cases, abused.

Most doctors agree that many factors have contributed to the current chronic disease crisis. Of those factors, lifestyle and environment undoubtedly play a large role, and many providers attempt to address this as a vague sidenote when counseling their patients. Unfortunately, their recommendations are usually an imprecise suggestion to increase physical activity and eat a "healthy" diet. Not only is that ambiguous, but also it is frequently driven by incomplete training and knowledge. While many physicians understand that their patients' lifestyles are a significant cause of chronic disease, they often don't know how to comprehensively advise their patients on how to reduce and eliminate their symptoms and reverse the disease's progression. That information was either unavailable or glossed over during the physician's education. In fact, most medical schools only offer general nutrition classes as an elective.

Years ago, I was discussing this issue with a colleague, a family practice physician focused on primary care in a low socioeconomic neighborhood. Her general patient population had a high rate of diabetes, and when she began practicing, she was tasked with providing diabetes education at her clinic. She lamented that when she began the diabetes education program, she did not understand how carbohydrates affect the body—an integral concept when working with diabetics. Somehow, she had completed an undergraduate program in biology, gone to medical school, and spent three years in residency without learning about the metabolism of macronutrients, the basic premise of human life. This is a huge disadvantage if your patient population suffers from a disease that these factors greatly influence.

Physicians are also deeply frustrated with their relationships with insurance companies and billing practices. For doctors, these bonds feel more like shackles when they realize that to pay off their monstrous student debt and make a decent living, they are forced to see patients at a rate that only allows for short visits; they spend less time with a patient than they do in a line at Starbucks.

A few years ago, I was celebrating the long and successful career of a friend and colleague who was retiring after 40 years of practicing as an obstetrician. She had successfully delivered thousands of babies and cared for their mothers. She ran an independent practice for the last 25 years but had chosen to retire early due to the constraints of insurance company policies and the mounting expenses of running a clinic not associated with a large health care company. She oversaw hundreds of medical residents throughout her career, and she described her concern for the future of obstetrics and gynecology.

She disclosed that over the past few years, her residents had been trained to spend 5 minutes with their pregnant patients and 10 minutes providing gynecological care for annual exams or health concerns. This allowed the resident to see up to 5–10 patients per hour, barely leaving time for a thorough exam or charting results. Not only is it impossible to conduct a thorough physical exam in that amount of time, but also building any kind of relationship or rapport is hopeless. Much of the peripheral work surrounding these visits is left to medical assistants and nurses, meaning the doctor's patient overview is primarily obtained by reading charts and not by interacting with the patient. Doctors often feel as though they have no choice.

Eventually, some doctors come out of the "fog" and shake the status quo; they realize they aren't actually healing people. If they are being honest, they realize that their toolbelt is half-empty and that they may not possess the necessary expertise to truly support their patients. When doctors reach this "Aha" moment, they take 1 of 2 routes. One route is becoming disenchanted with their careers and facing the disappointment that their original hopes to heal have dwindled to tasks like logging symptoms and prescribing pharmaceutical remedies. This may prompt the search for a passion project or a hobby outside of work to bring back meaning to their lives. While this may balance the physician's needs, it does little to improve their patients'

experiences or outcomes.

Other health care providers like myself decide to take another route and embark on a quest for more information. Much to my surprise, I found a growing consortium of "pioneers" asking the important questions and working to answer those questions through research and thorough patient care. When I found this body of innovative and inspiring knowledge that had been absent from my original education, my enthusiasm was restored. My career's original sense of purpose became clear once again, and my ability to help my patients expanded tenfold. For doctors like me, this excitement is countered with the reality that in order to really help our patients and gain the knowledge we need, we must invest in furthering our education.

Obtaining additional graduate degrees or enrolling in continuing education programs provide the instruction, but these options come at a cost. We have to reallocate time and money from our practice and previous school debt and funnel it into this postdoctoral training. We must also acknowledge that the standard of care will not fit our new business model because 5- to 10-minute visits, 2 to 3 times per year, are not possible when we set out to assist in healing the whole person.

There is a euphoria that accompanies the awareness that a science-based path to healing is available, but there is also a deep exasperation. Certain areas of the medical community are consumed by tradition and ego. When doctors like me learn there is another way, we want to share our excitement and our knowledge with our colleagues. The collaboration of many minds working together on complex diseases allows us to excel at our jobs. While some will jump on board eager to help more patients, others will turn up their noses and snub approaches that target lifestyle and nutrition as "witchcraft" or unsupported science. The latter attitude is an unfortunate one and promotes the patient's continued confusion between the methods that mask symptoms and the methods that reverse disease.

Luckily, the science is strong and gaining ground as more researchers turn their focus to disease reversal and a functional approach to health care, and more important than the mounting research is the clinical evidence: Our patients are getting better. They are reversing their diseases and finding a restored sense of health. The frustration we feel from interacting with

hardheaded doctors is not the need for validation. We are frustrated because we know that our patients are likely to visit 3–5 of these practitioners and waste approximately 5 or more years of their lives consulting a system that was not built to heal. They will feel hopeless while they watch their disease progress and their health crumble. By the time they reach a doctor who has the tools to actually help, they will be running on their last grain of motivation. At this point, patients are often so sick that taking another approach can be needlessly exhausting.

As a doctor, seeing patients in this state is enraging and heartbreaking. However, this is also a rewarding position to be in; we are able to offer our patients who have tried every drug and therapy—who are often at their breaking point—another choice. We can share the science with them; we can provide them with the evidence that shows their condition is not hopeless. We have the gratifying opportunity to clear a path for our patients and walk with them as they embark on a journey they never knew existed: the journey from disease into restored health.

Although, the frustration does remain for doctor and patient when, together, they acknowledge that the journey is more difficult because of the years wasted during the disease's progression. Those wasted years may have yielded damage to cells, tissues, self-image, self-confidence, relationships, and more. Those lost years caused unnecessary destruction, which makes the healing process extra challenging. However, the word "challenge" is not synonymous with impossible.

"Challenge" is a word that belongs to any journey. One aspect of the doctor's responsibility is to prepare the patient for the hardships and triumphs of his or her undertaking, and while both patient and doctor work together, their roles are distinct. The doctor becomes an investigator, an educator, and a supporter; the patient is tasked with action. The relationship between doctor and patient is dynamic, energized, and balanced—both are accountable for repairing the damage and disease. This type of relationship is quite unlike the doctor–patient relationships seen in today's health care community. It facilitates an understanding in which both parties take responsibility for their part as well as a commitment in which both parties agree to respect each other's time and effort. This relationship serves as a foundation for healing and rewards both

parties: the practitioner and the patient.

It's understandable if this sounds abstract. It's an alien approach to traditional health care, but the science behind it is solid, and the results are undeniable—it works. The prevailing logic is that disease is caused by an imbalance in the body, and when the imbalance is corrected, the body heals itself. The work of the physician is to find the imbalance and identify the method to correct it. The work of the patient is to put in the daily effort to establish physiological balance. This takes a variety of methods, so instead of hypotheticals, let's revisit the patients that we heard from in chapter one and learn more about their unique experiences in reversing their conditions.

Anna

Remember Anna? She began noticing symptoms of low thyroid function in college and suffered from weight gain, fatigue, brain fog, and persistent cold hands and feet. Later, her list of symptoms grew to include hair loss, depression, acne, and brittle hair and nails. Anna was 33 by the time she realized there was another way to treat her condition beyond the varying levels of the thyroid replacement hormone she was prescribed. Anna suffered for over 13 years while watching her health deteriorate and her dream of becoming a doctor slip through her fingers. Throughout the years, she lost confidence after being told that her condition was the result of bad genes and that her only hope was to eat less and exercise more.

Many traditionally trained doctors see this as a typical scenario for a person with low thyroid function. However, for a doctor trained in functional medicine, this history tells a completely different story. When Anna first visited me, we met for an hour and a half, and I extracted as much information as possible to begin my "investigation"—phase 1 of constructing a patient's treatment plan. There were some clues in her story that alerted me to the deeper issues at play.

One of the red flags was Anna's childhood history of asthma and allergies; there was clearly an imbalance in Anna's early life that had caused her immune system to overreact. It was important for me to gain a full picture of her medical background to identify the potential causes of that initial imbalance. Although

it may seem completely unrelated, Anna had been born through C-section, she had not been breastfed, and she had received multiple rounds of antibiotics as a young child. In addition, she had a dairy-heavy diet.

This information sets a scene for the functional medicine doctor. Research has clearly shown that children born via C-section have a much higher risk of developing gut dysfunction due to imbalanced gut flora.[2] Mothers share their gut flora with their babies during childbirth via the vaginal canal. When babies are born via C-section, their systems are colonized by bacteria from other sources such as the hospital room instead of a healthy dose of their mother's flora. This is troublesome because bacteria found in hospitals are dangerous and produce toxins. This immediately sets a baby up for immune system difficulties. Breastfeeding is the baby's second shot at receiving healthy gut flora from his or her mother. If a baby is lucky enough to build a relatively healthy microbiome after a C-section birth and formula feedings, a repeated use of antibiotics will knock the baby's system down once again.[3] This "trifecta" of gut damage sets kids up for an increased risk of developing chronic disease throughout their lives, and by examining Anna's history, I could clearly see that her gut needed support and healing.

As we worked our way through her past, I understood that Anna experienced extreme stress in college and lacked the coping mechanisms and emotional support she needed to manage that stress. Chronic stress can trigger a breakdown in the immune system and elicit an inflammatory response, leaving the body in a constant state of pain and irritation. Anna's story made sense to me and gave me insight into what was going on beneath the surface, which made testing that much easier. Over the following 3 months, Anna and I met every 2 weeks to continue our investigation. She completed tests that assessed her gut flora, inflammation level, autoimmunity status, nutrient levels, and more.

I learned that Anna, like most patients with low thyroid function, had leaky gut syndrome. This means that the barrier between her intestines and her circulation had broken down over time. Some of the spaces between her intestinal cells, which should be sealed, were wide open, allowing undigested food to enter her circulation. Healthy but undigested food had entered her bloodstream and caused her immune system to attack the food particles like it

would attack a virus. To help remedy this, Anna had to determine which foods were irritating her system by completing a process known as the elimination diet. Once she eliminated the inflammatory foods, she had to take specific supplements that would provide her body with the building blocks it needed to repair her intestines and maintain a diet that would not perpetuate an immune response.

Anna also started to learn about different coping mechanisms that would allow her to handle stress in a less destructive manner. She discovered that breathing techniques and reducing her technology use would help quiet her brain, allowing her body to restore itself throughout the day. Of course, the process of learning new habits ebbs and flows, but after 3 months, Anna lost 10 pounds and had consistent energy levels all day. We were able to reduce our visits to once a month, and we adjusted her healing protocol along the way to adapt to her changing body. After 5 months, she was off the thyroid replacement treatment, and her labs normalized. Anna's journey to complete healing was not over, but by that time, she felt motivated to continue because she realized that she was no longer living under the crushing weight of her symptoms.

For me, these are the best scenario to witness. Seeing a patient own the process and make the necessary lifestyle changes is incredibly rewarding, but not every story ends like this. Changes are difficult to make. It is important to remember that habits are created over a lifetime, and patients may have to unravel and reconstruct many areas in their lives to obtain the results they really want. For Sharon, the process of redefining her habits and health was a longer and more difficult process.

Sharon

Sharon had been suffering from symptoms of low thyroid function for over 20 years when we began working together. She had been a chronic dieter her entire life, utilizing a multitude of dangerous diet pills and starving her body. By the time she was in her 40s, she was paying the price with her health. And so began the snowball decline from the initial diagnosis of high cholesterol and high blood pressure to a damaging high-carb and low-fat diet, which continued

into depression, low libido, poor sleep, anxiety, and eventually thyroid symptoms. Before I met Sharon, she had been diagnosed with Hashimoto's thyroiditis, an autoimmune disease that attacks the thyroid gland, and her doctor had given her a permanent prescription for thyroid replacement hormone. She felt awful and failed to make sense of all her symptoms. She was out of hope and out of energy.

However, once Sharon started researching other options, she opened her mind to different approaches. First and foremost, Sharon knew that the barrier she had to continually fight against was her addictive relationship with food. She had created so many routines, habits, and relationships around poor eating habits, and she felt lost in the emotional connection she had with food. Sharon developed a comprehensive understanding of how she needed to eat in order to heal. At the same time, she took supplements, completed tests, and increased her therapeutic activities. She was fully committed. However, she could not seem to fully eliminate foods that were inflaming her immune system. She removed certain items for 3 weeks and then would engage in a 2-day binge, which left her feeling shame and despair. In Sharon's case, we continued to work together, but we both felt it best that she seek counseling to uncover the root of her food habits. For over 18 months, Sharon experienced highs and lows as she battled her challenges with food. Her epiphany came after about a year of counseling, and she was finally able to remove the damaging foods from her diet and replace them with healthier options.

Within 4 months, Sharon was a different person. She continued to implement all of the other aspects of her individualized plan while she worked through counseling, and eventually, all of her hard work paid off. She was no longer on any medication, and she was feeling better than she could ever remember. She continued to progress and heal and now, 2 years later, Sharon is in full remission from her autoimmune disorder. You may remember how Sharon's marriage broke under the weight of her disease's progression. Now, at 68 years old, Sharon feels strong enough to support someone else while she supports herself, and she is happily remarried.

Sharon is another success story, but the road to total healing was not easy. She had to face painful issues and remain steadfast throughout the roughest times. She had to maintain her faith in my intentions to support her even when

she doubted her ability to hold up her end of the deal. These doctor–patient relationships take trust, work, honesty, and integrity. If Sharon had lied and told me she was sticking to her program perfectly despite a lack of progress, I would have been sent on a wild goose chase to find a new answer. Instead, even though she felt ashamed, she remained honest, and I was able to add another professional to her care team and help her find her way.

Kenny

Kenny presented a different set of challenges when he and I began working together. To refresh your memory, Kenny was the veteran who had contracted H. pylori overseas. Excessive antibiotic use wiped out his microbiome, and long-term Prilosec use alongside the H. pylori infection reduced his ability to properly digest protein.[4] In some ways, Kenny had a clear-cut case. Remember, Kenny was not afraid to follow doctors' orders, so when I explained how his history, lab results, and other symptoms indicated low thyroid development along with his other symptoms, he jumped on board. Kenny read every book I suggested, and by the time we finished working together, I wondered if he might know more about thyroid disorders than I did. He kept me on my toes, and I enjoyed working with him immensely.

Due to his long-term use of Prilosec, Kenny did not have enough stomach acid (HCl) to break down proteins. Not only did this condition lead to more than just Kenny's poor absorption of amino acids, but also it meant that, for years, Kenny's body had not been fully capable of cleaving vitamin B12 or iron from food. Kenny had a condition called B12 anemia as well as iron-deficient anemia. Most of his symptoms, which were identical to symptoms of thyroid issues, were symptoms of anemia.

In chapter one, we saw that Kenny was diagnosed with high cholesterol and that doctors told him to go on a low-fat diet and reduce his meat intake. This actually exacerbated his issues. He stopped eating red meat, and therefore, he reduced his intake of vitamin B12 and iron. The reduction in fat intake was, in part, affecting his lack of libido and depression because his body was not getting the nutrition it needed to manufacture his hormones, including the ones affecting his thyroid. In trying to help, his previous doctors induced

a series of secondary health problems for Kenny. Although Kenny had low thyroid function, his primary issue was his diet and the inability to digest what he was eating.

Kenny went on a program that enhanced digestion and absorption while reintroducing necessary foods into his diet. He maintained an anti-inflammatory diet and completed an elimination diet to determine which foods were causing harm, and he was able to reverse most of his symptoms by including healthy fat, red meat, and loads of vegetables in his diet. A new diet and the right supplements were the magic combinations for Kenny. Within a year, he was off every medication and feeling great.

Derek

Not all stories are simple to solve. People have often been misdiagnosed for so long that there are years of unraveling to do. This was the case with Derek who was only 31 when he first came to my clinic. Derek had been diagnosed with bipolar disorder after years of suffering from anxiety and depression. Remember that Derek had also struggled with both weight gain and severe weight loss. One trend that stood out in Derek's history was that his parents and sister all had autoimmune diseases. In addition, Derek had suffered many symptoms associated with autoimmunity.

In the current medical culture, autoimmune diseases are often treated as separate disorders. Much of the research suggests that if a person has one autoimmune disorder, his or her risk of developing another one is significantly higher. This is completely logical because when the immune system is imbalanced and autoimmunity already exists, medicating the symptoms will not fix the dysfunctional system. Remember that autoimmunity often indicates the presence of a "leaky gut," so if the gut continues to malfunction, the immune system will have increasingly more triggers as different molecules enter the system undigested. This made sense to Derek. He had suffered from mood disorders and was later diagnosed with low thyroid function. Current research suggests that autoimmune disorders predispose a person to bipolar disorder.[5] No one had considered the possibility that Derek was experiencing systemic autoimmunity, but I was connecting the dots as he shared more

about his medical history. Remember Derek had connected the dots before, but his doctor brushed him off and refused to test him for the autoimmune condition, Hashimoto's thyroiditis.

While working with Derek, he admitted he was raised in a very stressful environment. This was, in part, because both of his parents and his sister were dealing with illnesses of their own. While Derek suffered, his issues were less pronounced. Derek was raised on the standard American diet (SAD), very low in nutrients with meals often poured from a box or can. I was interested in learning more about Derek's nutrient deficiencies and the state of his gut. Because Derek's parents and sister suffered from autoimmunity, I assumed Derek had received abnormal gut flora from his mother. We spent months testing and trying out different approaches to nutrition and supplementation.

A few major issues stood out in Derek's case—the severe zinc deficiency and the mercury toxicity. Zinc deficiency is strongly linked to autoimmune disorders, so this was not surprising.[6] Zinc deficiency is also linked to mood disorders, and zinc has been used in treatments to support depression and anxiety.[7]

The mercury toxicity was another factor we had to include in our treatment plan. As I previously mentioned, Derek was raised on processed foods. When he recited the typical makeup of his meals, he said that he ate canned tuna 4–6 times per week. In addition, he received flu shots and normal vaccinations throughout his childhood that contained mercury. The final exposure, which was easily identifiable, was the dental amalgam fillings. Because Derek's system was nutrient deficient, his detox systems were probably not functioning correctly. This meant that his body was storing the mercury from the tuna, dental fillings, and vaccines instead of clearing it. Mercury is a known neurotoxin, but a lesser known fact is that mercury is toxic to the mitochondria, the powerhouse of every cell. This type of toxicity is linked to mental health irregularities as well as autoimmunity.[8]

Along the way, we found other irregularities such as magnesium and vitamin A deficiencies, and we worked to correct all of these issues with a customized approach to diet, supplementation, and processes to help him detox and heal his gut. Derek and I worked intensively together for over 2 years until he no longer needed medication. It was a bumpy road at times, but

he was committed to healing. He chose to include meditation and counseling alongside the work we were doing. Derek arrived at a healthy weight and has maintained it with the regimen we found worked best for him.

He will likely need to supplement certain minerals and vitamins for an extended period of time— a small price to pay for good health. This is where genetic variation plays a strong role; some people need a greater amount of specific nutrients than others because they absorb them less efficiently or because their systems just need more of it to function. These are individual-specific genetic and environmental variabilities that we must consider when treating each patient. These days, Derek and I touch base quarterly to make any necessary adjustments and to check in with his system. At this point, he no longer tests positive for autoimmunity of any sort.

The Patient–Practitioner Relationship

Each one of these examples highlights just how individually focused care must be when healing a patient. There must be an established trusting relationship between doctor and patient, ample time to sort out the details of disease progression, and the proper tests need to be performed. This work is investigative; therefore, the right questions must be asked, and the inquiry must be thorough. This type of medical approach is focused on looking for the root cause of each individual's symptoms and continuing the search until the vital question of "why" has been answered.

As you learned from Derek's story, multiple symptoms and multiple diagnoses are directly linked to problems like deficiencies and toxicities. This begs the question: Are bipolar disorder and thyroid autoimmunity different conditions, or are they just multiple manifestations of one root issue? As health care providers, we must be willing to ask these questions, put in the time to find the answers, and stay humble throughout the process. The body is too complex a system for us to believe we already have all the answers. The truth is that patients are their own best experts, but as doctors, we can guide them to greater awareness and intuition so that they can find the healing they seek.

The other crucial difference between the before and after of each patient's

story in this book is the aspect of individualized care. While there are many similar symptoms among individuals with a thyroid disorder, the causes of the imbalance and the process of healing are never the same. The magic pill that works for everyone does not exist. There is no one plan or one process that will work for every person. This is the reason that both patient and practitioner must prepare for ample time, commitment, and trust- building. The plan for each patient is not only different but also changes throughout the course of treatment. As we coach the body into healing, we change the care strategy to address our patient's current needs. There is no way to know how a person will respond to specific treatment, so the patient–practitioner team must stay engaged, honest, and persistent.

As a functional medicine practitioner, my job is to remain humble and objective. This means that I cannot take one person's care plan and assume it will work for another. When, as doctors, we see positive results in one case, it can be tempting to attach ourselves to the method that gave way to those results. However, this type of attachment deters us from listening to the subtle clues that differentiate each patient from one another. There is a science to treating patients who suffer from chronic disease, but this process is also an art. The art involves actively listening not only to words but also to body language and small cues. Honing this craft develops one of the most important skills a doctor can use to help his or her patients.

When doctors learn to listen carefully, they have a better opportunity to teach their patients to listen intently as well. Patients who have suffered from chronic conditions have learned to tune out their symptoms so that they can function. Whether that involves learning to ignore the symptoms or medicating them into silence, living in a state of disconnection allows the patient to carry on. However, this adaptation inhibits healing. A functional medicine doctor is often charged with the task of teaching his or her patients to notice not only the body's loud and blaring signals but also the body's whispers. The whispers are the disease's beginning, and although, each one provides insight into what the body needs, patients are taught to ignore them, which results in disease progression and worsening symptoms. For example, if you get a headache every time you eat corn, the headache indicates a connection between a trigger (corn allergy) and a symptom (headache). Unfortunately, many people may

never realize the connections and will choose to take painkillers to mask the clues and move on. Their healing processes will never begin unless they learn to recognize the unique languages that each body uses to communicate signs of imbalance.

From there, the patient and practitioner can carry on with their work together. As we learned from Sharon's story, even though a patient might know how to reverse his or her condition, it is not always easy to change the behavior. Once the sources of the disease or imbalances are identified, the practitioner's care continues by helping the patient make the vital changes necessary to heal. It is the patient and the doctor's collaboration that will help generate additional support when needed. While there is a significant amount of people that never learn how to reverse their conditions, there is also a large group that chooses to ignore the changes necessary for recovery even when they know how to do it. There are many factors that lead to successful recovery, which we will explore later in this book, but the first step is finding the practitioner armed with the information that will help place you on the path to healing.

