

FUNCTIONAL MEDICINE:

The Future of Healthcare

EXPERIENCE L!FE

IN ASSOCIATION WITH



THE INSTITUTE FOR
FUNCTIONAL
MEDICINE®



When the head of the Cleveland Clinic approached functional-medicine pioneer Mark Hyman, MD, several years ago about starting an institute devoted to functional medicine, Hyman actually tried to talk him out of it.

Conventional medicine's penchant for managing and suppressing symptoms with procedures and pills, Hyman told then-CEO Toby Cosgrove, MD, should be replaced with the functional-medicine model, which seeks to identify the root causes that give rise to symptoms.

"I said, 'Toby, you don't want me there. Because, if I go there I'm going to be disruptive. I'm going to tell you that most of what you are doing is based on an outdated paradigm of disease that in many cases creates more harm than good. I would want to implement programs that are going to empty out half your hospitals, clear out most of your procedure rooms, and reduce hospital stays and doctor visits dramatically. Are you OK with that?'" says Hyman.

Cosgrove, who oversaw the Cleveland Clinic from 2004 to 2017 and now serves as an executive advisor to the \$8 billion healthcare system, was undaunted. He told Hyman he realized medicine was going in a different direction. "He saw what was happening in the field of functional medicine and realized that's where the future was," Hyman says.

In September of 2014, the Cleveland Clinic Center for Functional Medicine (CCCFM) opened, making the Cleveland Clinic the first mainstream institution to prominently incorporate the functional-medicine model.

In essence, functional medicine is a move away from the drug-based model of fighting infectious diseases that worked so well in the 20th century to a systems-oriented, patient-focused model designed to reverse the chronic-disease epidemic. Today's most prevalent health issues are mostly caused by the interactions between genetics, lifestyle choices, and environmental exposures, and treating them requires both understanding these interactions and designing appropriate treatments that are personalized to each individual.

"To have Cleveland Clinic — which is looked to as an institute that is at the forefront of change — come to us for help represents a sea change in healthcare," says Hyman.

"We're at a serious transition point. We're doing the type of medicine that will be the future of healthcare."

To better understand functional medicine, we've put together an e-book in association with the Institute of Functional Medicine.



Many people are finding better health solutions with functional medicine, a new model for how to practice medicine and treat chronic disease.

A few years ago, Louis Messina was in pain. Despite being on a variety of big-gun drugs to control his psoriatic arthritis, an autoimmune disease that attacks the joints, he still suffered from constant pain and swelling throughout his body. He walked with a limp because his left knee had arthritis-induced tissue damage; the big-toe joint on his right foot was similarly destroyed; and in the mornings, he would awake to find his hands balled up into fists. (They would unclench only after he submerged them in warm water for several minutes.)

“Morning stiffness may sound like a minor problem, but it’s a big thing,” Messina says. “If you can’t open your hands up in the morning, you really can’t do much. You can’t brush your teeth, or wash your face, or shave.” Nor can you perform surgery. At the time, Messina was in his early 50s and putting in 60 to 80 hours weekly as chief of vascular surgery at the renowned University of California, San Francisco School of Medicine.

“

Once we treated his poor, inflammatory diet and his underlying gut issues, which generated significant inflammation throughout his body, **all of those problems went away.**”

“I was quite incapacitated,” he recalls. “It was at the point where I couldn’t really make rounds with the residents in the mornings because I wasn’t able to easily walk up and down the stairs.”

Frustrated and thinking about early retirement, Messina made an appointment with Mark Hyman, MD, the medical director and founder of the UltraWellness Center in Lenox, Mass., and a leading expert in functional medicine. “I had never even heard of functional medicine,” Messina says. “I went on the recommendation of a friend of mine and, frankly, because my wife wanted me to go.”

Hyman took a detailed medical history, asking Messina very specific questions about his diet, lifestyle, early childhood illnesses, stresses, and recent health challenges, which included reflux, migraines, and more. Then he ordered a battery of tests to deepen his understanding of Messina’s overall health. (To get an idea of some of the tests Hyman ordered, see “Basic Tests Used in Functional Medicine” below.)

The results showed a variety of underlying gut problems, such as yeast overgrowth, a leaky gut, and allergies or sensitivities to many foods, including gluten. Tests also revealed low levels of vitamin D and magnesium;

hypothyroidism; and prediabetes.

“He had all kinds of problems,” says Hyman. “But once we treated his poor, inflammatory diet and his underlying gut issues, which generated significant inflammation throughout his body, all of those problems went away.”

For Messina, who up until this point had been offered only surgery or drugs (which cost more than \$30,000 annually and had serious side effects), it was an unprecedented medical experience.

“The rheumatologist that I had been seeing before Dr. Hyman still can’t believe it. She’s never seen anything like it,” he says. “My arthritis, my pain and swelling, it’s all gone. I now go faster on the stairs than my residents.”



Most doctors aren't trained to think about the underlying causes of disease, **such as toxins, allergens, microbes, nutrition, and stress.**

Messina’s experience, while notably rare in conventional medicine, is actually quite characteristic of functional medicine, an increasingly popular healthcare model. Its claim to fame: seeing the big picture, treating the whole patient, and recognizing and treating the root of disease, as opposed to just the most visible symptoms.

Some folks have the mistaken idea that functional medicine is simply lifestyle-based medicine, but it is a systems-oriented, science-based approach that involves taking a patient’s biochemistry, physiology, genetics, and environmental exposures into account when looking for the cause of a specific medical issue or set of symptoms.

Practitioners in the hyperspecialized, overbooked world of conventional medicine, says Hyman, sometimes don’t have the time or inclination to adopt this wider perspective. In Messina’s case, doctors had focused only on suppressing the inflammation — which was just a symptom — as opposed to digging deep and investigating what was causing that inflammation.

“Most doctors aren’t trained to think about the underlying causes of disease, such as toxins, allergens, microbes, nutrition, and stress,” says Hyman, former chairman of the Institute for Functional Medicine (IFM). “Conventional medicine is the medicine of *what* — what disease do you have, what drug should I give you. Functional medicine considers the diagnosis, of course, but it also seeks to answer the question *why*.”

An Epidemic of Chronic Illness

Matching a drug to a disease is a big part of the typical physician's job. It works like this: You get sick. You go to the doctor. The doctor runs tests or recognizes your symptoms. You're given a prescription to take to the drugstore. Sometimes the drug works wonders. Often, it doesn't — particularly over the long haul, and particularly if what you are dealing with is a chronic disease or condition. And often the drug has side effects. Over the past 70 years, this medication-centered mindset and the industry behind it have saved millions of lives, especially when it comes to infectious diseases, such as malaria and polio.

Conventional medicine is also adept at handling acute trauma. "If you go to the emergency room with a heart attack or a broken leg, the doctors who treat you will know exactly what to do," says Victor Sierpina, MD, a family physician at the University of Texas Medical Branch whose practice is informed by functional-medicine principles.

Where conventional medicine can fall short, though, is in the early identification and long-term management of chronic illness, including the kinds of digestive, metabolic, hormonal, and cardiovascular disorders in which many functional-medicine doctors specialize.

Conditions like obesity, type 2 diabetes, and cancer are characterized by a series of complex, multilayered symptoms that take years to develop and can affect every biological system, including circulation, immunity, and hormonal and neurological health. By the time most people are diagnosed with a persistent condition, they need a full-scale intervention, not a 15-minute appointment and a symptom-suppressing prescription.