CHAPTER 3

“Living” in a Fog

Patients like Derek and Sharon suffered through years of frustration and pain before they were diagnosed with low thyroid function. However, more commonly, people suffering from every underactive thyroid symptom in the book are never diagnosed. It sounds unbelievable, but the truth is that today's standard laboratory screening is often so incomplete that if a patient does not fit an exact mold, he or she is disregarded and never provided treatment for low thyroid function. These patients feel crazy because their experiences and symptoms are never validated, and they are often misdiagnosed with depression or chronic fatigue syndrome—diagnosis catchalls practitioners use when they really mean "I don't know what is wrong with you, and I don't know how to figure it out."

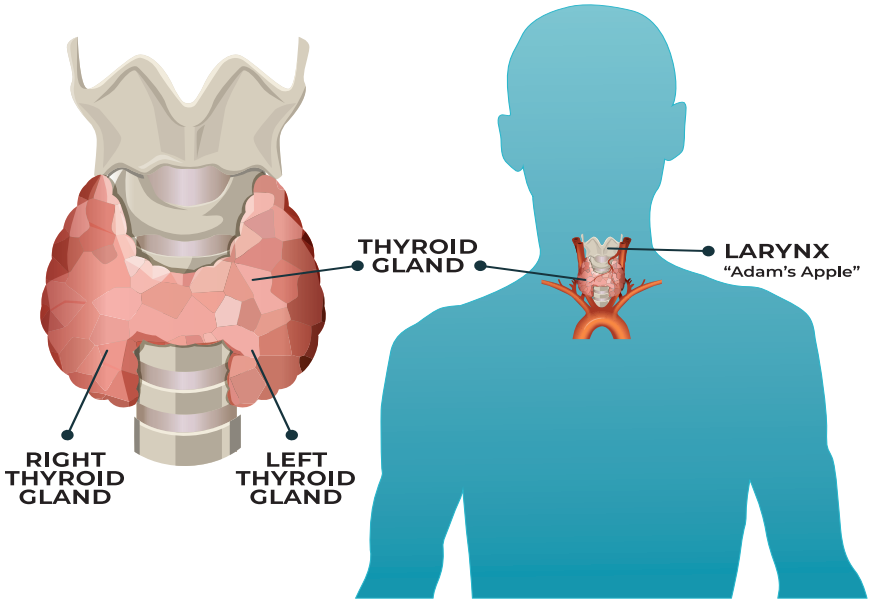
In fact, most patients I eventually treated for low thyroid function had, for years, experienced symptoms such as fatigue, hair loss, dry and brittle nails, depression, low libido, constipation, weight gain, poor concentration, cold hands and feet, poor memory and concentration, headaches, slow speech and movement, and a litany of other underactive thyroid symptoms. However, because they did not stray from the so-called normal laboratory ranges, they were dismissed, and thyroid dysfunction was ruled out. It is important to note that researchers estimate 20% of women and 10% of men have a thyroid imbalance, but only half of these populations are ever diagnosed.

Whether you have already been diagnosed with low thyroid function and still struggle with symptoms or you are thinking "this is me" as you read through this chapter, it is important that you understand the thyroid's functions and processes as well as why you may be experiencing symptoms. This chapter is dedicated to exploring the thyroid and its functions as well as the reasons you may be one of the millions whose condition has been undiagnosed or left untreated. Let's dive in!

What is the Thyroid?

The thyroid is the butterfly-shaped gland at the base of the throat that wraps around the trachea(the windpipe). The thyroid is a gland, meaning it produces chemical messengers that are secreted into circulation and carried throughout the body. These molecules interact with every cell in the body to

regulate metabolic activity and energy production. Thyroid hormone is often referred to as the master hormone because it affects every system in the body. If this system is off-balance, the body cannot properly use food to generate energy, which is reflected by weight gain and fatigue among other symptoms. The thyroid communicates with other glands such as the pituitary and the hypothalamus. While there are many glands involved in proper thyroid function, these three glands create a feedback loop, which determines how much thyroid hormone will be produced and released into circulation.



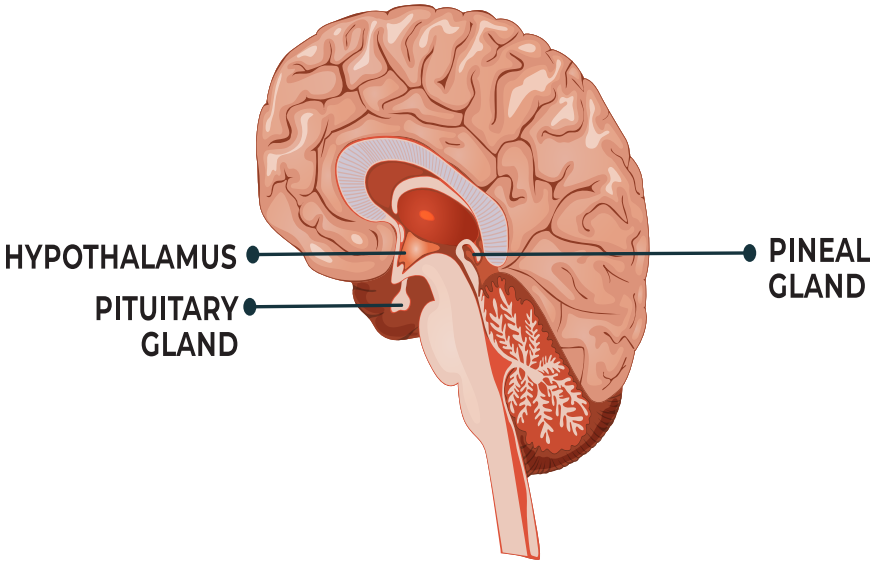
The Production of Thyroid Hormone: A Hormone Cascade

The thyroid cascade, or signaling process, begins in the hypothalamus region of the brain where thyrotropin-releasing hormone (TRH) is produced and secreted. TRH signals the nearby pituitary gland to release thyroid-stimulating hormone (TSH). TSH, as the name indicates, is a hormone that stimulates the thyroid to release thyroid hormone. These acronyms can get confusing, but just imagine the hypothalamus tapping the pituitary gland on the shoulder and saying, "Hey, can you tell the thyroid to pump out a little more

thyroid, please? Things are moving too slowly around here!" When there is not enough circulating thyroid hormone, the process upregulates. When there is too much thyroid hormone floating around, the process downregulates.

Once the thyroid releases its hormones, the process must move through a few more steps before you can feel its metabolic benefits. Most of the thyroid hormone produced by the thyroid gland is inactive upon release. In fact, around 90% of the thyroid hormone that is released into circulation is in the inactive form of thyroxine (T4), and approximately 10% of the hormone released is already in its active form, T3, or triiodothyronine.[1]

This is a very important place to pause and clarify the significance of this process. At this point, the hypothalamus, pituitary gland, and thyroid are working together to produce thyroid hormones in their active and inactive forms. Generally, these are the processes your doctor tests when he or she performs a thyroid panel. This is a pivotal point in which your thyroid may be receiving the right signals and producing the proper amount of thyroid hormone while its downstream processes are breaking down. This is the function your doctor has not tested for. Let's talk about the next steps in optimal thyroid function.



Downstream: Conversion and Uptake

Remember that the thyroid primarily produces inactive T4. This hormone must be converted to T3 to actively and effectively regulate metabolic activity. The conversion to active T3 occurs in peripheral organs such as the liver, tissues in the gut, the brain, and beyond. The liver is an important player in optimal thyroid function. Thyroid function can decrease if the liver is congested or working inefficiently, a concept that will make more sense when we discuss the different factors that reduce thyroid function. For now, it is important to know that the liver is responsible for about 60% of T4's conversion to T3.

The liver is also responsible for manufacturing and secreting a transport protein called thyroxine-binding globulin (TBG). Hormones T4 and T3 attach themselves to TBG to travel through the body via the bloodstream. Comprehensive thyroid testing should look at TBG levels to establish how much of your thyroid is bound by this protein and how much is unbound; however, this is rarely done. This element is another important factor in the thyroid process because bound thyroid hormones are inactive. So, if too much of the hormone is bound or too much of the hormone is in the inactive form of T4, you will not experience the benefits of having adequate thyroid hormone levels.

Let's recap what you have learned thus far, and then we'll add more steps of the thyroid process to your understanding.

- The hypothalamus produces TRH, which tells the pituitary to release TSH.
- TSH talks to the thyroid gland and tells it to secrete a lot of T4 and a small amount of T3.
- T3 is active, and T4 is inactive, so T4 must bind to TBG proteins (made by the liver) and travel to the liver or other tissues to be converted into T3.
- Bound thyroid hormones (T3 or T4) are not active and only free T3 (FT3) can enter your cells and make the metabolic magic happen.

Moving on, let's assume T4 makes it to the liver or peripheral tissues in the gut, brain, and muscles—another step where things can either work well

or malfunction. There are small proteins (enzymes) called deiodinases within the liver and peripheral cells. You may have heard throughout your thyroid journey that there is a connection between iodine and thyroid function. This is because the thyroid gland needs iodine to produce thyroid hormone molecules. However, iodine moieties must be removed from T4 before its conversion into active T3. There are 3 known deiodinases (D1, D2, & D3) that work in different tissues to assist in iodine removal. D2 is the major enzyme that converts T4 to T3. D1 is also capable of performing the conversion but does so at a much smaller rate. D3, on the other hand, has the distinctive task of converting T4 to a molecule called reverse T3 (RT3).

This is important! Reverse T3 is a mirror image of T3 but does not carry out the metabolic processes that active T3 can; however, it loves attaching to your cells' thyroid binding sites and blocking them from receiving active T3. More importantly, traditional providers rarely test for the presence of RT3, which is extremely problematic. If your thyroid processes are running smoothly, but you have too much D3 converting T4 to RT3 instead of active T3, your tests may look normal, but you may feel horrible! If your doctor only tests for total T3 but doesn't account for how much of it is T3 bound to a globulin protein or RT3, he or she is not looking at the whole picture. Ignoring RT3 makes it impossible to pinpoint the problematic step(s) in the process of your thyroid cascade.

Now you understand the difference between the forms of circulating thyroid hormone and the little helpers, deiodinases, that are responsible for molecular T3 or RT3 conversions. It is also valuable to know that there are complementary elements that support the proper function of thyroid production, transport, conversion, and T3's ability to enter the cell. Certain nutrients such as iron, tyrosine, zinc, selenium, and vitamins C, D, E, B2, B3, and B6 are all necessary for thyroid hormone activity. For example, selenium and zinc are necessary for T4's conversion to T3.[2] If the conversion is impaired, the body may not produce enough T3, or it may produce too much reverse T3, blocking the uptake of active T3 into the cell membrane. Once the free T3 is circulating, vitamin A and zinc are necessary for the cell's uptake of T3 into the nucleus where it becomes biologically active. As you will learn later in the book, ensuring your body has sufficient levels of vital nutrients through diet

and supplementation, while also managing stress levels and inflammation, is fundamental in healing and improving thyroid function.[3]

Uptake

Not all T4 is converted in the liver. Some cells, such as brain cells, can uptake T4 and convert it into T3 using D2. This process is enabled by receptors on the cell's surface. Those receptors depend on elements like zinc and vitamin A to function properly.[4] Exercise can also affect the sensitivity of receptors on the cell's surface, and there are genetic conditions that can also reduce the body's ability to absorb thyroid hormones into the cells. This is just one more step in the thyroid process that cannot be ignored when assessing proper function.

Testing for Thyroid Disorders

Now that you understand the general steps in the thyroid cascade, you are probably starting to understand that a complex process such as this cannot be assessed with basic and incomplete lab testing. In fact, many doctors only test for 2 markers: TSH and T4. These tests look at the output of both the pituitary gland and the thyroid. However, if your condition originated in the hypothalamus or during any of the steps that occur after T4 production, you may feel miserable, but your tests indicate that you are healthy.

In another situation, you may have abnormal laboratory tests, but the problem may not be with your thyroid gland. Pituitary or hypothalamus dysfunction may mean that the thyroid is not receiving the proper signals. In this case, the traditional approach to thyroid replacement may help make the patient feel better for a while, but it will not address the real problem.

The other very important factor in lab test interpretation is the laboratory range. Standardized laboratory ranges are often not based on healthy or optimally functioning ranges nor on research. Surprisingly, every lab creates a range of its own based on a bell curve obtained from the patients they test in their area. This means that a typical lab takes the square root of averages and creates standard deviations from those numbers, which results in the "normal range." This method does not produce functional ranges. Most traditional lab

results are irregular and obtained by testing unhealthy individuals. With the current state of chronic disease in Western culture, it is not helpful to measure health against a population of unhealthy people. Instead of using standard ranges, laboratories should assess individuals in functional or optimal ranges. That is my criteria as a functional medicine doctor.

Let's look at a few possible dysfunction scenarios and the testing methods necessary for identifying abnormalities in thyroid function.

Pituitary Dysfunction

The pituitary gland may receive the proper signals from the hypothalamus, but if the body has elevated cortisol levels caused by chronic stress, infection, imbalanced blood sugar, poor diet, pregnancy, hypoglycemia, or insulin resistance, the pituitary may function improperly. The pituitary can "burn out" under constant stress from the conditions above. This means it may not be capable of sending the correct signals to the thyroid gland, which would result in an underactive thyroid and associated symptoms, but the source of the problem is upstream at the pituitary.

Testing: In this case, the TSH would be below the functional range (1.8–2.5) but within the standard range (0.4–5.0). The T4 will be low in the functional range and could also be low in a standard lab range.

Under-Conversion of T4 to T3

Remember that around 90% of the thyroid hormone produced by the thyroid gland is the inactive form of T4. For the cells to receive thyroid hormone and transport it to the cellular nucleus for metabolic benefits, T4 must be converted into T3. Stress and inflammation, among other factors, can inhibit this conversion. Cortisol reduces the body's ability to convert T4 to T3,[5] and inflammation can cause damage to cellular membranes—the site of T4's conversion to T3. Stress and inflammation are a perfect storm for hypothyroidism.

Testing: In a conventional medical setting, the practitioner would most likely send you out the door believing you are healthy because your TSH and

T4 levels would be normal; however, if your T3 levels were tested, they would be low.

Hypothyroidism Caused by Elevated TBG Levels

As you can recall, TBG transports thyroid hormone through the body via the bloodstream. Bound thyroid hormones are inactive and cannot be received by cellular receptors. When TBG levels are high, levels of free thyroid hormone are low, resulting in underactive thyroid symptoms.

This pattern is seen in patients with high estrogen levels. TBG is elevated by high estrogen and often caused by birth control or estrogen replacement medications. Proper assessment of estrogen intake, clearance, and liver function may be necessary to correct the imbalance.

Testing: For a patient in this situation, TSH and T4 levels would be normal. T3 would be low, and T3 uptake (by TBG), as well as TBG levels, would be high.

Hypothyroidism Caused by Decreased TBG Levels

In direct contrast to the physiological conditions above, when TBG levels are low, free thyroid hormone levels will be high. Although it seems like excess free thyroid would cause hyperthyroid symptoms, remember that T3 is not biologically effective until it enters the cell and docks on the nucleus. Excessive amounts of free thyroid hormone can cause cellular resistance. In this case, the cells are no longer sensitive to free thyroid, and receptors on the cell surface do not uptake enough free thyroid into the cell.

This is more commonly seen in people with high testosterone levels, insulin resistance, and polycystic ovarian syndrome.[6] Blood sugar, insulin, and hormonal balance must be restored to correct faulty thyroid function.

Testing: Under traditional testing, TSH and T4 are normal. In functional testing, T3 is high, and T3 uptake and TBG are low.

Cellular Thyroid Resistance

In these cases, cells do not uptake active T3 efficiently. Much like insulin

resistance in cases with chronic inflammation and high blood sugar, thyroid resistance results from cellular inflammation, which can be the result of chronic stress, genetics, and high homocysteine; it is often a combination of all three.[7] Thyroid hormone production isn't the problem here, and TSH will be normal; however, the person will have symptoms. High homocysteine (which effects vitamin A levels needed for cellular uptake) and elevated RT3 indicate this pattern.

Testing: In this condition, all lab results would come back normal because there is currently no specific method to test for cellular receptor function.

Factors Affecting Proper Thyroid Function

The Liver

As I mentioned earlier, the liver is a chief participant in proper thyroid function. Not only does it produce the proteins responsible for transporting thyroid hormones around the body, but also it is a central hub for T4's conversion to T3. Anything that reduces liver function can also affect thyroid function. Therefore, it is critical that the liver is working well. The liver is a primary site for detoxification, so if your body is overloaded with toxins from alcohol, medication, heavy metals, environmental pollutants and chemicals, or more, you may not be efficiently converting T4 to T3.

The Gut

Much like the liver, if the tissues within the gut are damaged, efficient conversion to active thyroid hormone will be slowed. It is extremely common in cases of low thyroid function to see gut or intestinal damage that results in malnutrition, autoimmunity, and a variety of other symptoms and conditions. This will be addressed in greater detail in chapter 6.

Stress

Stress is another component in proper thyroid function. When the body is

in a state of stress, the adrenal glands secrete glucocorticoids such as cortisol. Cortisol revs up the body and prepares it to face the stress trigger whether it be imminent danger or irritating traffic conditions. While cortisol is a potent anti-inflammatory, it can also instigate damage throughout the body. In times of acute stress, cortisol works to support the body by reducing inflammation and suppressing the immune system. Stress also slows down or shuts down digestive and reproductive function to conserve energy. While this function makes sense for acute and short-term stress, long-term stress has similar effects and shuts down vital systems and utilizes resources designated for optimal thyroid function. Cortisol has a relationship to the thyroid in many ways, one of which is its ability to "steal" from the thyroid cascade for its own production, prohibiting the conversion of T4 to T3. The entire stress response has proven its damaging effects on the liver by reducing its capacity to filter toxins, leaving it underprepared to convert T4 to T3.[8]

Now would be a good time to emphasize the role of stress in reducing the body's ability to absorb nutrients. Assume you have an extremely healthy diet filled with whole, nutrient-rich foods. Assume you eat organically, which reduces your intake of toxins. Assume you pay close attention to loading your diet with vegetables, healthy fats, and lean proteins. Now, assume you are doing all of this while under the pressure of chronic stress. As I mentioned above, stress reduces the body's ability to digest food. This function evolved from times when humans were more likely use their "fight, flight, or freeze" instinct; in the stone age, digestion was not necessary if you were being chased by a cheetah. In those situations, stress was intense, acute, and then over. After the body was finished reacting to stress, it went back to its calmer state.

You can see how constant stress becomes problematic if you are constantly experiencing the accompanying physiological responses. Assuming you are eating a bountiful and nutrient-rich diet, chronic stress will not allow your body to utilize the many benefits of the food you've given it because your digestive system has slowed to a crawl. Further, when you are stressed, you need more nutrients to maintain bodily functions. This means you have a higher demand for nutrients but are absorbing less. Remember, this assumes you have an incredibly healthy diet. Can you imagine what would happen if you suffered from chronic stress while running on fast food and caffeine? Your

thyroid wouldn't stand a chance.

Toxins, Metals, Fluoride, and Medications

The environment is flooded with toxins, and many of those make it into our bodies via air, water, food, and surroundings. There are so many chemicals influencing our systems that it would be hard to pinpoint every molecule that contributes to low thyroid function. However, researchers have identified a few. For instance, perchlorates, a chemical byproduct of jet fuel and car airbags, seep into drinking water and reduce the production of thyroid hormone.[9] Toxins like these cause the pituitary gland to work harder, which produces more TSH, which tells the thyroid to produce more hormone.

Pesticides have also been named culprits in thyroid dysfunction. One study found that women married to men who used pesticides in daily agricultural work were at a much higher risk of developing thyroid diseases.[10] Many studies implicate fungicides, insecticides, and other pesticides as dangerous chemicals that reduce production of T3 and T4.

Heavy metals found in the environment and in common materials like vaccines, dental fillings, paint, or deodorant all have a damaging effect on the thyroid. Some of these metals affect the thyroid by pushing the immune system to attack its own tissues, creating an autoimmune response. Other elements such as mercury reduce the availability of selenium, which reduces deiodinase enzyme activity, rendering less active T3.[11]

Fluoride exposure is another potential concern for those facing underactive thyroid symptoms. There is much debate over the benefits and risks of fluoride, but studies show that those with high levels of fluoride in their systems have significantly decreased levels of TSH.[12] This is related to fluoride's ability to displace iodine in the body.[13] Iodine is a vital part of the thyroid's hormone production, so elevated levels of fluoride can reduce thyroid function.

Many medications are known to interfere with thyroid function. Some medications like glucocorticoids, dopamine agonists, or somatostatin analogs can reduce the production of TSH. However, newer drugs that directly affect the nuclear receptors in the cell are known to cause clinically significant hypothyroidism.[14] For a functional medicine practitioner, receiving a

thorough history of a patient's medication use is vital to understanding how pharmaceuticals may have impacted thyroid activity.

Infection

There are many ways infection can reduce thyroid function. In theory, any infection that causes long-term inflammation, chronic stress, or reduced digestion can affect the thyroid. However, infections such H. pylori (remember Kenny?), Yersinia, Borrelia, Candida, and Hepatitis C are some of the known molecular triggers for thyroid dysfunction and thyroid autoimmunity.[15]

Celiac Disease

There is a relationship between celiac disease, an autoimmune condition in which the body's immune system attacks intestinal cells, and autoimmune thyroid disorders. Research has shown an increased risk of autoimmune thyroid disorders in those with celiac disease and vice versa.[16] Some scientists believe this relationship may be attributable to similar genetic predispositions for both conditions. Regardless, according to Dr. Alesso Fasano, a leading expert in celiac disease, about 50% of those newly diagnosed with celiac disease also have thyroid disease.[17]

While we will take a closer look at autoimmune thyroid conditions in later chapters, it is important to understand that individuals with one autoimmune condition have a higher risk of developing others. Especially in the case of celiac disease, there is an understandable mechanism for this relationship. The damage that occurs to the intestines under celiac disease creates gaps between the cells in the intestines. This allows undigested food to escape into the bloodstream. Undigested food triggers the immune system to attack because it assumes the food molecule is a foreign invader much like a virus or bacterial infection. If your system is under attack every time you eat, your body is in a constant state of inflammation. Additionally, when the intestines are damaged, nutrients are not properly digested or absorbed, leaving behind an increased risk of malnutrition.