In 2011 the United States spent nearly 18 percent of its total gross domestic product on healthcare. And experts predict the cost of treating chronic illnesses alone could eventually bankrupt the nation.

That belief is based in part on the data: The Centers for Disease Control and Prevention estimates that one in two adults (133 million Americans) has at least one chronic condition such as heart disease, type 2 diabetes, cancer, or arthritis. Chronic illness is now also linked to seven out of every 10 deaths in the United States.

"I came out of conventional medical-school training and was in practice for two years, during which time I'd look at my schedule [at the end of the day] and agonize over the fact that I didn't help half the people on it," says David Jones, MD, former president of the IFM.

"I was seeing the effects of treating chronic problems with medications meant for acute illness," he recalls, "and the side effects left many of my patients feeling worse than they did before they saw me. My main treatments at that time were pharmacological and didn't address the underlying causes of my patients' real day-to-day issues."

Most experts acknowledge the current system is failing people with chronic illness. Even James Madara, MD, executive vice president and chief executive officer of the American Medical Association (AMA), agrees that traditional medicine education needs an overhaul.

“The structure of medical-school curriculum hasn’t changed in more than half a century, yet, in the last 25 years, patients’ needs have changed completely,” he says. “Today, for every one person admitted to the hospital, 300 more are seen as outpatients, most with chronic conditions. Caring for this new population requires an entirely different mindset.”

Say, for instance, that you suffer from migraines. An appointment with a typical conventional doctor would likely be brief and end with a prescription for pharmaceuticals.

**Most neurologists don't have the
right model for treating these people,
because they are treating only a symptom
— pain — and not the root causes.**

In contrast, with a functional-medicine practitioner, you fill out an extensive questionnaire about possible triggers of the migraines, including your diet; your digestive and elimination patterns; your sleep and stress levels; and your exercise and lifestyle choices, like smoking and alcohol use. A functional-medicine doc will then order a variety of tests to explore any issues the health history turned up.

“You need to explore what is giving rise to those migraines,” says Hyman. “Conventional neurologists will diagnose you with a migraine based on your symptoms, but they don’t investigate the causes of those migraines.”

And there are a variety of causes. For example, explains Hyman, one of his patients had migraines due to bacterial overgrowth in her small intestine. Another patient, who had been to the top headache clinics in the world, turned out to have a simple magnesium deficiency. Another had a gluten sensitivity that triggered her migraines. And yet another patient, who was approaching 40 and always experienced migraines right before her period, turned out to have an estrogen–progesterone imbalance.

Most neurologists don’t have the right model for treating these people, Hyman says, because they are treating only a symptom — pain — and not the root causes. In fact, many functional-medicine docs believe that drugs used to treat migraines can actually lower your pain threshold over time, resulting in even more uncomfortable headaches.

Jeffrey Bland, PhD, who is widely considered one of functional medicine's leading pioneers, explains it this way: "Functional-medicine practitioners spend time with their patients and listen to their histories because they are looking at the interactions among genetic, environmental, and lifestyle factors that can influence long-term health and complex, chronic disease."

The Foundations of Functional Medicine

Bland launched the functional-medicine movement about 30 years ago after he grew frustrated with what he calls "fragmented, organ-based specialty care."

Think of disease as a giant weed sprouting out of the body's soil, Bland says. "What's above ground is easier to see and, in many ways, easier to treat. But unless you dig down and uproot the weed, you'll never contain it; you'll only stunt its growth."

In 1990, Bland asked a group of medical experts to brainstorm a better way. Ultimately, the group laid down the foundations of functional medicine. The experts felt that catching the early warning signs of chronic illness would be best for patients as well as the healthcare system. They decided that employing extensive intake questionnaires and listening to patients' stories could provide important clues.



What's above ground is easier to see and, in many ways, easier to treat. **But unless you dig down and uproot the weed, you'll never contain it; you'll only stunt its growth."**

Soon after, Bland and his wife, Susan, founded the IFM and began offering introductory courses in functional medicine. To enroll, an applicant had to be a graduate of an accredited healthcare program: Doctors, nurses, naturopaths, osteopaths, chiropractors, and nutritionists could all participate.

Today, more than 100,000 healthcare practitioners have been introduced to the principles and practices of functional medicine, and the organization's membership is expanding by 30 percent a year. The IFM is developing courses on functional medicine that will be taught in medical schools around the country.

"Functional medicine isn't 'airy fairy,'" says Bland. "The method is grounded in science, and we use the best drugs available, if needed," he says. But, when appropriate, practitioners also advise patients about nutrition, exercise, and reduction of toxic exposure. "This is simply about using the right tool for the right job," he says.

A Step in a New Direction

The tools that Hyman used to reduce inflammation and heal Louis Messina's gut (what Hyman refers to as "the inner tube of life") included supplements to amp up certain nutrients and probiotics in his system; daily meditation practice; and, perhaps most important, a diet that eliminated problem foods, such as gluten, dairy, yeast, and sugar, and prioritized whole foods.

Messina's daily diet now includes lots of veggies, healthy fats, high-quality proteins, and a variety of anti-inflammatory spices and herbs. He no longer needs medication to treat his arthritis. "I enjoy this way of eating. I immediately took to it because I became aware of how good it made me feel," Messina says. "I used to have traditional meals, like cereal for breakfast, and I would always have an upset stomach 20 to 30 minutes later."

A few years ago, Messina was exhausted, in great pain, and on the fast track to early retirement. Today, he is symptom-free, physically fit, and unendingly grateful that functional medicine has allowed him to take charge of his own health.

It is these kinds of turnarounds that fuel the emerging popularity of functional medicine. Sometime in the last 50 years, most physicians lost their ability to see the big picture, which is addressing patient health concerns individually. Today's conventional focus, says Hyman, is on identifying the disease, naming it, making a diagnosis, then applying drugs and procedures to reduce the symptom profile. Functional medicine turns this entire way of thinking on its head. Instead of seeing patients through the lens of a disease, says Hyman, "functional medicine teaches practitioners how to connect the dots."

BASIC TESTS USED IN FUNCTIONAL MEDICINE

Testing allows doctors to gain a perspective on how well the body is doing its job. Just as a mechanic might hook your car up to a diagnostic computer to get more information, a medical doctor will peer at your blood, urine, and sometimes even stool to get more data points to plot a plan of action. A functional-medicine workup will often include the basics (cholesterol screening, lipid panel, white blood cell count), plus several more tests.

Most functional-medicine practitioners use a handful of labs that are usually considered out-of-network by insurance companies. The upshot? Patients must pay up front and in full. Afterward, however, you can submit a claim to your insurance company in hopes of full or partial coverage. According to the Internal Revenue Service, a health savings account may be used to pay for lab fees if they are considered part of medical care. So, if your functional-medicine practitioner is a licensed physician, you might go this route.

Prices below are approximate (costs can vary greatly between clinicians), but they are in the ballpark. Here's what to expect:



IgG ELISA Food Antibodies: This blood test assesses IgG antibodies for 87 combined foods, including gluten. The aim is to pinpoint food allergies and sensitivities that may be disrupting digestion and opening the door to autoimmune disorders and other inflammatory diseases. (Cost: \$200)



Organic Acids Test: Organic acids are urinary markers of metabolism. This urine test looks at issues related to mitochondria, B-vitamin deficiency, detoxification, and more. (Cost: \$300)



Thyroid-Stimulating Hormone: The pituitary gland secretes thyroid-stimulating hormones (TSH for short) to help the body regulate — you guessed it — the thyroid. Many people suffer from either an overactive or underactive thyroid. This blood test will give your provider a sense of your overall hormonal health. (Cost: \$200)



Digestive Stool Analysis: Used primarily to identify gastrointestinal disorders, such as irritable bowel syndrome and inflammatory bowel disease, this test also reveals the health of the gut's ecology (good and bad bacteria levels). The analysis detects yeast, parasites, and toxins that cause antibiotic-associated diarrhea. (Cost: \$425)



Saliva Hormone Testing: This test measures levels of the hormones progesterone, testosterone, and estradiol over 28 days. The aim is to look for imbalances that cause fertility problems as well as disruptions in mood, sleep, and appetite. (Cost: \$200)



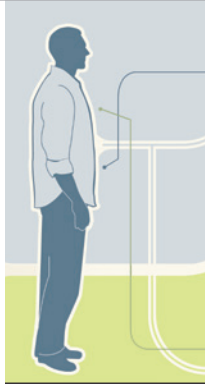
Intestinal Permeability Assessment: This urine test measures whether or not the lining of the small intestine is too permeable, thereby allowing toxins into the bloodstream, or, conversely, has decreased permeability, causing malnutrition and malabsorption. Patients drink a substance made up of two nonmetabolized sugars, lactulose and mannitol, and then submit a urine sample. This information is assessed to see how much of the substance passed through the small intestine and how much leached through the mucosal barrier. (Cost: \$130)



Urine Toxic-Metals Test: Heavy metals in the environment can enter the body through air, water, and food. Once inside, they can cause a host of ills. This urine test requires the patient to drink a chelating agent (a substance that binds to heavy metals and moves them out of the body through urine). Over a six- to 24-hour period, urine is collected and sent to the lab to be screened for lead, mercury, cadmium, and other heavy metals. (Cost: \$160)

Download the PDF.





TWO PATHS

Meet our hypothetical patient.

In his 50s, he is struggling with high blood pressure, high cholesterol, heartburn, joint pain, and type 2 diabetes — an all-too-typical list of issues. So, how would he fare at a typical conventional doctor's office versus a functional-medicine doctor's office? Here are some key differences.

1. Conventional-Medicine Approach

When it comes to acute trauma, like a broken leg, or infectious diseases, such as malaria, conventional medicine is incomparable. Not so when it comes to the epidemic of chronic disease. "The structure of medical-school curriculum hasn't changed in more than half a century," says the American Medical Association's James Madara, MD. "Caring for this new population requires an entirely different mindset." Confronted with our hypothetical patient's set of symptoms, many conventional docs would certainly consider lifestyle-based solutions. But their primary treatment would most likely be a drug-centered approach, breaking the larger problem into individual components and treating each issue with a separate medication. This strategy is accepted and supported by health-insurance and pharmaceutical companies.



Blood-pressure medication. Routinely prescribed for even mild problems, blood-pressure meds have been linked to an increased risk of cancer, back pain, and headaches.



Cholesterol medication.

Research shows that statin medications decrease heart-attack risk by less than 2 percent and can have serious side effects, including increased risk of type 2 diabetes and joint pain.



Diabetes medication.

Insulin can worsen type 2 diabetes in the long run. One drug, Avandia, has been linked to heart disease.



Nonsteroidal anti-inflammatories (NSAIDs) for joint pain.

NSAIDs, such as ibuprofen, can damage the all-important gut lining and lead to bleeding ulcers, heart attacks, and strokes.

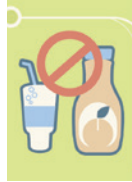


Acid blockers. These drugs, often prescribed for heartburn, work by impeding the stomach's ability to make acid. But the body needs stomach acid to digest food and keep harmful bacteria at bay. Long-term use of acid blockers is linked to osteoporosis

and nutritional deficiencies. Taken together, this potent cocktail of drugs can cause adverse interactions, and toxicities are possible. One common side effect is confusion, which in an older patient is often misdiagnosed as Alzheimer's.

2. Functional-Medicine Approach

The typical functional-medicine practitioner would probably recognize that the combination of high blood pressure, high cholesterol, weight gain, type 2 diabetes, and heartburn all share a single root cause: metabolic syndrome, one of the most common causes of heart attacks today. After taking an extensive health history, the functional-medicine practitioner would likely order laboratory analysis to create a personalized framework for diagnosis and treatment. Clearly, the course of action depends on what the testing turns up, but here are a few ways a functional-medicine doc might treat our patient.



Eliminate sugar. The major cause of metabolic syndrome is excess sugar and refined carbohydrates in the diet. The average American consumes about 150 pounds of sugar a year. Simply eliminating the excess sugar, starting with sodas and fruit juices, will often fix half of these problems.



Run thyroid tests. A low thyroid level in men and women is a sign of hormonal disturbance that contributes to metabolic syndrome. Functional-medicine docs use a series of tests (not just the one or two ordered by conventional docs) and note even minor abnormalities.



Prescribe blood-pressure medication (short term).

A functional-medicine doctor may use conventional pharmaceuticals as a first step, but not an endgame. The long-term solution is a nutrition-rich whole-foods diet high in magnesium and potassium, which lowers blood pressure naturally. Once blood pressure is under control, it's time to taper off the meds.



Incorporate more light and movement. Sunshine, for vitamin D, and exercise are both instrumental in bone strength, weight loss, and cardiovascular health. As the weight comes off, the arthritis pain disappears and much of what has been blamed on arthritis, which is often muscle pain, also improves with hormonal and nutritional support.



Monitor and maintain improvements. Heartburn often clears up when excess weight comes off, but if it continues, the functional-medicine practitioner might recommend a plant-based digestive enzyme with meals. Type 2 diabetes, too, usually clears up as hormones stabilize, diet improves, and weight normalizes. Same with high cholesterol. By getting out of the chronic-disease loop early, the patient avoids the long-term effects these problems eventually cause, including nerve pain and cardiovascular disease. As our hypothetical patient ages, he maintains his healthy lifestyle and continues to feel like he is in his 40s or 50s, with a clear mind, a healthy cardiovascular system, and a low risk of cancer and osteoporosis.

FUNCTIONAL-MEDICINE FAQs

What's the biggest difference between conventional and functional medicine?

Conventional medical schools train doctors to diagnose a disease and then assign a drug or surgery to correct it, says Kristi Hughes, ND, a naturopathic physician who practices functional medicine. For instance, many patients with heart disease have narrowing of the arteries that supply blood to the heart. A common approach is to insert stents in the arteries to prop them open and maintain blood flow.

The same issue, if approached by someone trained in functional medicine, would likely instigate a conversation with the patient about what environmental, genetic, and lifestyle factors may be contributing to a narrowing of the arteries. After all, numerous functions — poor diet, inactivity, hormonal imbalances, chronic inflammation — can have an impact on blood flow to the heart.

The conventional-medicine approach, says Hughes, “is doomed to fail in an era of chronic disease like the one we are in today. Rather, physicians must strive to identify and treat the underlying causes of illness, engage patients in a therapeutic partnership to co-create a plan for health and healing, and support behavior changes through empowering and educating patients on wellness care.”