There may be a clearer explanation for the relationship between celiac

and autoimmune thyroiditis. The body produces a specific antibody in celiac patients called anti-tissue transglutaminase (tTG). These antibodies all but disappear when a celiac patient follows a strict gluten-free diet. However, these antibodies can bind to the thyroid gland, which can trigger an immune response to the thyroid tissue.[18] This can teach the immune system to attack thyroid tissue even after gluten is eliminated. It's no surprise that anti-thyroid antibodies are more common in individuals with celiac.[19]

Low-Calorie Diet

Low-calorie diets are extremely dangerous for thyroid health. When the body does not receive enough energy, it defaults to a state of stress (starvation), and the adrenals produce cortisol. Remember that cortisol, over time, can cause a lot of damage to the body. When we do not consume enough calories, not only are we malnourished, but also the body pumps out cortisol to force the cells to give up stored sugar so that we have enough energy to function.

One study looked at thyroid function under a very low-calorie diet. Researchers found that women on a very low-calorie diet had a 66% reduction in T3 and a 27% increase in RT3.[20] To refresh your memory, RT3 is not active. So when the body is fed a low-calorie diet, it decreases production of active T3 and increases production of inactive RT3. Often, when my patients share their history with me, they have bounced between low-calorie dieting and binging. This is disastrous to metabolic activity because it forces the body to slow its metabolic rate due to reduced thyroid hormone production; then it tries to rev itself back up when it is finally fed.

Inflammation

Inflammation goes hand in hand with thyroid dysfunction. In part, this has to do with the underlying cause of the thyroid condition: stress, nutritional deficiency, and autoimmunity. All of these factors can cause inflammation or be a result of inflammation. Therefore, pain and discomfort are common when suffering from a low thyroid disorder.

Remember my patient, Erin? She was in so much pain that she was taking

painkillers daily, and eventually, her doctor prescribed medical marijuana to help her get some sleep. This is not abnormal due to the ever-increasing inflammation that accompanies thyroid disorders. One study found that even those with subclinical hypothyroidism who experienced very quiet symptoms had increased C-reactive protein and insulin levels.[21] Both of those markers indicate systemic inflammation.

Misdiagnosis

As you learned from the patient stories in chapter 1, there is rarely a clear-cut and stand-alone case of low thyroid function. While many people suffer from an underactive thyroid along with other imbalances, there are cases in which low thyroid function is diagnosed but the primary dilemma, such as adrenal fatigue or blood sugar imbalance, is overlooked. There are also cases in which symptoms are misdiagnosed as depression, chronic fatigue, or bipolar disorder, and the thyroid imbalance is left unchecked.

Thyroid hormone is so important to the proper functioning of metabolic processes—it can affect everything from sleep, mood, energy, and weight to skin, hair, bowel movements, and nails. In many of the cases in chapter 1, patients were prescribed multiple medications for symptoms related to low thyroid function before their actual thyroid condition was addressed. Contrastingly, the thyroid gland is often labeled the cause of a litany of symptoms when in fact, adrenals, digestion, or inflammation are the chief problems.

For this reason, patients must be informed and in touch with their bodies and symptoms. Utilizing that awareness while working with a practitioner who is educated in the physiology of thyroid function lends promise for accurate testing, proper diagnosis, and effective treatment.

CHAPTER 4

Getting to the Bottom of Your Diagnosis: The Cause

The last chapter emphasized the complexity of underactive thyroid disorders and the many influences that affect thyroid function. At each step in the thyroid cascade, there are numerous circumstances and factors that support or interfere with thyroid-related processes. We've covered some of the major elements that can wreak havoc on your body and reduce thyroid activity: nutrients, toxins, stress, and infections. With these many considerations, you may be stunned to learn that the number one cause of low thyroid function is not any of the usual suspects we've already covered. The leading cause of low thyroid function is actually the autoimmune condition, Hashimoto's thyroiditis.

What Is Hashimoto's?

Hashimoto's thyroiditis (HT), first described by Hakaru Hashimoto in 1912, is the autoimmune condition that occurs when the immune system attacks the thyroid tissues. In this situation, the immune system mistakes thyroid cells for unfamiliar invaders and does what it is designed to do: launch an inflammatory response to destroy pathogens. When your immune system focuses on a foreign invader, this is a very helpful process for keeping you healthy. However, autoimmunity occurs when the immune system turns on itself.

In the case of Hashimoto's, the immune system targets the thyroid, and the inflicted damage renders the thyroid less capable of producing thyroid hormones. Over time, this destruction results in progressive hypothyroidism or low thyroid activity. Although thyroid antibodies are often untested in individuals exhibiting hypothyroid symptoms, researchers suspect that approximately 90% of low thyroid function sufferers have autoimmune thyroiditis.[1] This is a staggering fact when considering that treatment protocol for autoimmunity is vastly different from the standard protocol for underactive thyroid treatment, but standard care all but ignores this reality. Millions of people suffering from low thyroid function are being treated with thyroid replacement therapy alone while a disease is manifesting underneath the surface—a disease that will eventually cause debilitating and far-reaching symptoms.

Statistics range on HT's prevalence in the general population. Its estimated range is 2–20% in women and up to 10% in men with incidence on the rise.[2] Women have a 5–10 times higher prevalence of HT over men.[3] To compound these staggering numbers, HT is very often found present alongside other autoimmune disorders, and the current rates suggest that over 100 million people are afflicted with over 80 different autoimmune diseases.[4] Although conventional and functional medical communities both agree that HT is the number one cause of low thyroid function, most patients are not thoroughly tested for this condition. Individuals often exhibit muted symptoms for years or decades as the disease slowly progresses. Because underactive thyroid symptoms are easily mistaken for other conditions, this disease is often overlooked as the source of fatigue, weight gain, inflammation, and more.

This issue is all too familiar for new mothers who have a higher risk of developing overt HT symptoms. Patients are too frequently dismissed as exhausted parents or are treated for postpartum depression. Likewise, women moving into perimenopause are given lackluster explanations that suggest their symptoms are common byproducts of hormonal changes and aging. These excuses are inadequate at best; women who face this problem may find their bodies in an active state of thyroid destruction.

Developing Hashimoto's Thyroiditis

As I previously mentioned, it can take years to develop overt symptoms of HT while the disease's progression goes unnoticed. Over time, this disease can become debilitating. Unlike other causes of low thyroid function, the tissue destruction that accompanies HT can make reversing an underactive thyroid significantly more difficult to correct. Throughout the course of HT, individuals can develop hypothyroidism or hyperthyroidism. During times of autoimmune flares, severe tissue damage ensues, causing a state known as a "thyroid storm." Hyperthyroid symptoms can persist because excessive thyroid hormone is released from destroyed cells. While symptoms of low thyroid function reflect a slow metabolism, symptoms of hyperthyroid can be much more terrifying. Acute damage to the thyroid gland may cause symptoms such as

- racing heart rate (tachycardia) that exceeds 140 beats per minute and atrial fibrillation
- high fever
- persistent sweating
- shaking
- agitation and anxiety
- restlessness
- confusion
- diarrhea
- unconsciousness (in its most severe state)

Although it's a possible symptom, not everyone with HT experiences overt hyperthyroidism. For many, the disease progression is slow enough that excessive amounts of thyroid hormone are not "dumped" into the system but secreted gradually over time.

How Do I Know If I Have Hashimoto's?

We have reviewed a myriad of symptoms associated with HT, and while prevalence is extremely high for those with low thyroid function, your symptoms are not enough to diagnose HT; these symptoms share many commonalities with other conditions. Luckily, there are simple and effective ways to test for HT. In conventional medical settings, physicians test for TSH and T4. They assume low T4 levels and elevated TSH levels indicate HT. This is based on the idea that if the thyroid is being destroyed, the pituitary will send louder signals (more TSH) to the thyroid to prompt extra T4 production.

There are flaws in this assumption, though. First, autoimmunity ebbs and flows. This means that when there is no acute damage, your thyroid may be able to compensate, especially in the disease's early phases. The second major flaw is a concept I covered in the previous chapter: It is absurd to measure true thyroid health using standard laboratory ranges. Not only do ranges shift based on age, gender, and size, but also a range based on optimal function is very different than a range based on the health of an average population, especially given the prevalence of HT within said average population.

While cases of HT would most likely see TSH and T4 levels out of optimal range, a better way to test for thyroid autoimmunity is by looking at antibodies. Due to the nature of autoimmunity, which can progress slowly over time and swing between silent and active stages, the indication of antibodies tells us that the system has "tagged" thyroid cells as dangerous and has targeted them for destruction.

Indications for autoimmune thyroiditis include thyroid peroxidase antibodies (TPO Ab) and thyroglobulin antibodies (TgAb). The most commonly elevated antibodies are TPO, and while TgAb is less common, it should always be checked. A positive test indicates autoimmunity.

Causes and Triggers of Hashimoto's

Autoimmune diseases like HT are multifactorial, meaning the disease has no primary cause. While there are endless options for the imbalances and conditions that contribute to HT, Dr. Alessio Fasano, a leading expert in autoimmunity has found three commonalities among those suffering from autoimmunity:

1. Genetics
2. Environmental triggers
3. Intestinal permeability/leaky gut

Let's address each of these factors in more detail to better understand how your body may have developed HT.

Genetics

While conventional health care tends to blame everything on genetics, it is important to understand that genetic framework is just that—framework. Scientific strides made over the last few decades in the field of genetics has revealed that although we come with a distinct DNA code, genes can be turned on or off by various factors. This research occurs in the field of epigenetics, which suggests that while our DNA may make us more susceptible to

developing certain diseases, that is not where the story ends. We also harness control over whether the gene code for our specific susceptibilities is turned on and makes our bodies vulnerable to disease. This is, in its true essence, the reason that nutrition, exercise, stress, toxins and the like can determine our health risks. Later, we will dive deeply into how this genetic reality gives patients the power to regain control and heal from HT.

Environmental Triggers

Expanding on that thought, every person has environmental triggers that can contribute to disease. While overt factors like smoking, stress, or heavy metals can affect health at the genetic level, other triggers interact with our immune system and teach it to react to specific molecules. Infections and food allergies are examples of this type of trigger. Environmental triggers can also be caused by lack of sleep, lack of food (low-calorie diets), lack of nutrients (deficiency), and lack of activity. When the body does not get what it needs to function, it compensates by begging, borrowing, and stealing from systems that it deems less necessary for survival.

Intestinal Permeability

Intestinal permeability is a common mechanism in individuals with autoimmunity. When you consider that your digestive tract is tasked with screening a consistent magnitude of foreign molecules from food, contaminants, bacteria, viruses, and fungi throughout each day, it is no wonder that this system breaks down so frequently.

When discussing autoimmunity and gut health, it is important to note that approximately 70% of the immune system originates in the gut. This, by design, makes a lot of sense based on the information above. Cells within the intestines are the gatekeepers to the delicate world on the other side of that intestinal wall. The digestive tract not only has to identify potential dangers to digestion and absorption, but also it must break down the healthy elements and transport it across the intestinal barrier into the bloodstream where it will be circulated throughout the body. This is a complicated and heavy job!

The breakdown of this process results in autoimmunity and allows for disease progression. One of the most profound problems in this situation is that the digestive cells, which should create a continuous barrier, begin to break apart. There are areas between cells called "tight junctions," named for the way in which they bind cells tightly together. These areas prevent undigested foods or foreign particles from entering the bloodstream. When tight junctions are damaged, microscopic spaces open and render the intestines defenseless against the outside world. This condition is also referred to as a "leaky gut" for obvious reasons. From here, an eruption of problems can develop.

A Closer Look at Links to Hashimoto's Autoimmune Thyroiditis

Gluten Sensitivity

In the previous chapter, I briefly covered the relationship between celiac disease, HT, and other autoimmune conditions. This relationship occurs for a multitude of reasons. Some scientists propose that there are genetic susceptibilities common between celiac and HT patients. Another convincing argument is that the gluten protein (found in wheat, barley, and rye) breaks down tight junctions in everyone's intestines and leaves even those without autoimmunity susceptible to an immune response!

Studies have shown that when a human eats gluten, tight junctions between intestinal cells loosen, leaving the circulation exposed to pathogens.[5] Now, for some healthy individuals who do not have other compounding health issues, this may be a transient condition that goes unnoticed and does not provoke symptoms. However, for many others, this damage to the intestinal barrier can perpetuate disease. In celiac disease specifically, the immune system is triggered by gluten and responds by attacking the intestinal cells, not only breaking down tight junctions but also ruining the "brush border" where macronutrients are digested and absorbed. This means that the body is in a constant state of inflammation and malnutrition as a result of the large, undigested food particles entering the system.

In most cases, people with celiac develop additional food allergies due

to their leaky gut. The immune system switch is "ON" as a result of gluten consumption, and the body is left to identify and fight food proteins that enter circulation undigested. In this process, the immune system learns that other foods are dangerous, and additional food sensitivities mount. Celiac or gluten sensitivity (immune response without the severity of intestinal damage to warrant a celiac diagnosis) may be the primary trigger for HT, or it may just be one of many. Regardless, everyone with HT would benefit from removing gluten from their diets. I have never seen anyone reverse HT without doing so.

Micronutrient Imbalance

There are countless micronutrient imbalances that can affect the immune system, gut integrity, inflammation, and autoimmunity. However, there are a few great examples that will illustrate the importance of a proper diet and a healthy gut for Hashimoto's patients. We will cover this more thoroughly in chapter 6.

Zinc

Over two billion people have a Zinc deficiency, and it is extremely prevalent in Westernized cultures.[6] Zinc deficiency is often caused by poor intake and exacerbated by poor absorption; however, zinc is necessary for countless physiological processes such as DNA synthesis, cellular growth and division (consider intestinal cells), and the development and integrity of the immune system.[7]

Glutamine

Glutamine is essential for small intestine function, enhancing cell survival, strengthening tight junctions, and providing anti-inflammatory support.[8] Glutamine is primarily found in animal protein, so vegans and vegetarians suffering from autoimmunity often experience improved gut health after reintroducing animal proteins to their diet.

Vitamin D

Vitamin D has endless functions in the body and is another nutrient many people lack, especially those who live in environments with little sunlight. Vitamin D is synthesized in the skin from a physiological reaction to sunlight exposure. However, it can also be obtained by supplementation or in small quantities in your diet. Vitamin D is especially important for those with autoimmune disorders due to the direct and indirect regulation of immune cells.[9]

Iodine

Iodine is a tricky micronutrient for people suffering from low thyroid function. Iodine was once thought to be a beneficial treatment for those with Hashimoto's, but research now indicates that supplementing iodine or increasing dietary intake can increase risk and exacerbate symptoms. In one large Chinese study, individuals with a high intake of iodine had a higher risk of developing HT than those who consumed low levels, indicating that while iodine is necessary for a healthy thyroid, excess intake may become harmful.[10]

Selenium

Selenium is a necessary nutrient for thyroid processes as was noted in chapter 3. It is vital in the process of converting T4 to T3. However, it may also be involved in the immune response. Interestingly, one study found that when deficiencies were resolved with supplementation (200mg/day), immune TPO antibodies were reduced. When the supplementation was suspended, antibodies increased again.[11]

Infections: Parasites, Viruses, Bacteria, and Fungi

There are a few mechanisms in which infections can trigger and perpetuate autoimmunity. One well-accepted line of thought is something called molecular mimicry. It is believed that most autoimmunity is triggered by an

infection of some sort, possibly more than one. The immune system recognizes the pathogen, launches an attack and then keeps a memory of the protein structure of that pathogen. This is the beautiful yet dangerous capacity of the immune system. Our immune systems have "memory." Suppose that one of these infections is similar to one of our own cellular proteins. It is plausible that the immune system may confuse our cells with the pathogen they are tasked with destroying.[12]

While molecular mimicry is one issue with regards to infection, another issue is the chronic inflammation that accompanies the initial infection. One aspect of autoimmunity is called self-tolerance. This is our immune system's ability to "tolerate" our own cells. Chronic infections and sustained immune response lead our immune systems down a path of confusion in which they can lose self-tolerance. This can be likened to a stressed-out parent, eventually losing tolerance with their kids and blowing up! This is what is happening, in effect, in the body of someone managing autoimmunity. The immune system is overloaded and eventually loses its "cool." Moving forward, the immune system is out of balance and life situations like pregnancy, hormonal changes, stress, deficiency, and trauma trigger immune flares. Part of the healing process in autoimmunity is rebalancing the immune system to regain self-tolerance.

Microbiome and Small Intestinal Bacterial Overgrowth (SIBO)

The community of microbes that live within the gut (primarily in the colon region) plays a massive role in immune system regulation, intestinal barrier integrity, and nutrient production and absorption. However, antibiotics, a poor diet, and toxic exposure can transform the community of healthy microbes into toxic microbes. When this occurs, there are many consequences that decrease health and increase one's risk of contracting diseases.

Imagine you have a military of beneficial little bugs that live throughout your digestive tract. Much like a true military, everyone has a specific job and place. At times, enemies may try to attack your territory, but the military is strong and holds the invaders at bay, making sure that they cannot build on

domestic soil.

If your military takes a giant hit, which could be caused by medications like antibiotics, a diet high in sugar and refined carbs, a diet absent of important fibers, toxic exposures to heavy metals or carcinogens, etc., you may not have a sufficient amount of soldiers to fend off the enemy. From there, an invasion will occur; the enemy can take over the territory, and the original (healthy) military is diminished.

This is commonly seen in those with autoimmunity. It's unknown as to whether this is a cause or effect of an autoimmune process, but there is a correlation, and it must be addressed. One of the unhealthy growth patterns regularly observed is fungal overgrowth such as Candida albicans. Candida overgrowth is on the rise likely due to the increasing number of people with diminished immune capacity. Candida is now the second most prevalent fungal infection worldwide.[13] Candida, when overgrown, can cause a multitude of negative symptoms beyond an inflamed immune system. These include pain, increased food allergies, and increased blood alcohol level. The last symptom is quite interesting because Candida expels ethanol as a byproduct of metabolizing sugar, so it is plausible to feel intoxicated, dizzy, or exhausted after eating sugar when dealing with Candida overgrowth. Candida can enter the bloodstream through a leaky gut and become a systemic problem, even lodging in peripheral tissues.

Another common problem seen in the guts of those dealing with autoimmunity is SIBO (small intestinal bacterial overgrowth). SIBO occurs when there is an overgrowth of bacteria in the upper intestines. When this occurs, there are additional assaults on the intestines. Interestingly, the use of levothyroxine, the popular thyroid replacement hormone used for low thyroid function patients, increases the risk of contracting SIBO.[14]

Food Sensitivities and Cross-Reactivity

Alongside gluten, there are many other proteins or food molecules that can cause potential harm to a person with autoimmunity. Remember that a leaky gut is a foundational dysfunction for those with autoimmune disorders, so the logical progression is that increasing amounts of undigested food may enter

the system and cause an autoimmune response. A person with autoimmunity may also have a predisposition to food allergies and sensitivities for other reasons involving the immune system.

Another concept in autoimmunity is cross-reactivity. Cross-reactivity occurs when the immune system recognizes similar molecules as dangerous. Not only can this happen between similar molecules in food, but also it can occur between airborne molecules like pollen and food molecules.[15]

Assume you have a gluten intolerance, and your body has learned to respond to gluten. You may eat foods or be exposed to other molecules whose structures are similar to that of gluten, so when the body learns to attack gluten, it also learns to attack proteins that are similar. This invokes a stronger and more profuse immune response. Lactose is another common "trigger" molecule. One study found that HT patients with lactose intolerance had a significant decrease in TSH after removing lactose from their diets, indicating that the thyroid did not need as much prompting to produce hormones as was necessary when lactose was present in the diet.[16]

Risk Factors

Sex. Women are much more likely than men to develop Hashimoto's disease along with all autoimmune diseases. Researchers have investigated the role hormones play in the development of autoimmune diseases.

Age. Hashimoto's disease can occur at any age, but it more commonly occurs during middle age.

Other Autoimmune Disease. Having another autoimmune condition such as such as type 1 diabetes, scleroderma, rheumatoid arthritis, or lupus increases your risk of developing additional autoimmunity like Hashimoto's disease. Likewise, having HT increases your risk of developing other autoimmune conditions. This is likely due to a combination of factors including genetics, intestinal permeability, and a dysregulated immune system.

Radiation Exposure. People exposed to excessive levels of environmental or medical radiation have a higher risk of developing Hashimoto's disease.

What Is the Treatment, and Is There a Cure?

As I have touched on previously, traditional allopathic approaches to diagnostics include testing T4 and TSH to look for abnormal hormonal levels. If the physician is prompted to dig deeper, they may test for antibodies. From that point, conventional or allopathic practitioners are most likely to treat HT using a synthetic thyroid hormone replacement; they might even move to immunosuppressant drug therapy if the severity of the symptoms requires. As additional symptoms develop, "Band-aid" prescriptions may be added to mask symptoms like mood imbalances, pain, and fatigue.

This conventional approach is the reason that HT is considered a "chronic disease." However, as a functional medicine provider, I can tell you that Hashimoto's does not have to control your life and that with comprehensive testing, customized treatment, and individualized care, you can absolutely recover from HT and live a healthy and energetic life. In chapter 2, I shared a few stories about patients who implemented functional medicine treatment protocols to address their very unique imbalances.

By using functional medicine, we strive to identify the root cause of the symptoms by assessing the clues each patient gives us, which tells us the origins of their condition. Then we aim to rebalance the body so that it is capable of healing. We are tasked with educating our patients so they can carry on in great health throughout the rest of their lives. This takes time, patience, and commitment. Using nutrition, detoxification, supplementation, lifestyle modifications—and when needed—pharmaceuticals, we can coach the body into a balanced state of well-being. The functional medicine approach is unique to each patient and cannot be replicated from person to person. In the next chapter, I will share the evidence-based techniques that functional medicine practitioners like myself implement to coach our patients towards healing.

CHAPTER 5

Addressing Chronic Illness: A Functional Medicine Approach

Functional medicine (FM) provides a different approach to health care, as it focuses on restoring a patient's health rather than simply managing his or her disease. This style of health care is based on scientific methodology aimed at prevention, early assessment, and finding the root of a patient's problems. If I had to break it down simply, I would say that practitioners trained in functional medicine ask a basic question that other health care providers typically don't: "Why?" This question is the foundation of functional medicine. Instead of combining symptoms and lab results into a diagnosis and then prescribing a pharmaceutical or surgical intervention to mask or improve the symptoms, functional medicine practitioners use symptoms and diagnostics as their launching point, not their landing pad.