What's the difference between functional and integrative medicine?

The difference between functional medicine and integrative medicine is subtle but meaningful. While all functional medicine is integrative (meaning it's open to integrating both conventional and alternative methods), not all integrative healthcare practices are functional.

An integrative doctor may be a family practitioner with an interest in Chinese medicine or an osteopath who incorporates homeopathy into his practice. That's fine, but it's not functional medicine, says David Jones, MD, president of the Institute for Functional Medicine (IFM), who likens the distinction to your computer: Functional medicine would be the operating system running in the background, while integrative approaches, like acupuncture and homeopathy, are like specific apps running in the foreground without an operating system connecting them.

Why haven't I heard of functional medicine?

The short answer is, you will. The long answer is that altering the course of conventional medicine is like turning a big ship: It takes a while. Functional medicine started in the early 1990s as the brainstorm of a few doctors frustrated with a medical system that expected them to treat chronic disease with pills and surgeries. Now, functional medicine has its own epicenter, the IFM. So far, more than 100,000 practitioners from 73 countries have been introduced to the principles and practices of functional medicine. Faculties from 30 percent of all medical schools in the United States have enrolled in continuing-education courses. One of the group's goals is to incorporate

functional medicine into medical-school curricula so that the next generation of doctors will be able to treat chronic diseases successfully.

To that end, the University of Miami worked with the IFM to come up with a dedicated functional-medicine and clinical-nutrition curriculum for doctors in the IFM program, which is in its third year of use. And IFM graduated its first class of certified functional-medicine practitioners recently.

How does one become a functional-medicine practitioner?

Functional medicine is not a standalone degree. Think of it more as a postgrad certification. Physicians, osteopaths, chiropractors, nurses, naturopaths, nutritionists, and others can attend functional-medicine courses to build on their training and as part of the larger continuing-education requirements needed to keep their licenses up to date.

A five-day introductory course in functional medicine is the first step. Here, professionals learn the underlying philosophies, diagnostic systems, and protocols for identifying and treating the root causes of disease. Then practitioners can attend specialized three-day seminars on topics such as cardiology, immunology, gastroenterology, hormonal balance, detoxification, and energy regulation.

How much does it cost to see a functional-medicine professional?

In addition to lab costs and follow-up appointments, expect to pay \$200 to \$400 for an initial consult. Be forewarned: Even if you can find a practitioner who takes your health-insurance plan (some functional-medicine practitioners do not), the out-of-pocket expenses for supplements and tests can sometimes be prohibitive.

Most major health-insurance companies won't pay for lab tests above and beyond a standard protocol. For instance, they'll often cover basic blood work, such as white blood cell counts, cholesterol levels, or blood-glucose levels, but not a stool test for parasites or urine test for hormone levels. While a functional approach may cost more up front, many patients find it well worth the money — both because they get better results, and because they avoid the side effects and quality-of-life sacrifices associated with many conventional pharmaceutical and surgical interventions.

How do I find a functional-medicine doctor?

Start by searching the IFM's website (www.functionalmedicine.org), but note that the site merely provides an unvetted list of practitioners who have completed the five-day introductory course. So, once you find practitioners near you, be sure to check out their websites for more info.

Download the PDF.



The **Functional-Medicine** Matrix

**Discover the simple tools progressive practitioners use to dig
beyond diagnoses and treat root causes effectively.**

BY **HEATHER ROGERS**

Ten years ago, Jared was an overworked anesthesiologist who lived on fast food and little sleep. After seeing multiple conventional physicians for the acute asthma he'd suffered with for five years, the 32-year-old was desperate for relief. So he visited Thomas Sult, MD, a functional-medicine practitioner in New London, Minn.

As a doctor himself, Jared was inclined to be suspicious of anything that didn't follow familiar protocols, so this was a reluctant — and last-ditch — effort to get better.

While conventional Western medicine focuses on dealing with the symptoms of illness, functional medicine aims to understand its causes, and it uses that knowledge to treat the roots of chronic disease.

Functional medicine operates on the principle that identifying a disease state is not the conclusion of a medical diagnosis; it's the beginning.

Yet arriving at this deeper understanding takes time, an investment that is central to uncovering and resolving the root causes of chronic illness.

During Jared's initial consultation with Sult, which lasted more than an hour, Sult asked questions about Jared's lifelong medical history, as well as his diet, relationships, and emotional state.

He entered this data into two simple documents — a timeline and a matrix — that would help him frame Jared's illness in an entirely new way.

Here's a look at how these two key functional-medicine tools are helping many doctors better understand the whole story of their patients' health.

Jared's Story

During his initial visit, Jared answered numerous questions about his health history, while Sult plotted out key events from Jared's birth to the present day on a timeline. This record would reveal that Jared had taken a series of antibiotic courses as a child and subsequently suffered severe gastrointestinal problems. It also showed that these issues had persisted into adulthood as chronic irritable bowel syndrome (IBS).

Meanwhile, Jared shared with Sult that he had been treated for a parasite a few years earlier, at which time his symptoms for IBS and asthma both cleared up for nearly a year. This might seem like a lucky coincidence, but for Sult the concurrence was critical.

"When we dove into his history and created the timeline, it became obvious that his lungs got bad when his guts were bad," Sult explains, noting that this connection is not uncommon. "When I laid it out in the timeline, it was like watching dominos fall."

He suspected that because both IBS and asthma are inflammatory conditions, the root cause of the asthma was the nearly lifelong

inflammation in Jared's gut.

Sult wrote a prescription for an antibiotic to wipe out the parasite he suspected had returned and put Jared on a probiotic supplement and an elimination diet to help his gut lining heal. The new menu eliminated eggs, dairy, gluten, beef, pork, corn, soy, and peanuts.

Despite his skepticism, Jared bought into the plan. When he saw his symptoms laid out on the timeline, he understood how his inflammatory symptoms had developed, as well as how they were connected to one another. This convinced him that healing might be possible if he committed to these changes.

The new diet was especially daunting to Jared, who ate mostly fast food, largely because he didn't have time to cook. A lifestyle counselor at Sult's clinic coached Jared in preparing enough vegetables, fruit, fish, and chicken to get him through the week.