At the base of every symptom is a root cause or many root causes. As I brieflymentioned earlier in this book, a symptom is the body's way of alerting us that something is not right. Consider how the body communicates when you touch a hot stove. The initial alarm is pain. This response happens very quickly by way of neural communication from your hand to your brain, telling you to remove your hand from the stove to prevent further damage. In this example, you know what caused the symptom of pain. From that point, your body will respond to the damage with redness, swelling, pain, and heat—signs the body is utilizing its ability to self-heal. However, what happens when you experience an undesirable symptom but don't know the cause? Your body will undergo the same process of pain, heat, swelling, and redness, albeit perhaps under the surface. If the solution is to take painkillers or other drugs, you have done nothing to resolve the assault. In fact, you have essentially hit "snooze" on your body's alarm. This would be the equivalent of keeping your hand on the stove and merely taking morphine to cover the pain; eventually, you could face irreparable damage.

In FM, the essential goal is to restore and maintain optimal health. However, this is never as obvious as removing our patient's hand from a stove. Instead, we begin with a heap of symptoms, stories, lab results, and other clues that drive our critical thinking and investigation until we establish the root of our patients' suffering. From there, we launch a treatment protocol aimed at restoring balance. This process is complex and takes a deep and thorough understanding of physiology and biochemistry. It also takes an open mind that

understands the countless influences over health and disease. This approach requires patience, humility, and a willingness to partner with our patients and actively engage in their healing processes.

Testing the correct biochemical markers for Hashimoto's thyroiditis, for example, reveals an essential piece of information. There should be a drastic difference between a treatment plan for someone with autoimmune thyroiditis and a treatment plan for someone whose low thyroid function is the result of something else. In conventional health care, doctors continue to treat the patient as though they have a thyroid problem when in reality, the patient has an immune system disorder. It is impossible to stop thyroid damage with a thyroid hormone. At best, this approach can only mask the symptoms for a short period of time. Instead, HT must be treated for what it is—an unruly immune system causing systemic inflammation and tissue damage. At the base of that understanding, there are a series of steps we can take to tame the immune system, prohibit further tissue damage, and restore health.

My patients' stories in chapter 1 illustrate how no two people are the same. Every person who comes to my office has a unique genetic code and distinct exposures and influences that have resulted in their current state of well-being. It is my job to assess their complex physiology and background without relying on diagnostic tools alone.

This often proves significantly more effective than a conventional approach. For example, In a conventional setting, a doctor may see a patient who reports having upper abdominal pain, acid reflux, and discomfort alongside chronic pain and weight loss. An allopathic (conventional) doctor, may ask when the symptoms began, so let's assume the patient says the abdominal pain began sporadically a year prior and that the chronic pain began in the last few months. In a conventional setting, the doctor may see these symptoms as distinct and unrelated. The doctor may continue his or her line of questioning to note whether anything happened around the time of onset. If the patient does not report anything, the doctor will most likely prescribe an anti-inflammatory for pain and a proton pump inhibitor (PPI), like Prilosec, to reduce stomach acid.

Now, imagine this patient visits my functional medicine clinic. My assumption would be that these symptoms could be related and may have a similar root. However, I would also have to leave my mind open to the

possibility that there may be many root causes and a lack of association. The point is that my mind is open when I begin the investigation. Functional medicine practitioners are trained in a methodology that helps them become the most effective health care providers possible. We are educated to uncover important clues and make connections in finding the source of our patients' disease. The acronym for this approach is "GO TO IT."

Initiating Care

Gather

Before I interact with my patients, I prepare to be present and engaged. This means that before entering the examination room, I gather myself. This step is essential in "hearing" my patient and responding accordingly. Imagine your doctor enters the room stressed from a previous interaction with another patient or a fight he or she had with his or her spouse. How focused will the doctor be on you and your needs? Sadly, this is all too often the case with many providers who are tasked with seeing 5–10 patients per hour. In functional medicine, a patient visit commonly lasts 30–90 minutes depending on the goal of the appointment.

Attentiveness for this length of time requires preparation on the practitioner's end. Practitioners may initiate a breathing exercise, short meditation, or another routine that primes them to begin the appointment with a clear mind.

The other important element in this phase is gathering thorough and complete information from the patient. It is imperative that the practitioner uses his or her detective skills to ask the appropriate questions and understand as many facets of the patient's life as possible. Let's take the example of the patient I described earlier. In an FM appointment, I would be tasked with understanding the symptoms and the degree to which her symptoms may have changed over time. I might ask, "Can you remember the first time you felt abdominal pain?" or, "Prior to experiencing chronic pain, did you ever experience occasional pain, and if so, how would you describe it?" From there, we would begin to work backward.

In FM, there is an information collection method called a timeline, which doctors use to recreate the story of a patient's life. This timeline begins at preconception. While this may seem drastic, health is not only influenced by interactions with the environment after birth but also by the environment in utero, which can positively or negatively affect long-term health.[1] Information about a patient's birth such as a mother's smoking habits, a severe infection during pregnancy, or birth via C-section offers valuable information about health risks and susceptibilities. From there, other clues like childhood allergies, trauma, places they lived or traveled to, career choices, and relationships all help FM practitioners piece together the evidence that enables them to zero in on the root cause(s) of their patients' suffering.

This process also creates space for our patients to begin making connections between their symptoms and experiences. In the case of my patient with abdominal discomfort and chronic pain, assume that she shared with me that 5 years prior, she spent 6 months in India. This may seem unrelated to her current situation because she did not experience symptoms until 3 years after returning. However, with this new information, I might consider parasitic infection as a potential cause. Knowing that this type of infection can take years to manifest overt symptoms or trigger an autoimmune response, my ears would perk up. I may ask additional questions such as, "When you were abroad, did you ever get sick or eat something that initially did not sit well with you?" A light bulb may flash over my patient's head while recalling that she had a 3-day stomach illness in India. This information may be unrelated to her symptoms, or it may be the underlying source of her health concerns. The point is that the doctor must be willing to dig into the story if they want to see the whole picture—a task that is all but impossible in 5–10 minutes.

This is the point of fully gathering a patient's story. It is not my job to mask symptoms; it is my job to identify what is causing the symptoms. From there, the work can begin.

Organize

The next phase of a thorough investigation is to organize the timeline. Much like a detective organizes the clues of a crime to create a scenario that

makes sense, the FM practitioner must do the same. In this case, let's imagine that the patient had a healthy birth, childhood, and beyond. Let's plug into the time when her mother died two years after her trip to India, an extremely traumatic experience for our patient. I would add that she reported taking anti-inflammatories daily for over 6 months and that she believes her symptoms have progressed over the last 2 years from minor to debilitating at times. I would note that her weight has dropped without explanation—over 10 pounds in 18 months.

There is another tool that we use in FM called the matrix, which helps us visualize the web-like connectedness of the body's systems. This is imperative because unlike allopathic health care, we approach the body as a dynamic whole. We know that a problem with the immune system may affect the neurological system or that an infection in the gastrointestinal tract may increase one's risk of cardiac damage. It is important that I take the information from the timeline and indicate the systems that may be involved and imbalanced. This helps me assess the diagnostic tests that I must use to explore the origin of my patient's problems.

Tell

Before completing this initial assessment, I recount the timeline back to the patient. While this may seem redundant, it accomplishes two critical aspects of care. First, it allows the patient to run through his or her story one more time and ensures that neither of us missed any important details. It may foster a deeper look at one specific point in time or require that we add more detail. Second, by retelling the story, the patient benefits from knowing that his or her doctor has actively listened. Active listening helps build trust and rapport, which both patient and practitioner must establish to successfully move forward.

Order the Priorities

As a doctor, it can be tempting to order every test available to help the patient faster. However, that course of action can be extremely costly and inefficient.

This phase of the FM model is about prioritizing the course of action. Here the doctor must decide which piece of information is most important to pursue and how to best examine that data. In this patient's case, it would be important to test for parasites and autoimmunity while also looking at other markers that indicate infection and inflammation. Based on the results, we would have a more refined course so that we could dive deeper into the root cause.

Initiate Assessment and Care

Here we initiate a plan for testing and treatment. Assume that we determined that the patient had a parasite, chronic inflammation, damage to the digestive tract, and a host of immune imbalances, which resulted in a positive rheumatoid arthritis test. Throughout this phase, we would engage in a treatment plan to kill the parasite, heal the gut, and rebalance the immune system. This plan would encompass the patient's genetics, family history, lifestyle, environment, diet, support systems, and more. The plan would aim to heal the body and support the mind and spirit throughout the process. Healing is not easy, as it can require that the patient make many changes to habits developed over decades, so it is imperative to take this process seriously and manage it gently.

Track Progress

The tracking phase is very dynamic. The patient and doctor work together to implement a plan and then respond as the patient progresses. Treatment may be adjusted based on the tracking process. The care remains active and is implemented as frequently as needed until the patient's symptoms resolve and testing indicates that the system is rebalanced. This period can take weeks, months, or years depending on the extent of damage.

The FM Approach to Managing Hashimoto's Thyroiditis

For any patient struggling with chronic disease, a successful treatment

is tailored to address his or her individuality. Hashimoto's thyroiditis is no exception, and while every treatment may have some similarities, the aim will always be to correct the unique root causes that have led to an imbalanced immune response and tissue damage.

In assessing a patient's history and creating a timeline, there are some specific clues that lead an FM doctor towards creating a specific treatment design. These are called antecedents, triggers, and mediators. Let's use the example of my patient, Stephanie, to better understand these factors and how they lead to imbalance and disease.

Antecedents, Triggers, and Mediators

Remember how Stephanie from chapter 1 spent much of her childhood alone, feeding herself processed food and watching TV? In taking Stephanie's history, she also recalled having chronic ear infections that were treated with regular prescriptions of amoxicillin. Stephanie also divulged that she had a family history of type 1 diabetes on her father's side, indicating a genetic basis for autoimmunity. These aspects of her early life serve as antecedents—factors that create a fertile ground for systemic imbalance. These specific antecedents notified me that, as a child, she was likely malnourished and had sustained damage to her gut due to her continuous exposure to antibiotics. This history increased her risk of developing an immune system imbalance.

Stephanie recounted feeling "great" until her 30s when she was balancing taking care of small kids, a stressful career, and running marathons. However, after deeper questioning, Stephanie confessed that she had not always felt great but that she had developed many habits that had allowed her to push through periods of pain and low energy. This phase of her life further depleted her body as well as any reserves that she may have had. In her body's efforts to keep up with her pace of life and her obligations, she was functioning on cortisol and not enough rest or good nutrition. These years of stress were a trigger that initiated disease and fed into the mounting antecedents that eventually pushed her body into overt imbalance. Remember that Stephanie could not lose weight after her second child despite running regularly. Hashimoto's is common after pregnancy, and this aspect of her history offered insight into

when her immune system might have started attacking her thyroid tissue.

An overt trigger occurred when Stephanie's mother was diagnosed with cancer. This was the stressor that pushed her into more obvious symptoms of HT; although, the disease was likely brewing for years. Her menstruation, sleep, and mood took a big hit. With her unique antecedents and triggers, her disease was supported by compounding mediators such as chronic stress from caring for her kids and a sick parent, over-exercising, and insufficient sleep. Mediators are factors that help to perpetuate imbalance.

Armed with this information, I was motivated to explore diagnostic testing to identify the cause of her underactive thyroid symptoms. Her previous doctor identified low T3 levels and high TSH levels (within standard ranges); however, she had not completed an antibody test. In addition, I needed to know what was happening downstream from her T4 production to know if she was also suffering from conversion issues. It was important to look at her levels of inflammation, blood sugar metabolism, the state of her immune system, and all correlated nutritional deficiencies. The following is the initial panel that we ran for Stephanie.

Thyroid Testing

TSH

Remember that the pituitary gland releases TSH to signal the thyroid to release thyroid hormone. If the circulating levels of thyroid hormone are low, the pituitary will increase the release of TSH. If we suspect a patient is suffering from low thyroid function, we would expect to see the level of TSH increase, yielding a high TSH.

- Optimal Range- 1.0–2.0 mlU/L
- Standard Range- 0.4–5.5 mlU/L

Free T3

Free T3 is a measurement of the active thyroid that is not bound to the transport protein TBG. This test is not typically ordered by conventional

practitioners unless a patient has hyperthyroid symptoms with normal free T4 levels. However, this test tells us how much active thyroid hormone is available to bind to the thyroid receptor sites on the cell surface. Free T3 is typically low in those with low thyroid function and Hashimoto's.

- Optimal Range- 5–7 pmol/L
- Standard Range- 3–7 pmol/L

Free T4

This test measures the amount of unbound T4 in the blood. Although much of the circulating T4 is converted in the liver, there are many cells that can take up T4 and convert it into T3 within the cell. Much like free T3, we would expect this number to be high in cases of hyperthyroidism and low in cases of hypothyroidism. This number is also elevated if the thyroid replacement dosage is too high.

- Optimal Range- 15–23 pmol/L
- Standard Range- 9–23 pmol/L

Reverse T3

RT3 is often produced when there is severe or chronic stress. Remember that RT3 is produced from T4 and is the mirror image of active T3. It is not active, but it competes for the receptor sites on the cell surface and blocks the active T3 (Note: This number can also be high when iron is low).

- Optimal Range- 11–18 ng/dL or < 10:1 ratio RT3/Ft3
- Standard Range- 11–31 ng/dL

Thyroid Antibodies

This test indicates a Hashimoto's diagnosis by identifying the presence of thyroid-related antibodies. Thyroid autoantibodies can result in a hypothyroid

or hyperthyroid state. Thyroid cancer may also cause elevated levels. Positive results indicate autoimmunity. There are up to 3 antibodies tested; the first 2 are the most common:

- Thyroid Peroxidase Antibody (TPO Ab): This is most commonly seen in autoimmune thyroid conditions like Hashimoto's.
- Thyroglobulin Antibodies (TgAb): While not as common as TPO Ab, these antibodies may be the culprit when thyroid lab results are peculiar, as these antibodies interfere with thyroid hormone production.
- Thyroid-Stimulating Hormone Receptor Antibody (TRAb): This antibody is ordered when a patient has hyperthyroidism, and a practitioner is concerned about an autoimmune hyperthyroid condition called Grave's disease.

Additional Testing Related to Thyroid Function

Blood Sugar

A dysregulated blood glucose levels can put increased demands on the adrenals and increase cortisol levels. As you know, cortisol can negatively affect thyroid production. Additionally, when the body cannot properly regulate blood sugar, insulin levels are often imbalanced as well, increasing inflammation and risk of metabolic syndrome. HT remission is impossible when blood sugar is imbalanced.

Fasting Glucose

This provides some indication of how your body balances blood sugar after fasting. If blood sugar or insulin is high, it may indicate a problem.

- Optimal Range- 80–99 mg/dL
- Standard Range- 65–110 mg/dL

HbA1C (Hemoglobin A1C)

This test is a long-term look at blood sugar levels. If the blood is consistently high in sugar, HbA1C will reflect it, as it presents the level of sugar attached to circulating red blood cells. It is most commonly used to assess type 2 diabetes and metabolic syndrome, but given that HT increases a patient's risk of contracting diabetes, it can be a helpful test for assessing overall risk.

- Optimal Range- < 5.0
- Standard Range- 4–5.9

Triglycerides

Triglycerides are fats that are manufactured by the liver to store excess sugar. High triglycerides increase a patient's risk of developing cardiometabolic disease.

- Optimal Range - <100 mg/dL (especially with a high triglyceride/HDL ratio or small LDL & HDL particle size)
- Standard Range- 50–150 mg/dL

Total Cholesterol, LDL, HDL, and More

While conventional providers still look at the quantity of LDL and HDL, most functional medicine providers look at other markers such as the size of the particles along with more current and accurate markers of risk. A thorough panel will indicate risk of cardiovascular disease, which is increased in those with autoimmune and dysregulated blood glucose levels.

Iron

Low iron levels make treating HT very difficult. It is vital to maintaining normal iron levels and proper transport when reversing HT.

Serum Iron – Iron is necessary for making hemoglobin, which carries oxygen on red blood cells. Decreased iron levels must be correlated with Ferritin, RBC, HGB, and HCT to rule out anemia (more on what those mean in a moment).

- Optimal Range (female)- 50–100 ug/dL
- Standard Range (female)- 40–175 ug/dL

TIBC – Total iron binding capacity. This can be elevated in cases of iron deficiency because it increases the cells' potential to bind to iron. TIBC is often high before anemia develops and, therefore, can be a good way to find iron deficiency early.

- Optimal Range – 250–350 ug/dL
- Standard Range- 250–425 ug/dL

Iron Saturation

- Optimal Range (female)- 20–45%
- Standard Range (female)- 15–50%

Ferritin

Ferritin is a good marker for total-body iron levels, and it reflects how much iron the body has stored. It also called an "acute phase reactant" and can be a good marker of inflammation.

- Optimal Range- 10–110 ng/dL
- Standard Range- 10–150 ng/dL

CBC

A complete blood count includes the following elements:

- Red blood cell counts: red blood cells (RBC), hemoglobin (HGb), hematocrit (HCT), MCV, MCH, and MCHC
- White blood cell counts: total white blood cell count (WBC), lymphocytes, neutrophils, basophils, monocytes, and eosinophils

Information such as B12 levels, iron status, inflammation, infection, and many other imbalances can be obtained from these tests.

CRP

C-reactive protein measures nonspecific inflammation, but elevated levels are correlated with an increased risk of cardiovascular disease.

- Optimal Range- < 0.5mg/L
- Standard Range- < 1 mg/L

Homocysteine

Homocysteine is an amino acid that is elevated due to deficiencies in areas such as vitamins B12, B6, and folic acid. It is generally associated with inflammation and correlated with an increased risk of cardiovascular disease.

- Optimal Range- <12
- Standard Range- <15

Selenium

Selenium is necessary for many processes within the body, but when specifically talking about the thyroid, selenium is needed to convert T4 to T3. Selenium deficiency is very common in those with low thyroid function.

- Optimal Range- 255–300 mcg/L
- Standard Range- 70–150 mcg/L

Urinary Iodine

Iodine is necessary for thyroid hormone production, and low levels of iodine are indicated in low thyroid conditions and goiter. However, increased or excess intake of iodine is indicative of HT. Therefore, high or low levels may present a thyroid risk.

- Optimal Range- 100–300 mg/L
- Standard Range- 34–523mcg/L

Zinc

Zinc is vital for the functioning of nuclear thyroid receptors within the cell. Deficiency will inhibit proper thyroid function. Additionally, zinc is necessary for immune function, and a deficiency increases an individual's risk of developing autoimmune diseases. Zinc supplementation must be considered along with copper levels, as these two micronutrients are antagonists. Excessive zinc supplementation can cause a copper deficiency; therefore, doctors should keep a watchful eye on the recommended supplementation.

- Optimal Range- 12–14.7 mg/L
- Standard Range- 9–14.7 mg/L

Vitamin D

Vitamin D is assessed with a marker called OH-25-hydroxyvitamin D and is a vital aspect of immune system regulation among other countless bodily functions.

- Optimal Range- 50–90 ng/mL
- Standard Range- 5–90 ng/mL

Vitamin A

Vitamin A is imperative for immune system regulation as well as for cellular sensitivity to thyroid hormones.

- Optimal Range- 68–98 mcg/dL
- Standard Range- 38–98 mcg/dL

Note: Standard laboratory ranges listed above reflect the variability of laboratories. Each lab manufactures its own range based on its patient population. For that reason, standard lab ranges shift from lab to lab. In addition, optimal ranges may vary depending on the practitioner's preferences as well as the individual patient presentation.

FM allows the patient to heal and regain wellness. Modifiable factors like activity level, nutrition, toxic exposure, and stress account for 70–90% of mortality in the United States.[2,3] This is a profound statistic because it means that genes alone are not our destiny. FM offers a deeper understanding of the unique origins of health and disease. The approach engages the expertise of the patient and the practitioner, offering a partnership that gives the patient control over his or her health. Not everyone will pursue a path to health even when armed with the information to do so. However, with the support of a practitioner trained in FM, the choice to regain health is available.

A committed, educated, and knowledgeable FM practitioner can use expanded diagnostics like those mentioned above to identify the source of his or her patients' suffering. This information prompts a unique care program designed to support healing. As I have emphasized, this is individualized care. Even though they may share the same diagnosis and symptom profile, no two patients are the same. Because of that, patients receive care aimed at creating the most beneficial interventions that will help them regain optimal health. In the following chapters, you will learn about the evidence-based methods available for treating and healing Hashimoto's thyroiditis. Let's take a deeper look at the path to wellness.

CHAPTER 6

It All Starts in the Gut

Once I've established that an autoimmune thyroid condition is a primary factor in a patient's low thyroid function, my goal is to provide my patient with the tools needed to heal the body and mind. Viewing the body as an interconnected web of systems, it is imperative to address the primary commonality between all autoimmune diseases: the gut. Not only does over 70% of the immune system originate in the gut, but also a complex network of hormones is involved in maintaining a healthy digestive system. It is all but impossible to reverse an immune system imbalance without identifying the cause of any gut damage.

Before I share my approach to gut healing, it would be beneficial for me to explain the basics of the digestive system. While this may seem like an unnecessary visit back to biology class, I have found that my patients' success is always correlated to how well they understand the underlying cause of their disease as well as the methodology behind their treatment. This entails a basic understanding of how the body malfunctions in an imbalanced state and what interventions will encourage optimal function.

Digestion

The Mouth

Digestion is the body's process of breaking down consumed food and beverages into microscopic particles that can be absorbed into circulation (blood and lymph) by passing through the cells of the intestinal barrier. To illustrate the digestive process more vividly, let's follow a healthy snack of apples and almond butter as it moves from your plate and into your body. Apples contain carbohydrates (primarily fructose, glucose, and fiber) as well as water. Almond butter is rich in protein and fats with a small amount of carbohydrate (primarily as fiber). Both foods also contain vitamins, minerals, and phytochemicals (aka micronutrients). Carbohydrates, proteins, and fats are "large" molecules (macronutrients), and they must be broken down into smaller components before they are absorbed. There are small proteins called enzymes in your digestive tract (mouth to anus) that aid in dividing large molecules into their smaller components.

So, let's follow your snack. Digestion begins in the mouth where a mechanical breakdown of food occurs; this is also known as chewing. Although this process is often overlooked, it is an important aspect of digestion. As you chew the apple and almond butter, you're not only breaking the food down and making it easier to digest but also you're mixing it around with enzyme-containing saliva. Saliva contains amylase and lipase, which are enzymes that aid in the breakdown of carbohydrates and fats, respectively. Taking time to properly chew is the first step in good digestion. Your mushy bite of apple and almond butter are then swallowed, and they travel through the esophagus to the stomach.

The Stomach

The stomach is the primary site of protein digestion. This is the organ that will do most of the work when breaking down the protein-rich almond butter. When the apple and almond butter arrive at the stomach, the organ is stimulated to produce gastric juice—a mixture of protective mucus, hydrochloric acid (HCl), intrinsic factor, and digestive enzymes. This mixture is extremely important for effective digestion. Mucus coats and protects the stomach cells from damage that can be caused by the low pH of HCL or stomach acid (averaging 2.5pH). However, HCl is necessary to unravel proteins, making important micronutrients such as vitamin B12 and iron removable from tightly bound protein molecules. HCl also kills pathogens like the bacteria on your fingers that made its way to the apple just moments before. Intrinsic factor is a molecule that transports the essential vitamin B12 into the intestines and allows for its absorption (B12 is found primarily in animal products and is vital to the composition of red blood cells and their ability to carry oxygen to your brain and small capillaries).

HCl has another purpose: It signals the release of additional enzymes, pepsinogen and gastric lipase (lipases break down fat whether in the mouth, stomach, or intestines). From there, pepsinogen is activated into pepsin, an enzyme that further disassembles protein into tiny amino acids. In tandem, gastric lipase removes fatty acids from triglycerides. Lastly, the stomach secretes a hormone called gastrin. Gastrin helps signal the downstream

digestive process by telling the pancreas and gallbladder to produce bile (fat emulsifier) and pancreatic digestive enzymes.

If you feel overwhelmed by this trip through the anatomy and physiology of digestion, don't worry about remembering every detail. Focus on the big picture: the importance of a high-functioning digestive system. Stress, infection, and other assaults on the body can deeply affect the stomach and cause its inadequate production of gastric juices, leaving proteins and micronutrients insufficiently digested. However, assuming that the digestion process is working well in this scenario, your is snack ready for its trip into the intestines.

The Intestines

Your apple and almond butter are now in the form of chyme, a soft mixture of gastric juices and partially digested food particles. This mix is now ready for the final processes of digestion that occur in the intestines where the food is prepared for absorption. As your snack enters the intestines, a hormone called secretin is released, signaling the pancreas to release a bicarbonate fluid that neutralizes acidic chyme to prevent intestinal damage. Secretin, in turn, signals the stomach to stop producing gastrin. This is the magic of hormonal signaling and our internal communication systems' intelligence demonstrating its intricacies. It is also no wonder that when these communication methods go awry, our bodies begin to break down.

Secretin has another job: notifying the pancreas to release a host of digestive enzymes and prompting the gallbladder to release bile. Pancreatic juices work to further break down proteins into amino acids, lipids into smaller fatty acids, and carbohydrates such as starch and sugars into disaccharides. It is important to note that the human digestive system does not break down and absorb the carbohydrate fiber. Fiber will continue its journey to the colon, but we will learn more about the importance of fiber later.

At this point, your snack has been disassembled into tiny pieces that are primed for absorption. The last imperative step occurs on the surface or "brush border" of the intestinal cell and must take place before nutrients can be absorbed across the intestinal barrier into circulation. Enzymes residing

on the brush border conduct the final steps in breaking down amino acids and transforming carbohydrates that are in the form of disaccharides (2-sugar molecules of lactose, sucrose, and maltose) into monosaccharides (1-sugar molecules of glucose, galactose, and fructose). Either due to genetics or to intestinal damage, many people do not have enough brush border enzymes to fully carry out this task. It is for this reason that many people are lactose intolerant; they do not produce enough of the lactase enzyme to break the disaccharide into its component pieces of glucose and galactose. This ultimately prevents it from being absorbed, which can result in a host of negative symptoms.

While a majority of food particles will move into the absorption phase, some food particles escape this fate. Bits of protein, fat, and carbohydrates will travel to your colon alongside fiber. Consuming fiber, which is found in the cellulose of plants including vegetables, fruits, grains, nuts, seeds, and legumes, is paramount to good health for a host of reasons and is credited for reducing one's risk of contracting Western diseases such as diabetes, cardiovascular disease, colon cancer, and obesity.[1] There are two types of fiber: soluble and insoluble. Soluble fiber helps lower cholesterol and glucose levels and is found in foods like psyllium, flax, barley, carrots, citrus, apples, and oats. Insoluble fiber builds bulk and helps move food through the digestive process. Nuts, beans, and vegetables are all good sources of insoluble fiber.

While fiber has countless health benefits, one essential aspect of consuming a diversity of fiber is the role it plays in feeding the microbiota in the colon. Supporting a complex and healthy variety of microorganisms is an important factor in reversing autoimmunity and regulating hormones. Increasing healthy "bugs" helps decrease bacteria that often promotes disease. Specific fermentable fibers (prebiotics) such as inulin, galacto-oligosaccharides (GOS), and fructo-oligosaccharides (FOS) have been shown to increase the numbers of healthy bacteria in the colon, improve gut barrier function, and regulate immunity.[2] In particular, supporting a range of healthy microbiota increases production of short-chain fatty acids that help protect the colon, improve metabolic function, enhance central nervous system function, and support immune function.[3,4] Maintaining a healthy gut microbiome contributes to proper production and the regulation of neurotransmitters, hormones,

neuroactive compounds, and more.[4] The benefits of a healthy microbiome are endless, and eating a high-fiber diet is often critical to the healing process. I will expand on this later in the chapter.

Before moving on, it is important to pause and recognize the importance of the digestive process. If at any point in this series of reactions, something does not progress appropriately, you have a digestive problem, and the healthy food you are consuming will not have the power to nourish you and give you fuel. Poorly digested food can cause immune responses and a series of other negative side effects. We will look more deeply into this when we discuss treatment methods that enhance digestion.

Absorption

Absorption is extremely complex and involves many physiological processes relating to positively and negatively charged molecules, fat and water-loving particles, transporters, and more. Instead of getting too deep, I want to point out the important aspects of this process regarding the structural integrity of your intestines. Now that your apple and almond butter are a series of monosaccharides, amino acids, fatty acids, and micronutrients, these small molecules must get into your bloodstream. Particles are absorbed into the intestinal cell and then transported out the other side. If they circumvent this process by slipping in between cells, your immune system will be triggered.

Imagine the security line at an airport. You queue up and follow the instructions: remove your shoes, unveil your electronic devices, step through the x-ray machine, until finally you are released on the other side and deemed safe to travel. This is a metaphor for the process of absorption. However, imagine that instead of following protocol, you become irritated by the airport line and opt to make a run for it through a gap in security, circumventing the x-ray machines and TSA personnel. Most likely, guards will pounce on you before you can reach the other side. This is how your immune system responds when food circumvents the proper absorption process. This instance describes leaky gut syndrome, an instance in which your security patrol will be on high alert.

What is Leaky Gut?

Your gut is meant to be permeable to tiny nutrient-containing molecules but impermeable to particles such as undigested food and pathogens. Your intestinal cells create this barrier with tight junctions—proteins that hold cells tightly together. Leaky gut occurs when damage to the tight junctions is severe enough to create dangerous entry points for immune-stimulating molecules. Once molecules enter the circulation between cells, the immune system tags them as invaders and launches an attack.

Symptoms of Leaky Gut

1. Autoimmunity
2. Digestive issues such as gas, bloating, diarrhea, or irritable bowel syndrome (IBS)
3. Seasonal allergies or asthma
4. Hormonal imbalances such as PMS or PCOS
5. Diagnosis of chronic fatigue or fibromyalgia
6. Mood and mind issues such as depression, anxiety, ADD, or ADHD
7. Skin issues such as acne, rosacea, or eczema
8. Diagnosis of Candida overgrowth
9. Food allergies or food intolerances

What Causes Leaky Gut?

Infection, inflammatory foods, and toxins are the primary causes of leaky gut. These substances trigger intestinal cells to release a protein called zonulin, which acts to break down tight junctions. In susceptible individuals, gluten and bacterial infections are the two most common triggers of zonulin release.[5] However, inflammatory foods (i.e., sugar, dairy, and alcohol), medications, chronic stress, and environmental toxins are also indicated as leaky gut triggers.

Medications

NSAID— Nonsteroidal, anti-inflammatory drugs such as Advil and Motrin are linked to an increased risk of intestinal permeability. In one study, all NSAIDs caused increased intestinal permeability and increased inflammation in many cases. Follow-up tests resulted in significant malabsorption.[6]

Corticosteroids— Steroids are often prescribed to reduce inflammation in individuals with autoimmunity. While this may be effective in reducing symptoms, it can exacerbate the progression of a disease by hindering immune function (especially in the gut) and contributing to leaky gut syndrome.

Proton-Pump Inhibitors (Prilosec, Nexium, etc.)— PPIs are generally meant to be taken for less than 6 weeks, although 25–75% of patients take them inappropriately.[7] Remember that the stomach's hydrochloric acid has a dual purpose of digesting proteins and killing pathogens. Using PPIs is associated with an increased risk of small intestinal bacterial overgrowth (SIBO), Clostridium difficile infection (C. diff), and decreased microbiota diversity.[8] Each of these conditions results in inflammation and leaky gut.

Birth Control— Birth control has been indicated as a factor in gut dysbiosis and reduced vitamin and mineral levels. Vital nutrients such as B vitamins, zinc, selenium, and magnesium, which support the gut, immune system, and thyroid health have also all been indicated.[9] Birth control is also connected to poor estrogen metabolism, an increased risk of depression, and impaired hormone regulation.

Antibiotics— Antibiotics aim to kill a bacterial infection, but in the process, they can wipe out the healthy bacteria charged with maintaining a healthy gut. Antibiotic use has been shown to alter the microbiome and induce metabolic changes such as endotoxemia, weight gain, poor blood sugar control, and mass fat gain in animal models.[10]

Infections

Infections such as Helicobacter pylori, Salmonella, Yersinia, parasites, and fungi have all been linked to autoimmune diseases and intestinal permeability. Infections such as these stimulate a consistent immune response, and in

some cases, initiate the molecular mimicry I described earlier in the book. As intestinal damage progresses, infections can enter the circulation and cause continued pain and suffering. People are often unaware that they are infected, and many doctors do not test for infections even after an autoimmune diagnosis. Infections that were once considered localized to other areas of the body can tear apart the digestive system and result in intestinal permeability.[11]

Chronic Stress

Whether acute or chronic, stress has a direct and immediate effect on the gut. Remember that when the human body feels a "fight or flight" response, the digestive system shuts down to allocate resources to other organs. This also occurs in times of chronic stress, which decreases motility, the production of digestive enzymes, the production of HCl, blood flow, and gut permeability.[12] Another byproduct of the slowed digestive system is a lower production of secretory IgA, the immune protein that acts as the first line of defense in mucous membranes like that of the intestines.

Diet

The scientific literature addressing connections between diet, gut health, and autoimmunity is endless. Diet has countless effects on the microbiome, the immune system, hormone balance, and toxic load to name a few. For instance, a diet high in sugar will feed toxic microbes and allow them to compete for resources in the gut while reducing healthy microbes. Sugar consumption drives blood sugar up, which is followed by a crash that requires cortisol to stabilize glucose levels. A diet high in fiber, in contrast, will carry toxins out of the system, feed healthy bacteria, support balanced neurotransmitter production, and slow digestion, which aids in blood sugar balance.[13]

Food allergies and sensitivities that stimulate an immune response can result in a consistent source of inflammation and intestinal damage. Insecticide residue on processed and nonorganic foods attack healthy microbes in the gut. Ultra-processed foods, which are so common in the current American diet, are implicated in increasing the risk of chronic disease and forcing the body

into a pro-inflammatory state.[14] This fact compounds the issue with processed foods' extremely low nutrient content, yielding a malnourished state even when plenty of calories (energy) are consumed.

Gluten

Gluten includes a family of proteins found in various cereal grains, and in addition, is fairly ubiquitous in our food chain. People often associate gluten with wheat. However, the gluten family houses a subset of proteins called glutelins and prolamins, which include gliadin from wheat, hordeins from barley, secalins from rye, and avenins from oat. Other grains such as spelt, emmer, farro, Khorasan, einkorn, triticale, and kamut also contain forms of gluten.

While some people are diagnosed with celiac disease, a specific autoimmune disease triggered by gluten, many people are deemed non-celiac gluten sensitive. In fact, in many studies, even individuals without celiac disease reacted to gluten with a rapid increase in intestinal permeability and immune response.[15]

Microbiome

Earlier, I reviewed fiber's importance in maintaining a healthy microbiome, but it is so important that it's worth a little more attention and explanation. The microbiome is a colony of microbes that inhabit your digestive tract, and those with the largest density live in the colon. At any given time, there is a competing balance of healthy microbes and dangerous microbes. The objective for good health is to tamper the growth of toxic microbes and enhance the proliferation of healthy ones.

Inflammatory foods, especially sugar, feed toxic microbes and give them the fuel to overrun healthy microbes that are busily supporting your immune system, generating micronutrients, and regulating neuroendocrine systems. Alcohol, sugar, junk food, many medications (especially antibiotics), reduce your good bugs and power up the toxic microbes. When there are not enough healthy microbes, your system is left vulnerable to overgrowth and infection.

One common overgrowth that is linked to autoimmunity is Candida albicans. I mentioned this briefly in previous chapters, but it is important to emphasize again. Every person has small amounts of Candida. However, when this fungus is supported by a poor diet, toxins, and medication use, it can create a lasting and negative effect on the body. Candida can aid in the development of leaky gut and travel into systemic tissues, inflicting pain and tissue damage in joints, the brain, and more.[16] Candida consumes sugars but excretes toxic ethanol. People suffering from severe Candida overgrowth may experience dizziness and fatigue after eating carbohydrates because of the fungus. It is also believed that Candida binds to mercury as a protective benefit, which can lead to increased complications when attempting to eradicate an overgrowth, as it forces the fungus to release mercury back into the system.

SIBO, or small intestinal bacterial overgrowth, is another commonly associated condition with leaky gut. This occurs when the wrong types of bacteria colonize and grow in the upper intestines. As I mentioned, much of our microbiota should reside in the colon where it thrives on undigested fibers and provides countless benefits such as neurotransmitter regulation. However, when that bacteria enters the small intestine, it has access to sugars and proliferates uncontrollably. Treatment for SIBO may require the use of antibiotics, which is ironic because overusing antibiotics can set the stage for SIBO in the first place.

The important takeaway is that leaky gut has multiple causes and perpetuating factors. It is a common tie-in to autoimmune diseases and must be healed to reverse symptoms and disease progression. Additionally, it is essential to understand that even in the absence of a celiac diagnosis, gluten stimulates the breakdown of tight junctions in everyone, so removing gluten will be key in attempting to reverse Hashimoto's thyroiditis.[5]

Healing Leaky Gut

The functional medicine approach to healing leaky gut is based on a system called the 4 Rs: remove, replace, reinoculate, and repair.[21] While treatment will vary based on each patient's specific condition, this system provides a framework for the process of gut healing and calming the immune system.

1. Remove

The first step in healing the gut is removing the sources of damage and the immune antagonists. It is impossible to heal the gut and reduce inflammation without knowing what is causing the body to react. There are a few areas that need to be addressed when removing harmful triggers.

a. Diet

One of the most powerful tools for calming the immune system and setting the groundwork for gut health is an elimination diet. Because food sensitivities associated with leaky gut are unique to each person, this diet removes the most common foods that provoke allergies or sensitivities and asks that the patient pay close attention to less common foods that are additional triggers.

Over a set period, a series of foods are completely removed from the diet until the patient feels that his or her immune system and inflammation have reduced significantly. Then, methodically, foods are added back into the diet one at a time, and reactions and symptoms are logged. This is a way to identify foods that an individual's immune system has deemed offensive. Some people can add offending foods back into their diet after their gut has fully healed.

b. Infections

Identifying infections such as parasites, fungi, viruses, and bacteria is important because ongoing proliferation and immune stimulation will continually cause inflammation and a dysregulated immune system. There are many diagnostic tools and treatment options available for identifying and healing infection. These can include herbs, supplements, pharmaceuticals, diet, and lifestyle adjustments.

c. Toxins

Heavy metals, pesticides, environmental pollutants, and medications must be considered when healing the gut. When the intestinal barrier is damaged, toxins can cross into circulation more easily and cause damage to cells.[17] Removing exposures and cleaning toxins from the body by enhancing

liver and digestive function improves healing. This may take shape in the form of eating organically, reducing household chemicals, cleansing heavy metals from the body, and improving the body's innate detox pathways.

2. Replace

This phase involves replacing compounds that may be diminished within the digestive function. As you learned earlier in the chapter, there are many enzymes and products the body must produce in order to break down food and ensure healthy digestion. Many individuals find that their bodies need support in this area, but the aid will be tailored to fit each patient's deficiency.

a. Digestive Enzymes

Pancreatic enzymes may be necessary to enhance the breakdown of foods within the intestines. This allows more healthy food to enter the body. Pancreatic enzymes are generally taken with each meal.

b. Hydrochloric Acid

Depletion of hydrochloric acid is common in those with autoimmunity due to chronic stress, infection, and more. Supplementing HCl will assist in the breakdown of proteins, the reduction in pathogens, and the release of vital micronutrients that are attached to protein structures.

c. Bile Salts

Bile salts produced by the liver and secreted from the gallbladder are necessary for fat digestion and absorption. When the digestive process is weak, bile salts can be added in tandem with HCl and digestive enzymes to facilitate fat digestion. This is especially important for individuals who have had their gallbladders removed.

3. Reinoculate

The significance of the microbiome has been emphasized in this chapter. Treatment for a leaky gut must include the reinoculation of the microbiome. While eating the proper diet is fundamental in growing healthy

microbiota, we often help the process along with two interventions: prebiotics and probiotics.

a. Probiotics

Probiotics are healthy bacteria that can be taken in supplemental forms. Probiotics enter the digestive tract as a backup infantry tasked with supporting the healthy microbes that are competing for resources in your gut. Probiotics can help push out toxic microbes and restore intestinal integrity and function. Researchers are continually working on identifying strains that effectively treat a myriad of conditions, and science is pointing to unique properties within each strain. Various strains of Bifidobacterium and Lactobacillus, for example, are known to restore gut function and support immunity.[18-20]

b. Prebiotics and Fiber

Reinoculating a healthy microbiome is supported by feeding and nourishing healthy microbiota. Prebiotics are fibers that are capable of feeding healthy bacteria without benefiting toxic microbes. This makes prebiotics especially valuable in balancing the biome.

Foods like bananas, onions, chicory root, garlic, asparagus, jicama, leeks, chicory, Jerusalem artichoke, yacón, and blue Agave are all good sources of prebiotics. Increasing your intake of prebiotic food is helpful, and supplementation can also improve outcomes. If you are experiencing symptoms of SIBO, prebiotic supplementation should be done gradually and with caution, as prebiotics can exacerbate symptoms.

4. Repair

After removing, replacing, and re-inoculating processes are addressed, the digestive system must be repaired. In this stage of treatment, we address the building blocks of a healthy digestive process by supplying the body with nutrients needed to reinstate gut health and structure. This aspect of treatment is also customized to each patient's exact needs. Here are some examples of how we might support the repair process.

a. Vitamin A

Vitamin A regulates and modulates the intestinal barrier. Studies exploring vitamin A deficiency among pregnant women showed that their offspring also suffered suppressed immune function within the gut.[22] Remember that vitamin A is also an essential nutrient for the cell's reception of thyroid hormone and for intestinal immune proteins like IgA.

b. Vitamin D

Vitamin D is a potent immune system regulator; however, it has also been proven that vitamin D3 can protect against damage to the tight junction made by gluten ingestion.[23]

c. Antioxidant Vitamins

Vitamins C and E, zinc, and selenium are all vital to proper digestion and immune regulation. Antioxidants scavenge for dangerous free radicals and are integral to immune regulation.[24]

d. Omega-3 Fatty Acids

Fish oil supplementation is a condensed source of omega-3 fatty acids that aim to balance the ratio of pro-inflammatory and anti-inflammatory precursors in the body. Omega-3 supplementation can reduce pain and inflammation.

e. Aloe Vera

Aloe Vera has been indicated as therapeutic for its anti-inflammatory effects on the mucosal lining of the digestive tract.[25]

f. L-glutamine

L-glutamine is an amino acid that significantly improves the intestinal barrier function.[26] In the small intestine, glutamine is and provides fuel for the metabolism, repairs and maintains the gut barrier functions, and regulates cell proliferation.[27] It is the most abundant amino acid in the blood and mucosal barriers.

Beyond Digestion: Healing Hashimoto's

As you have probably gathered, a healthy gut and optimal digestion play a role in reversing Hashimoto's thyroiditis that cannot be understated. We truly are what we eat, but we must be able to break it down and absorb it for any benefit to be realized. While gut damage and poor digestion are key aspects of autoimmunity, the story does not end there. Treatment for HT encompasses a host of lifestyle interventions as well. In the following chapter, I will present some compelling information that illuminates the importance of treating autoimmunity beyond the gut.

CHAPTER 7

Hashimoto's: Solving the Puzzle

Lifestyle and Environment

Healing the gut is a primary focus when attempting to reverse Hashimoto's thyroiditis and all other autoimmune disease. Reducing inflammatory exposures to the digestive tract while restoring the intestinal barrier will go a long way in rectifying health. However, there is more work to be done to ensure that all the interconnected physiological systems are balanced and function well.

First, it is important to remember the simple but profound question that functional medicine practitioners are trained to ask: Why? While we acknowledge that a broken gut is a core element of autoimmune conditions, for many individuals, the reason behind a broken gut extends beyond the insults of food, infections, and toxins. Most of my patients' autoimmune conditions are influenced by one or more of the following: experiences that induce trauma and stress, toxic buildup, poor sleep, and imbalanced sex hormones such as estrogen, progesterone, and testosterone. My point is that we cannot address the gut in isolation and expect the best results. It is imperative that aspects of lifestyle, biochemistry, and environment are taken into consideration with a holistic healing model of care to stop the cycle of disease.

Immune Balance and Anti-Inflammatory Support

The ultimate objective when addressing an autoimmune disease is to reinstate balance to the immune system and reduce inflammation. Calming the immune system by removing triggers like stress, inflammatory food, and toxins is the first step, but often the immune system needs additional support to regulate after years of imbalance. Understanding the basics of your immune system will help you appreciate the complexities of your healing process.

Within the immune cell population, there is a family of immune cells called T cells. Within that family, there are T-regulatory (Treg) cells tasked with regulating self-tolerance— the ability to tolerate your own cells and not launch an attack. Treg cells are involved in recognizing and "tolerating" a growing fetus, reducing allergy and asthma responses, and oral tolerance.[1] This regulatory response is diminished in those with autoimmune disorders, and

Treg cells often need support to maintain proper parameters between what is "self" and what is not.