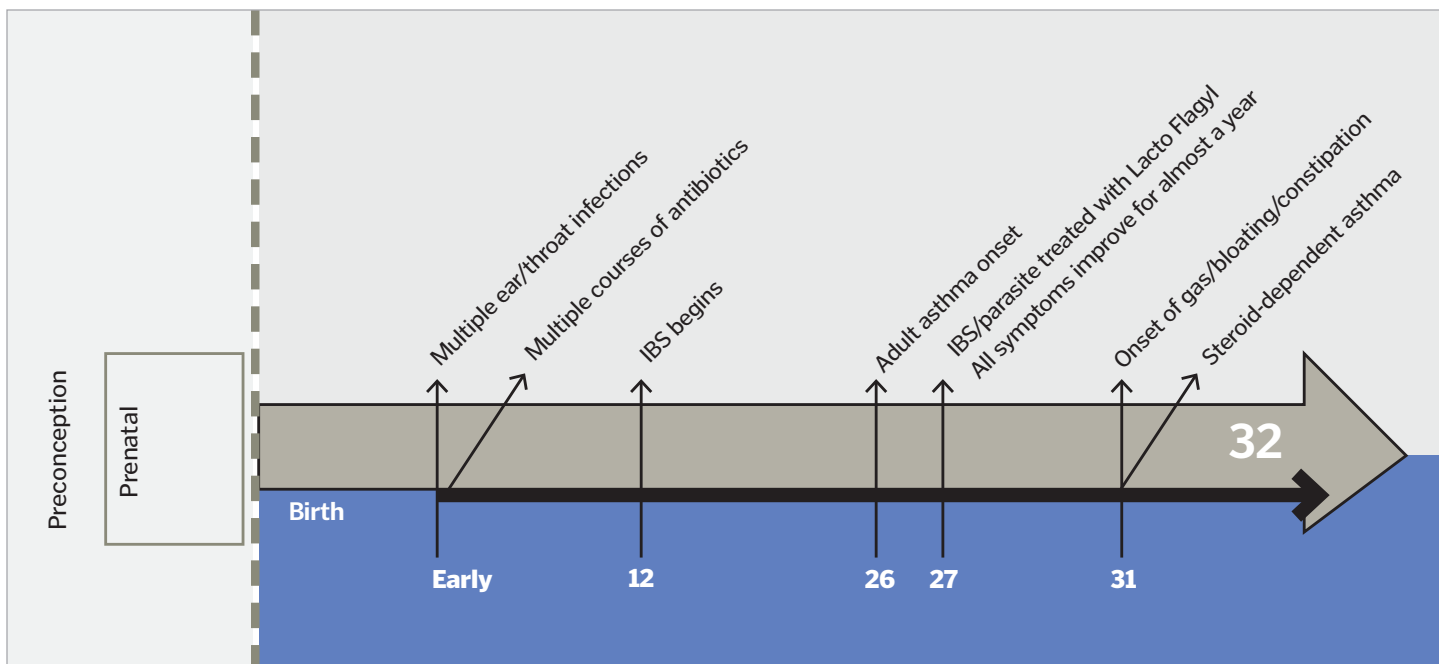
A lifestyle counselor at Sult's clinic coached Jared in preparing enough vegetables, fruit, fish, and chicken **to get him through the week.**

Restoring Jared's intestinal integrity would take time and effort. "With holistic medicine, it's almost never about a one-minute miracle cure," says Sult. "You can help people feel better pretty quickly, but healing is an iterative process. It takes time."

Jared saw a marked improvement in his asthma within three months. He continued with the anti-inflammatory diet and nutritional supplements — though he fell off the wagon a few times — and within two years had fully recovered. From asthma *and* IBS.

"The whole purpose of the timeline is to uncover those temporal relationships that aren't always obvious until you put them on paper," Sult explains.

It wasn't solely the timeline that enabled Jared and Sult to come up with a better theory about his symptoms. It was seeing the connections between them — a process supported by the second essential tool used by functional-medicine physicians: the matrix (below).



THE TIMELINE

Drawing from an extensive interview with Jared, this is the simplified narrative of Jared's medical history that Sult created, starting from preconception (some health conditions have their roots in prebirth factors). The timeline helped uncover the triggers of Jared's complaints: His asthma, IBS, and depression could all be linked to gut dysbiosis, which developed in childhood and was likely exacerbated by adult parasitic infections, and dietary and lifestyle factors.

Mapping It Out

One of the key principles of functional medicine is that no illness happens in isolation. The matrix offers a vivid visual illustration of this.

"The matrix is a new lens to look at all your body's systems, symptoms, and risk factors and see the story they tell about why you got sick and how to get better. It connects the dots between all your symptoms," says Mark Hyman, MD, director of the Cleveland Clinic Center for Functional Medicine.

The matrix helps providers organize patient information and guides them in where to begin treatment, mainly by pointing toward underlying issues with overall bodily function. The matrix shows how diverse symptoms might be linked, as well as which systems — not just which organs — need the most support first.

The seven fundamental biological systems that comprise the matrix are called nodes, and each node represents a different set of biological functions, such as communication between cells, or the absorption of vital substances like nutrients and oxygen.

Kristi Hughes, ND, who runs a functional-medicine clinic in Alexandria, Minn., declares the matrix “invaluable” for developing individualized treatment strategies.

After conducting the initial interview and a physical exam, and filling out the timeline, the practitioner plots a patient’s symptoms with his or her corresponding nodes on the matrix.

Symptoms typically cluster in some nodes more than others, signaling to the provider where to initially focus treatment.

For instance, if a patient seems malnourished but is eating well, he might have problems in the assimilation node. If a patient is chronically infected with colds and viruses, she might have problems with her defense and repair node.

At the center of the matrix is a circle,
around which all the nodes revolve.
**This piece of the map represents the
patient’s overall sense of well-being.**

Meanwhile, the nodes are framed by the larger context of the patient’s life. The left and lower edges of the matrix are for historical and lifestyle factors that might signal a predisposition or vulnerability to particular health struggles.

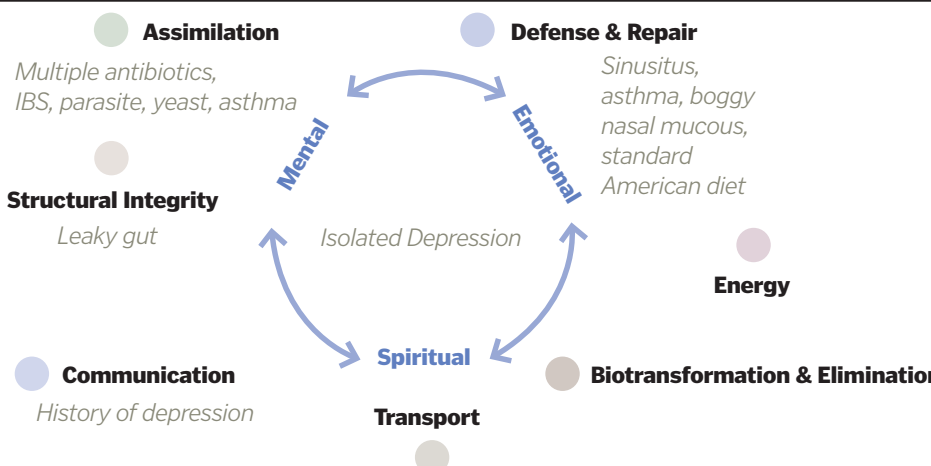

At the center of the matrix is a circle, around which all the nodes revolve. This piece of the map represents the patient’s overall sense of well-being.

If a patient is suffering depression, for example, it may be a result of a hormonal, biochemical, or toxic imbalance. It may also indicate that coaching and emotional support are necessary to help the patient follow through on lifestyle changes.

“Our thoughts, beliefs, and attitudes are not abstract. They have a powerful impact on our biology,” says Hyman. “Our immune system and gut flora effectively eavesdrop on our thoughts. Our brain size can grow or shrink depending on our response to stressful events.”

THE MATRIX

Using information drawn from the timeline, Sult plotted Jared's influences and symptoms on a matrix, as seen here. Each node represents a different biological system; the node with the most symptoms is where practitioners often focus their initial treatment plans.