In addition, there are cells called T-helper cells (Th). Th cells are divided into Th1 and Th2 cells, and their activity is thought to be regulated, in large, by Treg cells. Th1 cells drive cellular immunity by fighting pathogens (viruses and some bacteria) and cancer as well as by stimulating delayed-type hypersensitivity skin reactions. This response is known as cell-mediated immunity. Th2 cells initiate antibody production against extracellular organisms such as toxins, allergens, viruses, and many bacterias. The Th2 response is known as humoral-mediated immunity.

The immune-balance belief is that the dominance of these two cell types can cause disease and downregulate the other.[2] While there was once a belief that dominant Th1 cells caused autoimmune disease, it is now believed that dominance of either can contribute and perpetuate different types of autoimmunity.[3] To further complicate matters, dominance can shift between Th1 to Th2 throughout a disease's progression. In the case of HT, it is thought that Th1 is dominant most of the time.[4] For this reason, balancing Th1 and Th2 is a central aim of therapy.

Testing the Th1/Th2 Balance

As a practitioner, I will often perform a Th1 and Th2 immune inquiry, which can provide insight into how the immune system is balanced. This gives me an opportunity to "prop up" the lower functioning side by providing stimulating substances. If the patient is fragile or highly sensitive, the immune inquiry could exacerbate symptoms and lead to a flare-up of sorts. If I feel it is beneficial to test the dominance of immune function, patients will often receive a supplement that will trigger either the Th1 or the Th2 side of the immune system. Based on the following symptoms, after a "blind" trial, I can glean insight into which side of the immune system is overactive.

Treatment Strategies That Reduce Inflammation and Balance Immune Function

Omega-3

Nutrition is paramount to balancing inflammatory and anti-inflammatory systems. One key aspect of that balancing act is providing precursors for prostaglandins that mediate inflammatory or anti-inflammatory molecules. Omega-3 and omega-6 fatty acids (FA) support this process. Omega-3 and some omega-6 FA are the precursors to anti-inflammatory prostaglandins, while most omega-6 is a precursor for inflammatory molecules. The average American has a ratio of 15–20 omega-6 to 1 omega-3. Less westernized nations report a ratio closer to 4:1, which parallels a lower risk of inflammatory diseases.[5] Increasing your omega-3 FA intake by way of flax oil and fish oil is one method for improving inflammatory responses. This should be done in tandem with a reduction in processed foods and other sources of omega-6.

Curcumin

Another strategy that supports the body's ability to reduce inflammation is supplementing curcumin. Curcumin is found in turmeric, but it is typically taken as a concentrate. Curcumin is known to support the inhibition of pro-inflammatory pathways, resulting in the reduction in chronic inflammation and oxidative stress.[6]

Resveratrol

Resveratrol is a food molecule found in the skins of red grapes (and therefore red wine) that can be very useful in helping the body reduce inflammation. My patients have experienced a lot of relief from resveratrol supplementation, as it has been shown to help the body reduce inflammation as well as support the body's ability to respond to insulin.[7]

Vitamin D

We revisit vitamin D due to its ability to help the body modulate the immune system, which can directly impact autoimmunity. Many studies have focused on the effects of vitamin D supplementation for those suffering from autoimmune disorders, and this method has often resulted in improved symptoms.[8]

There's a fascinating correlation between vitamin D and autoimmunity, and that is the relationship between an individual's birth month and his or her risk of developing multiple sclerosis (MS). Those born in the northern hemisphere prior to the summer months (high sunlight exposure) have a higher risk of developing MS, whereas those born in October or November have a lower risk.[9] This could be explained by the mother's vitamin D levels, which may be higher during a pregnancy that lasts throughout the summer months.

Additionally, research has shown that childhood vitamin D supplementation reduces an individual's risk of developing an autoimmune disorder later in life.[10]

While there are endless nutritional aspects that impact acute and chronic inflammation, eating a whole food diet free from trans fat and refined foods is the foundation of maintaining a healthy inflammatory response. Diets high in trans fat, omega-6 oils, and refined carbohydrates are all linked to increased inflammation and an increased risk of developing inflammatory disease.[11-13]

Stress and the Adrenal-Thyroid Connection

When treating low thyroid function, one of the most overlooked connections in conventional health care is the relationship between the adrenal glands and the thyroid gland. The adrenals are small glands that sit just above the kidneys, and they are responsible for responding to stress by producing hormones aimed at physiological stress management. Recall that the pituitary gland and hypothalamus regulate thyroid hormone production by sending messenger molecules to the thyroid gland. This interconnected messenger system is referred to as the HPT axis. The hypothalamus and pituitary are

also involved in regulating the adrenal glands, and that communication loop is often referred to as the HPA axis.

When you experience stress or trauma, your adrenals produce a series of hormones aimed at preparing your body for a response. I have already covered this in previous chapters, but it is important to understand that the stress response, while functional and effective, downregulates the hypothalamus and pituitary. When adrenal hormones flood the system, the molecules tell the hypothalamus and pituitary that their stress message was heard loud and clear and that the adrenals have launched into action. Once that happens, the hypothalamus and pituitary can slow down and take a back seat.

However, when the hypothalamus and pituitary slow down adrenal stimulation, they also slow down stimulation to the thyroid gland. In a short-term situation, this is not a problem, but when my patients experience chronic stress or trauma, their systems maintain this state of low thyroid function, creating a fundamental imbalance of high cortisol and low thyroid. Eventually, if the adrenals fatigue, the cortisol response dampens, which is also problematic since cortisol is necessary for thyroid function. Remember that I have also described the impact of excess cortisol on thyroid function by way of "stealing" resources that are needed to convert T4 to T3. In cases where the thyroid gland is keeping up with T4 production, stress can prevent conversion to active thyroid hormone and yield symptoms of low thyroid function.

Stress hormones have another negative effect on thyroid function. When stress increases, inflammatory molecules called cytokines are produced to manage the assault (regardless of whether stress is caused by a pathogen or an argument with a family member). The relationship between cytokine production and the HPA axis has been shown to directly influence the development of autoimmune conditions.[14] Cytokines make cellular receptors less sensitive to thyroid hormones.[15] If your body is puttering along and managing to make enough T4, which is properly converting to T3, you may still experience underactive thyroid symptoms due to poor cellular reception.

Lastly, there is a crossover between stress and thyroid function that includes the sex hormone, estrogen. When cortisol levels are elevated and remain in that state for long periods of time, excess estrogen accumulates instead of being excreted by proper channels throughout the body. Excess

estrogen increases the thyroid-binding globulin protein. You learned in earlier chapters that TBG is responsible for transporting thyroid hormone throughout the body; however, when thyroid hormone is bound, it is not active. So, if there is elevated TBG, there is less available active thyroid. In many cases of prolonged stress, most (if not all) of these adrenal-related processes would experience some level of diminished function. However, many thyroid tests could still look normal.

It is important to mention here that blood sugar regulation is imperative in balancing stress hormones and restoring adrenal function. This topic is so broad that it could consume an entire book. To be brief, one of the stress hormones' many functions is to alert cells when blood sugar dips too low. Low blood sugar is life-threatening, so cortisol's ability to alert cells and tell them to release stored glucose into circulation is life-sustaining. If your blood sugar spikes and dips due to your diet or to organ damage, your adrenals will stay taxed.

Testing your Cortisol Levels

Keeping all of this in mind, you can probably imagine how balancing adrenal function and reducing stress is vital to reversing HT and keeping it at bay. To understand the adrenal trend, I use a saliva test to check cortisol levels (and often sex hormones) throughout the day. Cortisol levels shift throughout the day and should follow a general pattern. Knowing how that pattern is distributed between morning and night gives the doctor an idea of how to support adrenal regulation. Saliva testing in a healthy individual will show cortisol levels at their peak in the morning followed by a gradual decline throughout the day until it's at its base level at midnight. For many with thyroid dysfunction, cortisol will spike in the middle of the night, drop in the morning, and follow an imbalanced trend throughout the day.

Treatment Methods

Sleep

Sleep can be tricky if you are experiencing cortisol spikes in the middle of the night. However, as your adrenals balance out, this will become less pronounced. Studies have found that insomnia can be caused by a dysfunctional HPA axis and improper cortisol production.[16] Good sleeping habits will be vital to healing your body and calming dysfunctional adrenal glands. Here are some tips to help you enhance the benefits of sleep.

- Go to bed and wake up at the same time each day. Your body works on a rhythm that links the hormones needed to sleep and wake. Train your body to produce those hormones at the same time each day.
- Remove TVs and other screens from your bedroom, and use your bed for sleep. Even reading should be done away from the bed. If you read before bed, create a reading space away from the bed and do not read on screens within an hour of going to bed. Blue light from screens prevents the production of melatonin, the sleep hormone.
- Avoid caffeine. It is best to refrain from caffeine altogether, as it induces cortisol release. However, it is imperative to refrain from caffeine after 12 pm so the body can begin to slow down. Most of my patients benefit from moving to organic decaf coffee or green tea.
- Avoid alcohol. Initially, alcohol can help you fall asleep; however, alcohol spikes blood sugar. When the high blood sugar eventually wears off in the middle of the night, cortisol will be produced and level out blood sugar, causing wakefulness, anxiety, and sweating.
- Get regular exposure to daylight for at least 20 minutes per day. Daylight increases production of melatonin at night, which improves sleep behavior.[17]
- Do not eat within 3 hours of going to bed. Eating before bed can cause wakefulness and diverts your body's resources to digestion instead of restoration. There are times when this general rule is broken, and it often depends on the individual.

- Exercise before dinner. Exercise generates energy and endorphins when the body should be slowing down.
- Remedy mental "spin" by jotting down anxiety-inducing concerns on your to-do list an hour before bedtime. This can help your mind settle and release worries.
- Stretch before bed. Stretching helps relax the body and makes it easier to fall asleep.
- Take 200 to 400 mg of magnesium citrate or glycinate before bed. These supplements relax the nervous system and muscles and can also support regular bowel movements.
- Taking 1-3mg of melatonin (a natural hormone that your body should be producing at bedtime) can help you fall asleep and support your sleep rhythm.
- Listening to guided meditation or soft music can calm the mind and regulate breathing to help you fall asleep.
- Take a hot bath. While increasing your body temperature before bed can improve sleep, adding magnesium-rich Epsom salts with calming essential oils is even better. Magnesium is absorbed through the skin and can relax muscles and induce sleep. Adding aromatherapy oils like lavender to your bath can also reduce stress and calm the body.
- Create a calm environment in your room. This does not mean that you must remodel your bedroom. Create relaxation by removing clutter and maintaining organization and comfort in your bedroom.
- Create a dark environment. If you have ambient light in your room from street lights or other sources, install blackout shades or wear an eye mask. Light is a trigger for wakefulness. While it can be helpful to naturally wake up with the gradual sunrise, you can keep a dark room and install a natural sunlight alarm clock next to your bed to mimic natural waking.

Stress Management

Creating habits that support stress management throughout the day is also an effective way to support adrenal health. Breaking up chronic stress with short periods of deep relaxation gives the body a chance to regulate stress

and train the stress response to be less harmful. Meditating for just a few minutes can be very helpful. Meditation has been shown to decrease anxiety and depression, and immune function can be improved when patients are in a meditative state.[18] Meditation can be intimidating for some, but apps like HeadSpace and Calm make meditation very accessible and easy to practice.

Exercise

Exercise can be very beneficial for health, but if your adrenal function is diminished, it is important to modify your activity level. Remember Stephanie who was feeling awful, raising two kids, caring for a sick parent, and still trying to run long-distance? She was not doing herself any favors; she did not have the energy reserves or stress tolerance to deal with that amount of physical demand. If you have adrenal fatigue, starting an activity routine that includes gentle walking, Qigong, or gentle yoga is best. You will reap the rewards of exercise without draining your body. From there, you can build onto your intensity when your body is ready.

Supplementation

Supplementation may be appropriate when supporting adrenal function. There is a diverse selection of adrenal support compounds available, but your doctor will create a supplementation plan based on your test results and cortisol patterns. It is not wise to supplement without a deep understanding of how each compound will affect your specific situation. Supplementation may include the following elements:

Licorice Root— Licorice root can improve adrenal fatigue because it keeps adrenal hormones from being broken down and metabolized. This makes hormones like cortisol available for longer periods of time.[19]

DHEA— DHEA is another hormone produced by the adrenal glands that is involved in nervous system function and sex hormone production. When the adrenals are weak, DHEA supplementation may be needed. Many studies have found that adding DHEA to adrenal treatment can improve depression,

anxiety, energy, insulin sensitivity, and libido.[19] Although DHEA does have its benefits, this supplement should be used with experienced supervision, as there can be negative repercussions.

Ashwagandha— Ashwagandha is an adaptogenic herb (basically meaning it adapts to what you need). It is effective in regulating adrenal function as well as improving thyroid function.[20]

Nutrients— Vitamins C, B5 (pantothenic acid), and magnesium have all been well researched for their benefits improving adrenal function.[19]

Social Support

For many of my patients, social support can be the most challenging aspect of recovery. Surrounding yourself with relationships that support your health and well-being often means restructuring current relationships or investing less time in those that render stress. On the other hand, learning to seek support from loved ones or friends can also pose a challenge for many patients. However, the research is clear that social support has a direct impact on long-term health, stress hormones, and immune function, so this is often included in my successful treatment plans.[21, 22]

Endocrine Disruptors and Toxic Buildup

Another well-supported theory behind the explosion of HT and other autoimmune disorders within in our population is the prevalence of environmental pollutants, heavy metals, pesticides, and household chemicals (xenobiotics) that are deemed "endocrine disruptors." Because they act as hormones, block hormone production, and stimulate our immune systems, they "disrupt" the endocrine balance. A delicate balance exists between the thyroid and other hormones, a relationship that is not fully understood. Recent research has indicated that women may have a higher risk of thyroid-related diseases because of the estrogen receptors on thyroid cells.[23] In fact, in some cases testosterone therapy has been seen to reduce autoimmune response.[24] While the entirety of the relationship between sex hormones and the thyroid is still under great debate, we can safely say that they are interconnected, and

when one hormone system is disrupted, the others are likely to suffer as well.

Toxins including polychlorinated biphenyls, dioxins, phthalates, polybrominated diphenyl ethers (PBDEs), and other halogenated organochlorines interfere with hormone production and regulation. This type of exposure has been shown to induce HT.[25] These chemicals are commonly found in flame retardants, plasticizers, fuel residue, coal-burning residue, and industrial adhesives and lubricants regularly found in building materials and household products.

In recent years, there has been a large movement to remove bisphenol A (BPA) from plastic products such as water bottles, baby bottles, and tin can linings. BPA was identified as a chemical molecule that could bind to the thyroid gland and inhibit T3 activity.[26] Heavy metals like mercury, cadmium, and arsenic are also indicated in autoimmunity and poor thyroid function. We are exposed to these metals on a regular basis in amalgam fillings, vaccinations, air, water, and food sources. One study including patients with mercury sensitivity demonstrated how the removal of mercury-containing fillings significantly reduced thyroid antibodies; researchers concluded that filling removal was an important part of their treatment plan.[27] Interestingly, another study found that women in China who were exposed to environmental pollutants and who had higher levels of cadmium and lead also had higher thyroid antibody levels.[28] Arsenic is also a known endocrine disrupter that also has causative links to cancer.[29] Toxins make their way into your body through digestion, skin, and lungs and then lodge themselves into "storage sinks," which include your bones, fat cells, and blood.

Testing for Toxins

Environmental pollutants and heavy metal testing can be observed via blood, hair, or urine samples. However, some toxins lodge themselves in tissues and are very difficult to test. Clinical symptoms and your personal history will play a role in your treatment.

Treatment

When I suspect toxicity of any sort in a patient, it is important for me to support his or her body's innate detoxification systems. The liver is the primary site for detoxification, but aspects like hydration, gut health, and healthy bowel movements are also factors in moving toxins out of the body. It is common for patients who change their diets at the onset of treatment to lose weight, which can cause fat cells to release toxins back into the system. This ultimately results in symptoms that are mistaken for a flare-up or relapse. If toxins are dumped back into circulation, they can initiate tissue damage and interrupt function. In any case, reinforcing detox is, overall, beneficial to recovery.

The first step in detox is reducing toxic exposure. This means drinking filtered water, refraining from using plastics, eating pesticide-free food, scanning your home for toxic cleaning products and other exposures like flame retardants on clothes and furniture, and possibly even removing dental amalgams. The second step is upregulating the detoxification pathways in your body. This is primarily the liver's job, as it is responsible for transforming toxins from fat-loving molecules into water-loving molecules, which can then be carried out in the urine, feces, and sweat. If the liver is bogged down or does not have the tools it needs to make these conversions, toxins will stay in circulation until they find a place within your tissues to hang out and damage the cells. The gut is also heavily involved in removing ingested toxins or toxins that have been delivered back into the gut for excretion after a liver detox.

Liver Support

The liver has two main phases of detoxification. Phase 1 transforms toxic molecules into water-soluble molecules that can be excreted in urine. In most cases, the first phase makes toxins less dangerous, but there are molecules that become significantly more dangerous; these depend on the second phase in becoming benign. This is important because if your liver has the tools to complete phase 1 but is lacking in the tools to complete phase 2, you can experience greater toxicity!

Phase 1

The first phase of liver detoxification is reliant upon enzymes to make the conversions necessary for the detox. These enzymes require a series of micronutrients and antioxidants. In addition, consuming extra virgin olive oil and virgin coconut oil have been shown to enhance phase 1.[30,31] These nutritional components can also be considered necessary for proper phase 1 function:

- B vitamins
- Folic Acid
- Antioxidants and Polyphenols
- Vitamins C and E (also considered antioxidants)
- Carotenoids (a precursor to vitamin A
- Glutathione
- Milk Thistle (known to protect liver cells against damage)

Phase 2

Phase 2 is heavily reliant upon amino acids from protein intake. Specific nutrients associated with improved phase 2 detox include the following components:

- Glutamine
- Glycine
- Taurine
- Cysteine
- Phytochemicals found in garlic, onions, cabbage, broccoli, and other cruciferous vegetables.

Glutathione

I want to make a specific case for the use of glutathione, which is often referred to as the master antioxidant. Glutathione is powerful for liver

detoxification as well as for achieving overall health. However, it is also a factor in general autoimmunity. When you experience chronic inflammation from autoimmunity, there are increased free radicals in the body, which leads to tissue damage and an increased risk of developing cancer. Glutathione is a key player in reducing free radical levels and supporting recovery, but those with autoimmune diseases tend to have diminished levels.[32,33] The amino acid, glutamine, can upregulate levels of glutathione, which should be considered in tandem with glutathione supplementation.[34] Note that N-acetylcysteine (NAC) is a precursor to glutathione and may be used in lieu of or in tandem with glutathione, which is often taken up by intestinal cells for their own use, preventing it from benefiting other systems.

Gut Detox

The gut is responsible for preventing toxins from entering the body and expelling them efficiently through feces. Two of the most powerful food sources for gut detox are rice bran and psyllium, which have both been shown to clear toxins such as PCBs, dioxins, and furans by binding to them and removing them through feces. In addition, chlorophyll from green vegetables and chlorella algae are also powerful because they block the absorption of dioxins in the intestines.[35] Matcha green tea (4g) has been studied in animal models and has been found to increase environmental pollutant excretion by up to 10 times.[36]

As you know, there are many benefits to probiotics when managing autoimmunity, but they also have a place in detoxification. Strains including L. rhamnosus, Propionibacterium, and Propionibacterium freudenreichii were all found to block absorption of aflatoxin and other carcinogens.[37,38] L. plantarum has also been shown to alleviate lead toxicity and cadmium toxicity.

Take Away

This chapter covered a lot of ground, and if anything, it supports the necessity of treating the whole patient and not a few symptoms here and there. It is because of the many interconnected systems within the body that a whole

body approach focused on customization for each patient is the most effective treatment model. This is the path to optimal health and healing.

While much of this information may be immediately useful, I strongly encourage patients to consider changes to your health regimen alongside the guidance of an experienced health care provider. However, you do not need to wait for a treatment plan to start healing. In the following chapter, I will offer you a road map that will explain how you can begin your healing journey right away.

CHAPTER 8

The Time Is Now

By now, you have digested a lot of information about low thyroid function. You know that the leading cause of low thyroid function is Hashimoto's thyroiditis. You understand that healing an autoimmune disease like Hashimoto's means healing the entire body. You have learned that healthy gut function is critical to reducing inflammation and balancing the immune system. You also realize that healing is possible, but it is not as simple as taking a pill or undergoing a procedure. You can reverse your symptoms and regain your health, but you must be ready for the challenge.

This chapter is focused on providing you with the steps you can take to make immediate improvements to your health. While finding the right doctor is a necessary step in identifying and treating all of the imbalances you must address, there are various steps you can take right now to reduce symptoms and begin the healing process. This chapter will ask you to launch your own investigation that will support the most individualized and effective treatment strategy possible. Before you proceed through this chapter, you should get a journal or notebook that you can dedicate to your care plan.

Identify Your Intention

Begin your journal by identifying how your life will be different once you heal. This is an essential question to ask yourself as you prepare for the lifestyle changes required for recovery. You need to understand how your symptoms have negatively affected your life and how your life will improve with good health. Understanding this will help solidify your commitment and motivation for pursuing autoimmune disease reversal. Ask yourself the following questions and craft thoughtful answers that you'll be able to draw upon when you hit speed bumps in your progress.

- How do my symptoms affect my relationships?
- How do my symptoms affect my energy and activity level?
- How do my symptoms affect my ability to pursue my goals and ambitions?
- How do my symptoms affect my self-esteem?
- How would I relate to friends and family differently if I were healthy?
- What activities do I miss or want to pursue when I am able?

- What is my greatest motivation for pursuing the treatment necessary to reverse my condition?
- What are the biggest barriers keeping me from making the diet and lifestyle changes that are necessary for healing?

Now, that you are clear on your intention and motivation, you need to gain clarity about your symptoms. Chapter 10 acts as an appendix of resources. There, you will find a Medical Symptoms Questionnaire, which is a tool to help you track your symptoms, but for now, create a more fluid story about your experience. This can help remind you of what a normal day looks like and serve as a way to compare your improvements over time. Begin with how you feel upon waking and then paint a picture of your normal day including symptoms, feelings, energy levels, frustrations, and self-talk. Here is an example from Anna's journal. She wrote this prior to our first appointment.

Anna's Journal
June 4, 2015

I wake up to my alarm every weekday morning at 6:30 am. My head feels heavy and groggy. I am often sweaty and feel discomfort in my neck, arms, and legs. I usually check my phone for messages and a quick news update, and then I go to the kitchen to make coffee and start breakfast. I need coffee to clear my brain, but sometimes after I drink it, I feel anxious. I normally eat an omelet with cheese and ham or oatmeal with berries and almonds. I shower and get ready for work after breakfast, and if I have time, I reply to some emails.

When I arrive at work, I have another cup of coffee and begin reviewing my agenda at my desk. By about 10 am, I feel tired and foggy, so I usually have a granola bar and fruit with a cup of tea. I take lunch between 12:30 pm and 1 pm and normally go to a deli with coworkers. I choose chicken noodle soup, salads, or a healthy sandwich with water. I like the downtime, but I notice that I spend much of my time comparing myself to my coworkers and wondering if they are judging my appearance or my weight. Sometimes we'll walk for 30 minutes after we eat. I like that time, and it refreshes me for the

afternoon.

I usually work from 2–6 pm at my desk, but I feel exhausted by 3 pm, so I drink a 5-hour energy and have a snack. Sometimes I just snack on fruit, but I love microwave popcorn, so I have low-fat popcorn about 3 times a week. This is the time of day when I normally get headaches, and sometimes I just need to put my head down on my desk and close my eyes. I keep lavender essential oil at my desk and use it when I have a headache. I also keep a heater under my desk because I feel cold most afternoons. I have a hard time concentrating as it is, but when there are noises around me, I am easily distracted. It is ok when I am working with numbers, but when I have to write reports, I have a really hard time. I am always a little worried about not being good at my job, and I feel a lot of stress and pressure, especially when I can't focus well.

After work, I head to the gym at least 3 times a week. I am normally tired, but it gives me a little energy once I work out, so I try to do a yoga class, boot camp or Pilates. A few nights a week, I make dinner plans with friends. If I eat out, I normally eat a salad. I am self-conscious about my weight, so I never want to eat heavy foods in front of my friends. In fact, they often comment that I am the healthiest eater in our friend group. They go out for drinks after, but I hate the bar scene; it just makes me feel worse about myself, so I normally go home. I often feel sad in the evenings. I am frustrated that I can't figure out how to lose weight, clear up my skin, or just feel better in general. I feel like I do better than most of my friends, but I feel worse. If I go straight home after work, I am more likely to binge on carbs. I like to curl up and watch a movie, but sometimes I crave sugar more when I'm at home. I notice that when I give in and eat sugar, I feel itchy at night. I also get a burst of energy around 10 pm, so if I am not disciplined, I stay up too late watching TV or surfing the web and checking social media. I know that it makes me feel worse, but sometimes I just need to connect with what other people are doing.

I go to sleep between 11–12 am. I usually sleep through about half of the night; the other half, I wake up regularly. I try not to eat or drink within an hour of going to bed because I feel like I sleep better on an empty stomach. I wake up and do it all over again.

If your symptoms feel different on weekdays versus weekends, journal both experiences. This will not only help you derive clarity about your experience but also it will allow you to notice relationships between habits and symptoms. After you have journaled your daily experiences, create a general timeline. You will build a very detailed timeline with your practitioner, but for now, jot down a loose idea of your mental, physical, and emotional health beginning at birth. Remember that if you know anything about your mother's gestation or prenatal health, that information can also provide you with clues. It is important to note infections, stressors, and trauma, even if it seems unrelated. To give you an example of how symptoms and life experiences may be connected, let's look at Erin's timeline.

ERIN'S TIMELINE	SYMPTOMS
BORN VIA C-SECTION IN 1959.	DIGESTIVE ISSUES AND HAD TO BE FED SPECIAL FORMULA
8 YEARS OLD-PARENTS DIVORCE, AND DAD MOVES OUT OF STATE	MONO DIAGNOSIS AND MISSED A MONTH OF SCHOOL
9 YEARS OLD— MOM REMARRIED AND MOVED ACROSS THE COUNTRY. LIVED IN OLD HOUSE WITH LEAD PAINT	LETHARGIC AND INSECURE
12 YEARS OLD— MOM HAD A NEW BABY.	FELT EXCITED AND ENERGETIC WHEN HELPING WITH BABY
13 YEARS OLD— BABY SISTER DIED OF SIDS.	FELT SICK ALL THE TIME, NO ENERGY, AND CONSTANT STRESS AND FATIGUE.
15 YEARS OLD— MOM DIVORCED AND MOVED BACK TO CALIFORNIA.	ALWAYS FELT TIRED. SLEPT 14+ HOURS ON WEEKENDS.
15–18 YEARS OLD— SMOKED CIGARETTES SOCIALLY. BINGE DRANK IN HIGH SCHOOL.	BLOATING AND FATIGUE WERE NORMAL.
18–21 YEARS OLD— WENT TO COLLEGE FOR INTERIOR DESIGN. STOPPED DRINKING AND SMOKING.	GAINED 10 POUNDS IN COLLEGE. DOCTOR DIAGNOSED UNDERACTIVE THYROID. STARTED SYNTHROID. LOST 7 POUNDS.

22 YEARS OLD— GRADUATED FROM COLLEGE. DAD DIED OF HEART ATTACK. VERY TRAUMATIC.	GAINED A FEW POUNDS, HAIR WAS BRITTLE, AND DOC INCREASED MY DOSE.
23 YEARS OLD—GOT FIRST JOB AND MET HUSBAND. STARTED BIRTH CONTROL.	STARTED DRINKING A LITTLE BIT WHILE DATING HUSBAND, BUT I FELT SO HORRIBLE EVERY TIME THAT I QUIT AGAIN. GAINED ABOUT 5 POUNDS.
25 YEARS OLD—GOT MARRIED.	DID A SERIES OF CRASH DIETS TO PREPARE FOR WEDDING. LOST 15 POUNDS. CONTINUED YO-YO DIETS FOR 2 YEARS UNTIL I GOT PREGNANT.
27 YEARS OLD—HAD FIRST DAUGHTER.	GAINED 40 POUNDS AND LOST 35 OF IT. FEELINGS OF EXHAUSTION AND ACHES BEGAN. INCREASED SYNTHROID.
29 YEARS OLD—HAD SECOND DAUGHTER.	GAINED 35 POUNDS AND ONLY LOST 20.
30 YEARS OLD—WENT BACK TO WORK AND STOPPED BREASTFEEDING.	MORE PAIN AND FATIGUE, STRESS, AND HEAVY PERIODS. FELT ANXIOUS AND OVERWHELMED MOST OF THE TIME.

35 YEARS OLD—STILL WORKING AND MANAGING FAMILY. DIAGNOSED WITH CHRONIC FATIGUE SYNDROME.	BEGAN GETTING MIGRAINES WEEKLY. FATIGUED CONSTANTLY. PUFFY FACE AND DRY, BRITTLE HAIR WERE PRONOUNCED.
37 YEARS OLD— STOPPED WORKING.	FELT ITCHY AND ALLERGIC. JOINT PAIN BECAME DEBILITATING. FEELING OF DEPRESSION. BEGAN ANTIHISTAMINES, ANTIDEPRESSANTS, AND PAINKILLERS DAILY. CONSTIPATED AND PAINFUL ABDOMEN.
45 YEARS OLD— FIRST DAUGHTER WENT TO COLLEGE.	BEGAN SLEEPING MORE OFTEN.
47 YEARS OLD— SECOND DAUGHTER WENT TO COLLEGE.	SLEEPING 14 HOURS A DAY.
50 YEARS OLD— GOT DIVORCED.	SAME SYMPTOMS CONTINUED.

As you can see from Erin's timeline, there were many points in her life where stress and health issues intercepted. These points are clues that tell us how her body and immune system may have responded to certain triggers. We can see that she had an extremely stressful and traumatic early childhood and that her immune system was behind the curve after a C-section birth and formula-feeding. We can also see how her disease progressed from an underactive thyroid into complete autoimmunity. This type of tracking will serve as a foundation for your doctor; he or she will build upon your timeline as they interpret trends and symptoms.

Nutrition

The next immediate step you can take is with your nutrition. While your functional medicine practitioner will be able to fine-tune your nutritional plan, you can get started by shifting into anti-inflammatory eating.

Start a Food Diary

By keeping a food diary for at least 3 weekdays and 1 day over the weekend, you will become more aware of your general nutrition trends. The food diary is also great data for your doctor, as he or she will be able to pick up on potential triggers and areas where your diet can be tailored to improve your symptoms. You can keep your food diary separate from your symptom log or create them side by side. Putting them side by side may provide information about which reactions are triggered by food. That being said, many food reactions are delayed, so we cannot assume a direct and immediate cause and effect. Here is a quick look at Kenny's food diary before he visited me.

Kenny's Journal

Jan. 16, 2017

TIME	FOOD	SYMPTOMS
7 AM	2 CUPS BLACK COFFEE 1 APPLE 2 PIECES OF WHOLE WHEAT TOAST 1 TSP MARGARINE	LOW ENERGY BUT A BOOST FROM COFFEE
12 PM	HOMEMADE CHICKEN NOODLE SOUP ½ TURKEY AND LOW-FAT CHEESE SANDWICH WITH NONFAT MAYO 1 CUP BLACK COFFEE	A LITTLE FATIGUED AND A 20-MINUTE NAP AFTER LUNCH
4 PM	1 BEER AND ½ CUP SNACK MIX AT THE PUB WITH FRIENDS TO WATCH THE GAME.	STOMACH PAIN (MILD)
7 PM	6 OZ BAKED CHICKEN BREAST 1 SMALL BAKED POTATO WITH MARGARINE AND LOW-FAT SOUR CREAM GREEN SALAD	TIRED AND RELAXED WITH WIFE AFTER DINNER ON THE COUCH
9 PM	1 LOW-FAT CHOCOLATE COOKIE AND 1 CUP OF HERBAL TEA	OFF TO BED AT 9:30

We can see by Kenny's food diary that he is eating a very low-fat diet, which was prescribed for his high cholesterol. He is snacking on refined carbs and fighting fatigue all day. If this sounds like you, it is time to read the next section!

Eliminate Processed Foods, Sugar, Dairy, and Gluten

While you may eventually need to do an elimination diet to identify foods that are irritating your immune system, you can remove known inflammatory foods right away. Removing processed foods, sugar, dairy, and gluten will go a long way in relieving your symptoms and provide your body with better nourishment.

Many people with low thyroid function try to maintain a low-fat diet to combat weight gain. This approach to nutrition inherently increases carbohydrate intake, sugar cravings, and increased hunger pangs. Contrary to the old way of thinking, healthy fat does not make you fat or raise your cholesterol. Healthy fats are a great way to replace sugary foods that inflame your system and raise your blood sugar. Fat keeps you satiated and provides essential nutrients to your body. Increasing whole food sources of protein and fat and removing sugar is a great step.

In addition, you now know that gluten is a problem for everyone with an autoimmune disease. Most of my patients experience noticeable symptom relief after eliminating gluten from their diets; however, gluten is hidden in many foods and other products. See chapter 10 for a comprehensive list of foods and products containing gluten.

Dairy is a very common symptom-inducing food group. While some people are sensitive to proteins casein and whey, others are sensitive to lactose. Removing dairy benefits a great majority of my patients.

Processed foods must be removed from your diet for your body to heal. Processed foods are riddled with unhealthy additives and other food monsters like trans fats. These ingredients directly inflame your immune system. In addition, eating processed foods are taking the place of foods that could be providing you with healthy fuel and micronutrients. Instead of a bag of potato chips, you could eat homemade guacamole with cucumber slices, which would

go much farther in nourishing your body and satiating your hunger.

Making the move from processed foods to whole foods can be difficult for many reasons. Processed food is often convenient, and many individuals are overwhelmed with making whole foods an approachable part of their routine. Processed foods are also addicting, and the intense flavors, sweetness, and saltiness can make it hard to say no. Check out my list of replacement foods in the resource chapter; the recommended foods are delicious, easy, and satisfying!

Increase Vegetable and Fruit Intake

One of the best things you can do for your health is increase vegetable and fruit intake (with an emphasis on vegetables). Veggies and low-sugar fruits are loaded with fiber, water, antioxidants, and dense micronutrients that serve to improve every function in your body. Veggies and low-sugar fruits are filling and low in calories. This is important because it means you can eat more food and consume more important micronutrients without taking in too much energy that could be stored as fat. Remember that many vegetables serve as prebiotics for your microbiome, as well. Leading researchers believe that eating between 9–13 servings of vegetables and fruit per day is one of the best things you can do to increase longevity and health.

The USDA recently agreed and changed their recommendations to 5–13 servings a day based on age and size. Check out the resource section for great ideas on how to increase your veggie and fruit intake!

Probiotics and Prebiotics

You don't have to wait for your doctor to find a reputable probiotic. Visit your local high-quality health food store and follow these tips:

- Do a little online research first. Check out reviews looking for brands with high quality and high integrity.
- Look for a CFU (colony-forming unit) of 50 billion or higher. A lot of the bacteria will die off in your stomach, so you need very high quantities to

ensure that some make it to your gut!

- The more strains the better! Look for products with high diversity and multiple strains.
- Prioritize strains for Lactobacillus and Bifidobacteria. Lactobacillus acidophilus and Lactobacillus plantarum are very beneficial and reside in the small intestine or the upper GI tract among your immune cells; Bifidobacterium lactis, Bifidobacterium longum, and Bifidobacterium bifidum live in the colon.
- What's the CFUs' shelf life? Look for information on the label indicating how long CFUs will retain their viability.
- Make sure the package is resealable and that it is stored as directed (i.e., if it needs to be refrigerated, make sure it is not being sold on the shelf).
- Ensure that it does not contain any bioengineered ingredients (GMOs).
- Confirm that the product label indicates good manufacturing practices (cGMP).

Cut Down on Stress

Stress robs your body of energy and perpetuates your disease. It can be helpful to track stressors and your responses to them. This recognition brings awareness to the unique sources of stress in your life and your current stress management tactics.

In your journal, make a list of every stressor as you experience them in your daily routine. These may include negative thoughts, interactions with people, situations such as traffic or work conflict, food, financial decisions, social media, or family responsibilities. Create one column for the stress and another column to report your reactions and responses. It can be helpful to rate the stress on a scale of 1–10.

Improve Your Stress Management Library

After logging your common stressors and your responses to them, you may realize you could benefit from strengthening your stress management skills. Stress is inherent in today's modern world, but you can control how you react

to it and preserve your energy. For a detailed list of stress management tools, check out chapter 10. Then go back to your journal and write an alternative reaction for each of your stressors.

Incorporating short bouts of meditation, deep breathing, time outside, yoga, or relaxation throughout your day—even for 5 minutes—will help your body downregulate and combat inflammation.

Build Your Network

Identify supportive relationships in your life. These may be your cheerleaders who perpetuate motivation, or they may be individuals who live a healthy lifestyle and inspire you by example.

The other side of this exercise involves identifying relationships in your life that may create barriers to your success. This task can be very difficult, and it does not mean that those relationships cannot persist. However, you may need to reallocate your energy and focus more on the relationships that will help you heal. For instance, if you have a coworker that you only meet for drinks, you might need to spend less time with that person, or you can reformat your routine by inviting them to chat over tea or a hike. This is a good time to pull out your journal and make a list of the people that will help you recover. Then make a list of the people that help you perpetuate the bad habits that contribute to your symptoms and come up with ways you could reframe those relationships.

Lastly, you may have to address stress-inducing, toxic relationships in order to make a full recovery. As you can recall from Sharon's story, some people need to include a counselor or mental health professional in their treatment plan. If toxic relationships contribute to your disease in any way, you may find greater success by consulting a professional who can help you manage that area of your life in tandem with your health care.

Exercise

Exercising with an exhausting condition like Hashimoto's thyroiditis or adrenal fatigue can feel impossible. However, if you tailor your activity level to

account for your discomfort and fatigue, you'll experience an increased energy level, and you'll have a better mood sooner rather than later. If you suffer from pain and fatigue, walking, gentle movements like tai chi, gentle stretching, and meditation will be more suitable for you.

Researchers have seen exercise significantly improve an individual's mood in as little as 8 weeks.[1] If you're experiencing fatigue and mood swings associated with autoimmunity, incorporating exercise can not only improve mood, but also it can increase strength and functional capacity, decrease cortisol levels, enhance body image, and improve sleep.

Start Your Wellness File

While your journal will provide useful data to you and your doctor, you can build your wellness file by completing the forms available in chapter 10. Maintaining detailed records is incredibly helpful for building treatment protocol, although most of my patients find it more interesting to compare the before and afters of the healing process.

You are now armed and ready to take control of your health. It can be daunting to redesign your life to heal, but the rewards are endless. I have seen countless patients "own" their healing and become role models to their friends and family by sharing their experiences and impacting the lives around them. Before I leave you to your healing journey, I want to share a few follow-up stories from my patients. I hope the stories in the next chapter will solidify your motivation, commitment, and inspiration. Like you, these individuals once suffered from the incredible frustration surrounding their health problem. Now they are some of the healthiest and happiest people I know.

CHAPTER 9

Your Transformation

Healing is a journey, and like any good voyage, there are periods of hardship, and there are times of triumph and celebration. There are also moments that force us to question our intentions, motivations, and resolve. It is critical that as you begin your journey, you are prepared for every moment along the way. In the last chapter, I outlined the many steps and behaviors you can change right now. These new habits will serve as the foundation for greater health. The patients that improve and reclaim their lives are defined by their ability to implement the lifestyle changes that will propel them towards health.

It is fair to say that most people understand that fast food, smoking, drugs, and alcohol are not good for them. So why do so many people partake? The answer is that habits are built over years of influences, interactions, and relationships. Some habits are so deeply ingrained that we don't even fully understand how they have intertwined with our lives. We must recognize these behaviors, reflect upon them, and rework them if we want to achieve better health.

Many of my patients applied a variety of techniques while pursuing their treatment. As I have interacted with hundreds of patients pursuing greater health, I have extracted patterns and similarities between their experiences that have served to support success. I have also seen the characteristics that will most likely succumb to illness. I hope these insights may prove helpful as you prepare for the work ahead.

Leading an Inspired Life

At a certain point in Anna's treatment, she revealed to me that she felt utterly alone. Although she was sharing her experiences with family via email and phone conversations, Anna lived alone and away from family. She had worked hard to change her diet and had been very successful, but found that in times of stress, she did not know how to comfort herself. She used to turn to food, but she knew that was no longer an option. She had a group of friends, but none of them could relate to her new lifestyle, so she did not reach out to them when she was most frustrated. Although Anna had developed a regular breathing and meditation practice, it was the first habit she dropped when she was overwhelmed. After a few months of treatment, Anna realized that

she needed more support to help her cope with stress. She also wanted to surround herself with like-minded people whose lifestyles reflected well-being. She found a meditation and yoga center in her neighborhood and was able to share her needs with one of the coaches there. Twice a week before work, she attended private meditation sessions with her coach. This helped Anna accept accountability and gave her someone to spend time with. Anna also dropped her gym membership and attended a nightly yoga practice. She soon realized that she was gaining a new community of friends—friends who had also found meditation and yoga by way of autoimmune disease and other health issues. Anna felt supported, inspired, and empowered every time she was in that space.

As I shared in chapter 2, Anna was able to stop taking meds after only 5 months. She redefined her life, and after a year of intensive yoga practice, she went on to pursue a yoga certification. Anna now teaches many different levels of yoga focused on pain management and stress relief. I still see Anna for annual follow-ups, and she continues to inspire those around her to pursue health, leading by example. In almost each of my patients' success stories, I see that they have found a source of inspiration and that throughout their progress, they become an inspiration to others. Family members, friends, and coworkers often pay it forward and follow the path my patients have forged.

Becoming Your Priority

If you are anything like Stephanie who was overwhelmed by managing a household, a demanding job, excessive exercise, and eventually, an ailing mother, you may need to take a lesson from her story. Stephanie really struggled to ask for what she needed; in fact, she had a hard time identifying her needs in general. When we dug into her mindset, she divulged that, for her, even running had never brought her joy. It had developed out of her need to "accomplish." Stephanie has a stereotypical type A personality, which drove her to do everything "right" and be everything to everyone, that is, except for herself. It took almost 4 months before Stephanie could even take baby steps towards making herself the number 1 priority. I helped her understand that, although she did not have to be number 1 all the time, she would need to be at

the top her of her list for a while if she was going to heal and continue caring for those around her. Stephanie agreed to have an honest and vulnerable discussion with her husband and kids about her needs. To her surprise, they rallied around her in support. Her children participated in more of the household chores, and her husband helped her carve out a few hours, multiple times a week, for self-care. For Stephanie, this included hiring a caregiver for her mother 4 mornings a week. They all agreed to give up their yearly family vacation to reallocate funds to Stephanie.

Her family decided, together, to revisit the plan every month to see if she needed more. However, for the time being, Stephanie had 12 hours per week dedicated to activities that provided stress relief and relaxation. She spent that time walking with friends, getting massages to help relieve pain, practicing gentle yoga, and painting.

Stephanie also realized that she needed help with her nutrition and asked that her family all commit to keeping off-limit foods out of the house. This meant that her kids and husband went out once a week without her for a "Daddy" night to eat foods that were not going to help Stephanie heal. This had the added benefit of allowing her one night a week of quiet relaxation at home.

Creating a Tribe

It is difficult for some of my patients to find people who truly support them. Their family and friends are happy they feel better, but they are unwilling to make changes in their own lives that mirror the pursuit of my patients' health. Some of my patients want support and validation as they face the highs and lows of healing.

Remember Erin who was diagnosed with chronic fatigue syndrome and decided to join a support group? After her HT diagnosis, she maintained her relationship with the CFS group and encouraged many of them to pursue autoimmune testing. As she built relationships in her support group, many of her friends wanted to devise methods to support each other and make healing easier. They were already in the habit of meeting once a week, so they used this meeting time to exchange food as well. Each group member would make an "approved" meal in bulk, like soups or casseroles, and share it with

the members. This helped each person cook less, which is a giant benefit to those facing chronic fatigue symptoms and autoimmunity. As time went on, they brought crops from their small gardens to share and would do other nice things for each other when possible. This type of group has been extremely beneficial for many of my patients. A few of my patients have started their own support groups, which has allowed them to explore different treatments, tips, and recovery tools.

Clearing Roadblocks

Every one of my patients has experienced a moment in the healing process where they've felt they've taken 10 steps backward. Sometimes this is because their bodies experience flare-ups, the patient reverts to old habits, or unexpected life events bring about severe stress. However, sometimes a patient constantly butts heads against a specific barrier, and they just can't figure out why. Sharon experienced this with the nutrition aspect of her plan. This is very common because food is unavoidable. It is something that we all must face multiple times a day, and it can hold memories, emotions, and deeply ingrained habits.