Retelling the Patient's Story	Physiology and Function: Organizing the Patient's Clinical Imbalances				
Antecedents <i>Type A personality, predisposition to gut issues</i>					
Triggering Events <i>Proton pump inhibitors</i>					
Mediators/Perpetuators <i>Dysbiosis, leaky gut</i>					
Personalizing Lifestyle Factors					
Sleep & Relaxation <i>Poor sleep</i>	Exercise & Movement <i>Limited due to work hours</i>	Nutrition & Hydration <i>Limited diet, fast food</i>	Stress & Resilience <i>Marked stress</i>	Relationships & Networks <i>Good</i>	
Name: <u>Jared</u> Date: _____ CC: _____					
© Copyright 2011 Institute for Functional Medicine					

Structural Integrity

This node concerns the integrity of all the body's physical structures. This includes subcellular membranes, major organs, and the musculoskeletal system of bones, ligaments, muscles, and tendons. Imbalances here can stir up a wide range of symptoms. If your cell membranes are stiff from overconsumption of trans fats, for example, the cells' receptors can't communicate freely with the rest of your body. If your bones or vertebrae are out of alignment, you may experience chronic pain and fatigue.

Psychosocial Realm (center)

While not technically a node, the psychosocial center reflects functional medicine's fundamental regard for a patient's mental, emotional, and spiritual well-being. This realm includes the patient's cognition, emotional self-regulation, and self-efficacy, as well as his or her sense of life meaning and spiritual purpose. Imbalance in this sphere can affect (and be affected by) all of the biological functions.

Assimilation

This node involves the organs and systems that bring substances into the body and renders them usable to our cells. This includes the gastrointestinal tract, respiratory and reproductive systems, and skin. Since most of what we take in is food, the primary setting for assimilation is the gut, where nutrients move into the bloodstream via the cells that line the gut wall. When this lining is compromised, it can trigger an immune response, creating inflammation that can spread to the rest of the body.

Defense & Repair

This node reflects immune function, including your body's attempts to defend against foreign invaders that cause infection and to self-repair from inflammatory damage and injury. When the immune system is balanced, it sends the appropriate messages and repair cells to the right area — and stops once the problem is resolved. But if the immune system overreacts, as with autoimmune disorders, or stays on too long, as with chronic inflammation, this can result in a wide array of physiological symptoms.

Energy

This node signals how well the body turns food into energy, beginning at the molecular level. Energy is produced by our cells' mitochondria, which capture the energy produced by the digestion of nutrients. When something goes awry with mitochondria, we derive less energy from what we eat and the body has fewer resources to make hormones, build proteins, or repair DNA. This can leave you feeling lethargic and run down.

Communication

Cells are constantly sending and receiving messages with their neighbors, and in some cases with other cells throughout the body. These messages involve hormones, neurotransmitters, cytokines, and other signaling molecules. Malfunctioning in the cell communication node can manifest as depression, hypothyroidism, insulin resistance, and rheumatoid arthritis.

Transport

The transport node represents the cardiovascular and lymphatic systems, which move molecules within cells, between tissues, and throughout the body. The fluids associated with intercellular movement are blood, lymph, cerebrospinal, and interstitial fluid. When materials cannot be transported efficiently in your body, illness results. This can take the form of heart failure, hypertension, kidney disease, or edema.

Biotransformation & Elimination

This “detox” node involves systems that chemically modify and excrete toxic substances, including environmental toxins and metabolic and digestive byproducts. The main avenues of elimination are the skin and the gastrointestinal and urinary tracts. Being unable to expel wastes can lead to a host of conditions, including hypertension, type 2 diabetes, and neurological problems.

Healing Synergy

Addressing the root causes of urgent conditions often solves many problems at once. This is exactly what happened with Jared. Though he went in to be treated for asthma, he got two for one: The asthma cleared up once his GI tract was healed and his inflammation subsided. No more asthma, no more IBS.

“Everything in the body is connected like a web,” explains Hyman. “Address the root of the problem — gut issues that drive inflammation throughout the body — and all sorts of other locations get better, including the lungs, joints, skin, brain, and more.”

For Sult, the value of the timeline and the matrix lies in how they help tell a different story about an illness.

“People create a mythology about why they’re sick because they have to understand it, and if their myth is ‘I deserve this,’ then it’s going to be harder to get well,” says Sult.

“But the story can be converted to ‘You got this weird bug when you were traveling and it seemed trivial, but it led to leaky gut and an inflammatory immune response, and that is causing your illness.’”

Putting illness in these broader contexts also empowers the patient to play a bigger role in his or her own healing. It was ultimately the changes Jared made for himself — in his diet and elsewhere — that healed him. Sult just pointed him in the right direction.

“The timeline and matrix tell a story,” says Hyman. “They inform a path forward to address the root of suffering and pain and provide hope and clarity where there often was none.”

ONE DISEASE, TWO TREATMENTS

Kristi Hughes, ND, director of medical education at the Institute for Functional Medicine, runs a clinic in Alexandria, Minn. In the cases below, the matrix helped her diagnose two patients experiencing unique health issues with type 2 diabetes — and enabled her to come up with two different and individualized treatments.

Patient 1

Hughes’s first patient was an electrician with a great love for fishing. During their interview, she inquired if he had been exposed to toxic materials on the job. He said he frequently worked with lead pipes, so she asked whether he was exposed to lead in other situations. It turned out he had a habit of holding lead sinkers in his mouth as he tied them to his fishing line.

Hughes knows that high levels of lead can affect metabolic function, blood-sugar levels, and blood pressure, so she wasn’t surprised when she worked

through his matrix and saw that some of his key symptoms clustered under the biotransformation node, which involves detoxification.

His body's natural ability to remove toxins was altered by the environmental exposures to lead, and the type 2 diabetes was just one outcome. Hughes adjusted his therapeutic intervention to include supervised oral chelation therapy, which led to marked improvements in blood sugar and blood pressure.

Patient 2

Hughes's second diabetic patient, a woman in her 40s, revealed during their interview that her diet was composed largely of simple carbs and sugar. She turned to comfort foods to deal with a stressful job and family situation, and it had turned into a destructive addiction. "It was very lifestyle driven," Hughes says.

In laying out the woman's story on the matrix, Hughes found the bulk of her symptoms showed up in the center, the area used to indicate the patient's mental-emotional-spiritual state.

"Her draw toward unhealthy food choices was based on the hit she would get — the endorphin rush, the sugar rush," Hughes says.

"A big part of her treatment was psychological therapy — she needed to be aware of the cravings and dig into 'Why do I feel like I need sugar right now?'" This new mindfulness led to her diet and lifestyle transformation.

Conclusion

If Hughes had applied her Patient 2 approach to Patient 1 (whose type 2 diabetes was rooted in an altered metabolic function influenced by lead exposure), Patient 1 would have likely continued to struggle without much improvement.

Similarly, if Hughes had started a detox regimen with Patient 2, it would not have helped the woman overcome her emotional sugar addiction.

While both patients revised their diets and started exercising more, the departure points for their treatments were radically different. They both successfully controlled their type 2 diabetes without resorting to prescription medication, while the clarification provided by the timeline and matrix played a key role in getting them the unique support they required for healing.

Want to go deeper?

Read *The Disease Delusion* by Jeffrey Bland, MD, or *Just Be Well* by Thomas Sult, MD — both books explain the functional-medicine matrix nodes in more detail. Or visit www.functionalmedicine.org to locate and research functionally trained medical practitioners near you. For more in-depth functional-medicine coverage, see our [website](#).