Sharon really struggled to increase her fat intake and to refrain from counting calories due to her history with yo-yo dieting. Women's magazines were a huge trigger for her. The magazine covers were always going on about the latest dietary trends, and she would often bring in clippings to our appointments, insisting that I was on the wrong track with her nutrition. This barrier continually reversed the work we were doing with her health. With the help of her counselor, she was able to reduce the scope of her barrier by addressing her false beliefs about food. She was prompted to ask me for reading material. I was able to offer her easy science-based reading, which helped her learn the basics of nutritional science and why her body needed the foods I was suggesting.

Another barrier that Sharon eventually identified was that she had created a network of friends in her retirement community that loved to complain about ailments. While she felt comforted when she was able to relate, she left get-togethers feeling depleted and exhausted. Sharon eventually joined a

women's golf group in her neighborhood filled with women who were active and focused on health. As you may recall, after a couple of years of treatment, Sharon was feeling great and met her current husband, Jim. Jim and Sharon are both committed to good health, and after 6 months of dating, Jim had lost 20 pounds by following Sharon's nutrition protocols; he tells her he feels like he is 30 again. Sharon tells me that by increasing her attentiveness towards the barriers that get in the way of her health, she feels like she honors herself and knows herself better than she ever did before.

Making a Plan and Putting It on Paper

My patients who live on a tight schedule need a structured plan for most activities to take the guesswork out of recovery. Some need an exact meal plan, an activity schedule, or a relaxation strategy. This was the case with Nicole. When Nicole came to me, she was only 20 and fully immersed in her university experience. She was struggling to keep up with dance and her studies at NYU. She needed a steady and realistic plan that would help her feel better and maintain every other demanding responsibility.

She was committed to her goals and dreams, and she was ready to do anything to get there. However, she was so busy that she had no time for error. Much like Kenny, Nicole found following protocols and making changes simple. However, if she was left to question, even for a moment, what she was supposed to eat, she would get overwhelmed and was likely to just skip the meal. For this reason, we created an exact meal plan that covered every nutritional need and allowed her to choose appropriately from the cafeteria. She met with the cafeteria staff to ensure that approved foods were not cross-contaminated with gluten and that she would have the variety of options she needed at each meal.

Nicole was so active that we did not need to build exercise time into her schedule, but we did have to account for downtime and relaxation. Nicole created a schedule that she posted in her dorm and kept with her. The schedule included 5-minute breathing breaks throughout the day. She learned a technique that helped her reach deep relaxation quickly. That built-in time every 4–5 hours helped her manage stress throughout the entire day. Nicole

also realized that coffee triggered serious anxiety as well as autoimmune flares. She loved coffee, so she added time to her schedule where she could drink a decaf coconut milk latte once a week. The rest of the week, she drank herbal tea.

Nicole and I worked together regularly for over a year. In that time, she fully reversed her autoimmune condition and balanced her thyroid hormones as well as her other hormones. She maintained a healthy weight and regained her energy. She believes that she now has more energy than ever before.

Reworking Your Schedule

Even after you have written everything down and you've committed to prioritizing your needs, fitting in new behaviors can be challenging. Once Derek and I created his treatment plan, he realized that he needed to include counseling, IV micronutrient treatments, exercise, sauna time, and detox treatments every week. He also had to find time to prepare and cook his meals. These new demands accounted for about 12 hours a week.

Derek had to make some sacrifices if he was going to heal. While he normally spent Sundays watching football or playing golf with his buddies, he decided to carve out 4 hours every Sunday morning to prep meals for the week. He used that time to make some easy items in bulk that he would be able to grab in a pinch for dinners and snacks. He joined a cycling group, and instead of watching TV on Saturday mornings, he met a group of 6 friends to road bike in the country. The group would ride, grab lunch, and then a few of them would break off to swim and sauna. Eventually, Derek joined the swim group and built one of his sauna sessions into social time.

Derek needed to sweat in heat to excrete toxins, so when he started feeling better, he joined a hot yoga studio. He felt like he was killing two birds with one stone by working out in the heat. He was also able to manipulate his work schedule to fit counseling sessions and treatments into his work week. His boss agreed to let him take 2-hour lunches twice a week so that he could make it to appointments that were necessary to his progress. These changes manifested over more than 6 months and required continuous adjustments as his body recovered.

I also recommended that Derek attend an 8-week course called Mindfulness-Based Stress Reduction (MBSR), a widely regarded method for stress management. Not only did he have to commit 3–4 hours each week, but also he had to find the funds necessary to participate in the class—about $400. However, Derek's life had been riddled with stress and trauma, and he knew that his health would continually be at risk if he did not have the tools he needed to manage stress. He completed the course and told me that it was one of the best investments of his time and money.

Setting Reminders

Kenny was excellent at making changes and following orders. He prided himself on being able to accomplish whatever he put his mind to. However, after the first few weeks of treatment, Kenny reported that he often forgot to take certain supplements. He would take the fish oil supplements but forget to take vitamin D. Although he had all of his instructions written out, he had a hard time remembering to include new tasks in his daily routine. Kenny needed reminders. During his third session, we took 15 minutes to review his schedule and enter daily reminders into his cell phone so that he would receive text alerts. He also chose to include reminders about consuming healthy fats and carbs as well as setting aside 5 minutes before each meal to breath and prepare for healthy digestion.

Kenny lived by those reminders and found that they relieved a lot of stress. He didn't have to worry about anything unless he was traveling or could not perform his routine for an extended period. After a few months, Kenny shared his reminders with me. He had added alerts that reminded him of his goals as well as daily positive affirmations. I loved that idea, and now I regularly recommend the idea to my patients. Kenny had a full remission of HT. I think he would tell you that he was more excited about his balanced cholesterol and that he no longer experienced any signs of depression or low libido.

Replacing Behaviors

It is more difficult to change a behavior if you don't have something to replace it with. Just as Nicole replaced coffee with tea, a good replacement helps my patients stay on track. Simple replacements like sparkling water for alcohol or eating nuts instead of cheese are good options. However, many people find even these small changes very difficult. When that is the case, it is worthwhile to break these goals into tiny steps.

For instance, when Stephanie had to give up gluten, she was remiss to give up bread. Although grains were not helping Stephanie heal, she decided to shift to a gluten-free bread for a month before deciding to give up on bread altogether. During the second month, she ate less gluten-free bread and began making homemade bread based with almond and coconut flour. Eventually, she gave up grains completely. She was also very stubborn about giving up peanut butter. She decided to mix peanut and almond butter together for the first few weeks and then eventually moved away from inflammatory peanut butter and replaced it with almond and walnut butter.

This is also common with exercise. Patients who have felt awful for a long time struggle to build a fitness routine, even if it is low-impact. Many of my patients have created sedentary lives because they did not feel good enough to move. When they come to me, they have become attached to behaviors like watching TV, surfing the web, playing video games, and scanning social media. I had one patient that started replacing sedentary habits by doing squats and lifting weights on commercial breaks. Eventually, she traded in most of her TV-watching time for walking and swimming. Even if it is a slow process, it is worth it when you move in the right direction.

Preventing Temptation

I have had countless patients who say things like "I wouldn't eat the chips if they weren't in the house," or "if my husband were more active, I would love to hike or walk with him, but he just likes TV." Even when my patients are ready to hit the ground running, many of them fall prey to temptation. My most successful patients are those who remove those temptations. This is hard for

many reasons. For instance, avoiding temptation becomes a challenge when you have children, spouses, or roommates who enjoy eating foods that will trigger your symptoms. Engaging in serious conversations about your desire to take tempting foods or beverages out of the house can prove to be very effective. Some patients make a list of replacement foods and drinks and then make them available for everyone.

Other temptations include activities like going out to dinner. If you are used to drinking beer every time you visit a specific restaurant, you may have to make concessions. If you are at a point in your progress that allows you to have a glass of red wine, you can replace beer with wine. However, that may not be an option for you, and you will have to decide if you can manage the temptation. Maybe just going to the restaurant will trigger temptation, and if so, you may need to find another restaurant or a different activity.

Relationships can also be a source of temptation. I had one patient share that her entire marriage had been built on her and her spouse's love of eating and drinking. Every trip they took revolved around wine and food. She was terrified to confront her husband and tell him that she had to change her behaviors because she thought it would be the end of their marriage. However, she knew that she had to stop eating off-limit foods and drinking wine if she was ever going to heal. Eventually, she confronted her husband, and they worked extremely hard to shift the way they related to each other to reduce the number of temptations. They continued to go out to eat, but she would look at the menu in advance and even call to ask if she could arrange gluten-free dishes. Her husband was understanding and stopped drinking wine with her for 6 months. Instead, he met his brother for a glass of wine once a week and saved his wife the temptation. In the end, her husband felt better, and they found healthier ways to enjoy time together.

Granting Permission

The last trend I believe is essential to my patients' healing is their willingness to grant themselves permission to heal. Not only can this be the most important component but also it can be the most difficult. When my patient Erin finally decided that she was "all-in," she sat in my examination

room crying. She admitted that she fantasized about having a different disease that would keep her in the hospital. She wanted a diagnosis that people understood to be serious. She could not seem to give herself permission to be sick or to allow herself the resources to heal. She told me about her friend who had been recently diagnosed with cancer. It was a heartbreaking situation, but she shared it with a twinge of jealousy. Her friend had spent weeks, maybe months, in bed with family and friends caring for her. Her friend was validated in her sickness, which motivated her to undergo the treatments and receive the support that would heal her. She was able to go on leave from work and focus on her health.

Erin apologized constantly throughout this story, reassuring me that she didn't want to trade in her condition for cancer. She didn't resent her friend for the care and love that she was getting. She just wanted someone to tell her that she could focus on healing. She needed permission to be sick.

This reflects the cultural view of autoimmunity that so many of my patients face. They have often seen 3–5 doctors who either misdiagnose them or tell them they are fine. They have lost their ability to trust their instincts. They have been shamed and guilted into believing they are crazy or lazy. Erin, like so many others, had to grant herself permission to be sick. She had to do it while believing she could repair her body. She had to believe that when she took a nap or dedicated time to relaxation, that it was just as important to her healing process as the treatment her friend was receiving. Erin's friend survived cancer, and Erin survived her autoimmune condition. Erin reversed autoimmunity, in part, because she granted herself permission to be sick, and in part because she believed she would get better.

Not Every Patient Will Heal

Although ample research and countless case studies depict many successes, the truth is that not everyone will heal. Some people have complex diseases and feel that they do not have the energy, support, or resources to make the changes necessary to support their body's healing. These people fall victim to the imbalances that have perpetuated their disease and the conventional medical approach that validates a symptom-relieving model of care.

Every time I see a patient give up on themselves, I pause. I search through my mind and my heart wondering if I did everything I could. Occasionally, a patient comes back months or years later ready to try again. If his or her circumstances have changed or the disease progression has taken another step, the patient will recommit to following the plan. Everyone's situation is different, and sometimes the barriers are too many. In my practice, we do everything possible to help our patients find every tool they need to succeed. My hope is that each one of my patients can harness the strength and commitment needed to reverse the disease. Now that you know what it takes and you can see the road you must walk, you must decide if you are ready to heal. I hope you are.

CHAPTER 10

Well Equipped

1. **Medical Symptoms Questionnaire**
2. **Stress Assessment**
3. **Gluten Resource Guide**
4. **Food Swap – Replacement Food Guide**
5. **6 S's – Six Ways to Increase Vegetable and Fruit Intake**
6. **Mindful Eating Beginner Guide**

Medical Symptoms Questionnaire

Adapted from the Institute of Functional Medicine MSQ

Name_____

Date_____

RATE EACH SYMPTOM BELOW BASED ON YOUR HEALTH WITHIN THE LAST TWO WEEKS.

0 = NEVER
1 = RARELY 2 = SOMETIMES
3 = FREQUENTLY 4 = CONSTANTLY

HEAD	____HEADACHE	____FAINTNESS	TOTAL ____
	____DIZZINESS	____INSOMNIA	
EYES	____WATERY/ITCHY	____BLURRED VISION	TOTAL ____
	____SWOLLEN/RED	____TUNNEL VISION	
	____DARK CIRCLES/BAGS		
EARS	____ITCHY	____DRAINAGE	TOTAL ____
	____EARACHES	____RINGING	
NOSE	____STUFFY	____SNEEZING	TOTAL ____
	____SINUS PROBLEMS	____EXCESS MUCOUS	
	____HAY FEVER		
MOUTH/ THROAT	____CHRONIC COUGHING	____SORE THROAT	TOTAL ____
	____GAGGING	____HOARSENESS	
	____CONSTANT CLEARING OF THROAT	____DISCOLORED LIPS GUMS OR TONGUE	
	____SWOLLEN TONGUE	____LOSS OF VOICE	
SKIN	____ACNE	____DRY SKIN	TOTAL ____
	____HIVES/RASHES	____HAIR LOSS	
	____HOT FLASHES		
	____EXCESS SWEATNG		
HEART	____IRREGULAR BEATING	____CHEST PAIN	TOTAL ____
	____RAPID/POUNDING		
LUNGS	____ASTHMA	____CONGESTION	TOTAL ____
	____DIFFICULTY BREATHING	____SHORTNESS OF BREATH	
	____BRONCHITIS		

DIGESTIVE TRACT	____NAUSEA ____VOMITING ____BELCHING/GAS ____ABDOMINAL PAIN	____BLOATING ____CONSTIPATION ____HEARTBURN	TOTAL ____
JOINTS/ MUSCLES	____JOINT PAIN/ACHES ____ARTHRITIS ____STIFFNESS	____MUSCLE PAIN ____MUSCLE ACHES ____WEAKNESS	TOTAL ____
WEIGHT/ CONSUMPTION	____BINGE EATING ____BINGE DRINKING ____COMPULSIVE EATING ____UNDERWEIGHT	____CRAVINGS ____EXCESS WEIGHT ____RETAINS WATER	TOTAL ____
ENERGY	____FATIGUE ____APATHY ____LETHARGY	____HYPERACTIVITY ____RESTLESSNESS	TOTAL ____
MIND	____POOR MEMORY ____POOR CONCENTRATION ____STUTTERING/ STAMMERING ____LEARNING DISABILITY	____CONFUSION ____POOR PHYSICAL COORDINATION ____DIFFICULTY MAKING DECISIONS ____SLURRED SPEECH	TOTAL ____
MOOD	____MOOD SWINGS ____ANXIETY/FEARS ____NERVOUSNESS ____DEPRESSION	____ANGER ____AGGRESSIVENESS ____IRRITABILITY	TOTAL ____
OTHER	____FREQUENT URINATION ____NIGHT SWEATS ____SLEEP DISTURBANCES	____GENITAL DISCHARGE ____FREQUENT ILLNESS	TOTAL ____

GRAND TOTAL ____

Stress Assessment

Indicate your response to the stresses that you have experienced by writing high, moderate or low (H, M, L). Indicate the year of occurrence and any pertinent details.

EVENT	H/M/L	YEAR	DETAILS
CHANGE OF JOB			
LOSS OF JOB			
RETIREMENT			
CHANGE OF HOME			
LOSS OF HOME			
CHANGE/LOSS OF RELATIONSHIP/DIVORCE			
LOSS OF A FRIENDSHIP			
TENSION WITH FRIEND OR FAMILY MEMBER			
DEATH OF A CLOSE FAMILY MEMBER			
DEATH OF A FRIEND			
GAIN OF A FAMILY MEMBER			
CHRONIC POOR SLEEP			
WORK/CO-WORKER TENSION			
RAISING CHILDREN			
CHILD LEAVING HOME			
FAMILY TENSION			
FAMILY MEMBER BATTLING SUBSTANCE ABUSE			
FRIEND BATTLING SUBSTANCE ABUSE			
PERSONAL STRUGGLE WITH SUBSTANCE ABUSE			
INJURY TO REPUTATION			
PERSONAL ILLNESS ILLNESS OF CLOSE FRIEND OR FAMILY MEMBER CHANGE/LOSS OF RELATIONSHIP/DIVORCE			
NEW MARRIAGE			
FINANCIAL DISTRESS			
NEW FINANCIAL RESPONSIBILITY			
LARGE SHIFT IN FINANCIAL STATUS			
OTHER _____ _____			

Gluten Resource Guide

Gluten Containing Grains

- ☐ Wheat
- ☐ Wheat Berries
- ☐ Wheat Germ
- ☐ Rye
- ☐ Durum
- ☐ Emmer
- ☐ Einkorn Wheat
- ☐ Barley
- ☐ Bulger
- ☐ Couscous
- ☐ Farina
- ☐ Farro
- ☐ Graham Flour
- ☐ Kamut
- ☐ Semolina
- ☐ Spelt
- ☐ Triticale

Foods Often Contaminated with or Containing Gluten Products

Must be certified gluten-free or assume gluten is contained within the product.

- ☐ Egg Substitute
- ☐ Imitation Crab Meat, Bacon and Processed Meats
- ☐ Salad Dressing
- ☐ Soy Sauce
- ☐ Teriyaki Sauce
- ☐ Malt Vinegar
- ☐ Candy Bars

- ☐ Meat Substitutes
- ☐ Self-Basting Poultry
- ☐ Ketchup
- ☐ Mayonnaise
- ☐ Processed Cheese
- ☐ French Fries
- ☐ Fried/Breaded Foods
- ☐ Cold Cuts
- ☐ Commercial Bullion
- ☐ Soup
- ☐ Malt
- ☐ Tabbouleh
- ☐ Pudding
- ☐ Fruit Fillings
- ☐ Gravy
- ☐ Cereals
- ☐ Canned Baked Beans
- ☐ Non-Dairy Creamer
- ☐ Energy Bars
- ☐ Root Beer
- ☐ Trail Mix
- ☐ Wheatgrass
- ☐ Vodka and Other Liquors
- ☐ Beer
- ☐ Oats (Unless GF)
- ☐ Oat Bran (Unless GF)
- ☐ Roasted Nuts
- ☐ Meatballs
- ☐ Wine Coolers
- ☐ Blue Cheese

Miscellaneous Sources of Gluten in Your Home

- ☐ Cosmetics

- ☐ Shampoo
- ☐ Lipsticks
- ☐ Medications
- ☐ Stamps
- ☐ Envelopes
- ☐ Supplements
- ☐ Vitamins
- ☐ Play-Doh
- ☐ Conditioner

Other "Code" Names Indicating Gluten

- ☐ Aveva Satica Cyclodextrin
- ☐ Brown Rice Syrup
- ☐ Dextrin
- ☐ Fermented grain Extract
- ☐ Hordum Distichon
- ☐ Hordeum Vulgare
- ☐ Hydrolysate
- ☐ Hydrolyzed Malt Extract
- ☐ Hydrolyzed Soy Protein
- ☐ Hydrolyzed Vegetable Protein
- ☐ Maltodextrin
- ☐ Modified Food Starch
- ☐ Natural Flavoring
- ☐ Phytosphingosine Extract
- ☐ Amino Peptide Complex
- ☐ Secale Cereale
- ☐ Triticum aestivum
- ☐ Triticum Vulgare
- ☐ Tocopherol
- ☐ Vitamin E
- ☐ Yeast

Food Swap

Replace the foods you are likely to choose in a moment of stress or distraction with foods that are less likely to result in overeating.

TOSS IT	STOCK IT
CEREAL	OAT-FREE NUT GRANOLA AND APPLES
CHIPS	SALTED NUTS
CRACKERS	CELERY AND GUACAMOLE
GRANOLA BARS	KIND OR LARA BAR
WHIPPED CREAM	COCONUT CREAM
PRETZELS	ORGANIC JERKY
CANDY	DARK CHOCOLATE & DATES
ICE CREAM	BLENDED FROZEN MANGO
COOKIES	DATES AND ALMOND BUTTER
CHEESE	VEGGIES WITH GUACAMOLE
COMMERCIAL DRESSINGS	OLIVE OIL AND BALSAMIC
VEGETABLE OIL	OLIVE, AVOCADO AND COCONUT OIL
MARGARINE	GRASS-FED BUTTER AND GHEE
SUGAR	MAPLE SYRUP, HONEY AND STEVIA
WHEAT FLOUR	ALMOND MEAL AND COCONUT FLOUR
SOY SAUCE	TAMARI OR COCONUT AMINOS
SODA	SPARKLING WATER
COFFEE	HERBAL TEA
MALT VINEGAR	APPLE CIDER VINEGAR

The BIG Six

Six Easy Steps to Eating More Veggies and Fruits

Smoothie

Load your breakfast with veggies, fruit, protein, fiber, and a little fat.

Recipe: 2 cups raw spinach, ¼ cup coconut milk, ¼ cup water, 1 tbsp flax seeds, 1 banana, and ½ cup frozen blueberries.

Recipe: 2 tbsp almond butter, ½ cup unsweetened almond milk or water, 1 banana, 2 cups raw chard, and 1 serving of chocolate protein powder.

Soup

Make a triple batch of veggie soup and freeze your leftovers in portion-size containers. Try soup for breakfast in cold winter months to mix things up.

Salad

Start with 2 cups of greens and add colored veggies. Throw ¼ cup of protein on top (beans, fish, chicken, seeds, or nuts) and then top with an easy dressing based in olive or avocado oil.

Stir-fry

Think of this as a hot salad. If you need something warm, gently stir-fry animal protein with veggies, coconut oil, seasonings, and sauces. Enjoy as is. Breakfast stir-fry with veggies and eggs is a great option!

Snack

This is your opportunity to fill up on veggies and fruits. Plan on keeping whole fruits and nuts/seeds with you for AM snacks and veggies with guacamole or hummus for an afternoon snack. This will help you control portions at lunch and dinner.

Side

Instead of choosing breads and grains as a side dish, try one raw veggie side and one cooked veggie. If you are worried about satiety, add fats such as olive oil, grass-fed butter, avocado, or nuts and seeds.

Beginner's Guide to Mindful Eating

Mindful eating habits are helpful for everyone, especially those who are trying to change their routines around food. Follow these steps to create a more mindful relationship with your food and your body.

Before choosing when and what to eat

1. Take 4 deep breaths.
2. Notice where you feel hunger in your body.
3. Ask yourself, "What does my body want right now?"
4. Assess emotions/triggers.
5. Move away from distractions.

Before taking your first bite

1. Look at your food and notice what it is appealing about it.
2. Smell the food. Does that influence your hunger?
3. Take a deep breath.

During meal

1. Chew the first bite very slowly and notice if the flavors, textures, or sensations change.
2. Pay close attention to how each bite affects hunger and satiety.
3. When you feel 80% full, notice if you are compelled to eat more.
4. Where is that sensation coming from?

After meal

1. Notice your energy level for 60 minutes after your meal.
2. How is your energy 3 hours after your meal?
3. Do you feel like you are digesting, or can you feel the food sitting in your stomach?
4. How long are you sustained by that meal?
5. Are you left with any cravings or emotional hunger?

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Chapter 2

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