3 Miracle Cures (That Aren't, Really)

**Too many chronic ailments have been pronounced “incurable.”
Here’s how some forward-thinking practitioners are resolving
such conditions – and transforming their patients’ lives.**

BY ANJULA RAZDAN
ILLUSTRATIONS BY GREG HALL

In his nearly 20 years as a functional-medicine practitioner, neurologist David Perlmutter, MD, has treated hundreds of patients with chronic illnesses. Many came to him as a last resort after years of searching for relief and being told repeatedly that their conditions were incurable, or that the underlying causes were unknown. Tremors, rashes, debilitating pains — Perlmutter’s files are full of “mystery” cases that turned out to be not so mysterious after all.

“Headaches almost ruined my day-to-day life,” one woman wrote to Perlmutter after 30 years of suffering. Jill (not her real name) was a computer programmer, but had to quit when her migraine headaches — which made her nauseated and intolerant of light — became too severe. She consulted several doctors but found only short-term relief with the prescription drugs they offered.

Jill eventually discovered that by following a gluten-free, low-carb, high-fat diet, she could eliminate her headaches — permanently.

While relieved to be rid of her migraines, Jill found it maddening that this relatively simple “cure” was so long in coming. During all her medical searching, she recalls, “not once did any doctor ask what I was eating.”

Because conventional doctors receive little training in nutrition or lifestyle-based treatments in medical school, it makes sense that none had explored potential food triggers. They just provided a diagnosis and offered whatever symptom relief they could.

This is how many chronic conditions wind up classified as having no known cause or cure, when in fact they may have both.

While adept at dealing with infectious diseases and acute conditions like broken bones and heart attacks, conventional medicine often falters when faced with chronic conditions driven by a complex collection of genetic, environmental, and lifestyle factors.

“If you read the neurology journals about treating migraines,” Perlmutter explains, “you’ll see a handful of recommended drugs. But all those drugs are treating the symptomatic smoke and ignoring the underlying fire.

“A migraine headache could be coming from an inherited food sensitivity, issues related to lack of sleep, or even a consequence of having eyeglasses that don’t fit appropriately,” Perlmutter continues. Of course, not all serious conditions can be so easily resolved. And some diseases really are incurable.

“The point is, we are too often offered one treatment for the end-product diagnosis — the migraine headache — and basically told to ignore the contributing factors.”

Yet those contributing factors are often the missing link. This is why a growing number of progressive physicians are shifting their

treatment approach, looking first to causal factors instead of simply addressing symptoms.

“In functional medicine, we understand that people can get to a similar diagnosis by many different paths,” says Perlmutter, author of the best-selling books *Grain Brain* and *Brain Maker*.

The three case studies that follow share a common denominator: What’s being treated are people, not diseases. While each example involves skill, patience, experimentation, and effort, the end result looks a lot like a miracle.

And to the people who are no longer suffering, it probably feels like one, too.



Jessica had been seeing various dermatologists for 12 years, trying to cure the cystic acne covering her face and upper body. She worked her way from local doctors to the Mayo Clinic. They put her on antibiotics and on Accutane (which was first developed as a chemotherapy drug). Nothing worked.

Having exhausted her conventional-medicine options, Jessica found Thomas Sult, MD. “Her face was red,” he recalls. “It basically looked like she’d been slapped — and she had pustules and scarring. Her upper back and shoulders were inflamed.”

Sult asked Jessica when she last had felt truly well. “She said, ‘I’m here for my acne.’ I told her, ‘I know about your acne, but let’s talk about your history.’”

Functional-medicine practitioners always create a detailed timeline of a

patient's history to uncover any potential triggers for the illness, Sult says. In addition to revealing leverage points for treatment, this helps the patient understand his or her trajectory from wellness to illness.

"Most of the time, medicine is passive — you see a doctor, you get a pill," Sult says. "In functional medicine, we ask patients to do proactive things in terms of changing their lifestyle. Unless they understand their own narrative, it's difficult for most people to do that."

Jessica told Sult she'd had perfect skin as a teenager and no discernible health problems. But in college, she began suffering from irritable bowel syndrome (IBS), including alternating constipation and diarrhea, plus cramping, gas, and bloating.

When she was 21, fatigue set in, followed by joint pain. Then, around 25, Jessica got mild acne, which deteriorated quickly into severe cystic acne.

Sult learned that Jessica's family history showed significant gastrointestinal problems, anxiety issues, and arthritis on both sides.



In functional medicine, we ask patients to do proactive things in terms of changing their lifestyle. Unless they understand their own narrative, it's difficult for most people to do that."

So, what happened? When Jessica moved from home to college, Sult believes, the stress of a new life, coupled with academic pressure and a genetic predisposition to inflammation, caused her gut to become "leaky." Food particles escaped into her bloodstream to trigger systemwide inflammation. (For more on leaky gut, see ["How to Heal a Leaky Gut."](#))

As a result, Sult believes, Jessica's liver became so overburdened by the substances leaking out of her gut that the detoxification process shifted to her skin.

The skin is the largest organ in the body and one of the key organs for detoxification, Sult says. "In Jessica, we have altered microflora in the body with an altered immune response — the undercurrent that contributes to an acne flare-up."

Sult put Jessica on an elimination diet, with fish oil and probiotics to quell

the inflammation and heal her gut. (For more on elimination diets, see ELmag.com/ifmdetox.)

When Jessica returned three months later, she still had the acne, but it was less inflamed. Sult suspected food sensitivities, so he ordered a digestive stool analysis and a test for nutrient deficiencies.

The results were eye-opening: Jessica had significant gut dysbiosis from yeast overgrowth, plus low levels of omega-3 fatty acids and elevated persistent organic pollutants (POPs) in her blood.

Sult treated her yeast overgrowth with a probiotic. To help detoxify the POPs, he increased her intake of healthy fats, especially omega-3 fatty acids and coconut oil. “I basically gave her an oil change,” Sult says.

Jessica continued to avoid dairy and gluten, which she’d discovered she was sensitive to after the elimination diet. She consumed a low-carb diet for six weeks, and then transitioned to a paleo diet rich in veggies and healthy meats.

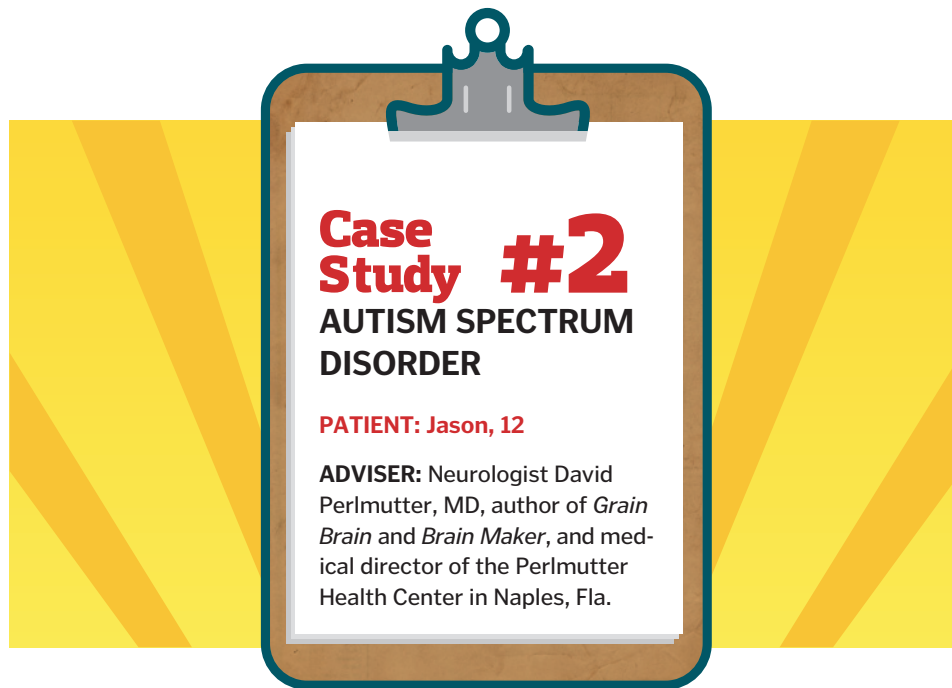
It can take time to test out various theories about underlying causes, **and also time for the body to heal.**

Sult explains: “In order to change the microbiome, you have to hit the reset button — you have to start with a low-carb diet to keep the candida and other opportunistic bugs at bay — and then splash the gut with a rich diversity of vegetable matter to support a diverse microbiome.”

After another three months, Jessica reported fewer IBS symptoms, and “her skin, although not completely cleared up, had improved by another order of magnitude,” Sult says.

At that point, Sult ran another test for POPs. Her results still showed high levels of a common pesticide: The detox process had mobilized the toxin, releasing it into her system, so Jessica continued with her “oil change” to help flush it out. Three months later, her skin was 95 percent better. Three months after that, it was totally clear.

All in all, it took Jessica a year to regain her health, and Sult says this is not uncommon. It can take time to test out various theories about underlying causes, he notes, and also time for the body to heal.



When Jason went to see David Perlmutter, MD, he could not remain seated, maintain eye contact, or speak in full sentences. His mother, Melinda, had taken him to numerous doctors who performed MRI scans of Jason's brain, EEG monitoring, and multiple blood tests — all of which turned up nothing.

As Perlmutter discussed Jason's history with Melinda, he took note when she said she had been on antibiotics throughout her third trimester for a chronic bladder infection.

"We now understand that antibiotics not only play a significant role in altering the microbiome of a mother, which can affect the development of the baby, but also change the microbiome of the birth canal," Perlmutter says.

Although Jason was born naturally, Perlmutter believes he missed out on the microbial transfer normally conferred by a vaginal birth because antibiotics had eradicated the normal flora from the birth canal.

To make matters worse, Jason was put on multiple courses of antibiotics for chronic ear infections shortly after birth. In fact, Melinda said, during Jason's first year of life he was on antibiotics "more often than not."

Over the next few years, Jason continued to take antibiotics for various infections, including pneumonia and strep throat.

Meanwhile, his parents became increasingly concerned about his development: He had an extreme speech delay, experienced severe anxiety, had a hard time interacting with others, and developed repetitive behaviors and obsessions with things like turning lights on and off.

In reviewing Jason's records, Perlmutter discovered that doctors had repeatedly noted gastrointestinal issues plaguing the boy, including recurrent stomachaches and projectile vomiting. There was obviously a lot going on in his gut.

"There's not a single case that I have seen in my practice of treating an autistic child where the parents did not talk about severe digestive issues," says Perlmutter.

Although many physicians think of autism as a brain-based disorder, Perlmutter says, there have been several recent studies showing significant differences in the gut bacteria (as well as increased gut leakiness) of autistic children.

"The changes in the gut bacteria impart changes in the body that are reflected in compromised functionality of the brain," he explains. This insight has allowed for a totally new approach to the symptoms of autism. (For more on the link between gut and brain health, see ["Healthy Gut, Healthy Brain."](#))

In Jason's case, a digestive stool analysis confirmed Perlmutter's suspicions: The child's gut was almost devoid of *Lactobacillus* bacteria.

Perlmutter started Jason on aggressive probiotics and vitamin D, which supports the immune system and helps moderate inflammation.

"Fundamentally, most of the issues with autism come down to inflammation," he notes, adding that inflammatory markers are high in children with autism as well as adults with Alzheimer's.

He also put Jason on fish oil and a low-carb, gluten-free diet with plenty of healthy fats. "Again, this was all to reduce inflammation," Perlmutter says.

When Melinda returned three weeks later, she said Jason had made great progress: His anxiety had decreased, and for the first time in his life, he could tie his own shoes. Five weeks after that, she reported that Jason continued to do well and she wondered if they could amplify his progress.

She and Perlmutter discussed additional treatment options, settling on a fecal transplant to further rebuild Jason's microbiome.

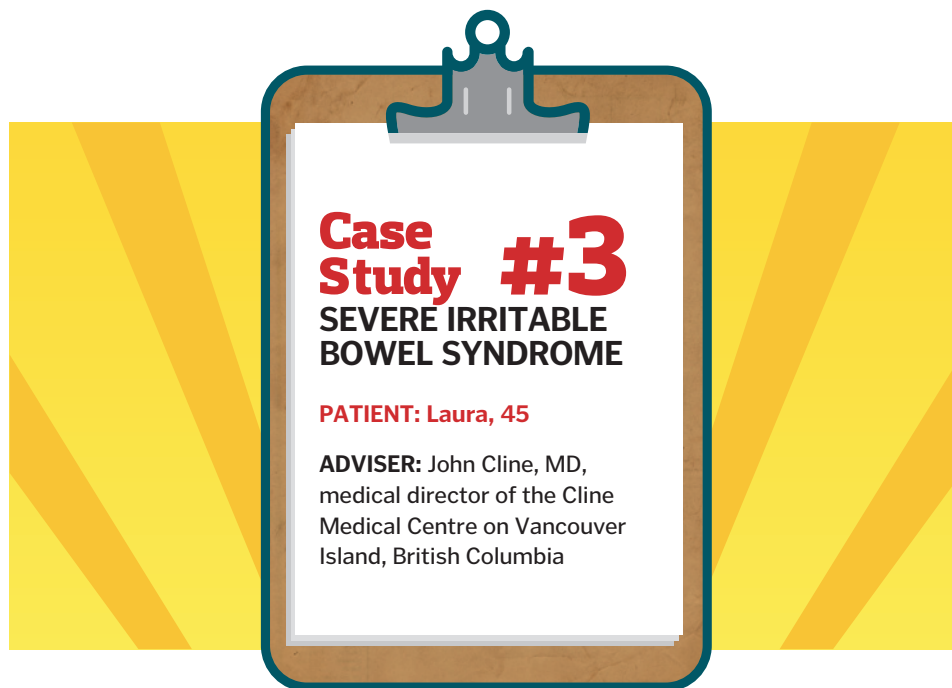
In a fecal transplant, good bacteria are extracted from the fecal matter of a healthy person and transferred to the colon of a person with compromised gut bacteria. The enema-like procedure is simple and nonsurgical, and it is the most powerful therapy available to recolonize a compromised microbiome.

Several weeks after the fecal transplant, Perlmutter received a video clip from Melinda that brought tears to his eyes: Jason was happily jumping up and down on a trampoline and speaking more fluently with his mother than

ever before. “It was absolutely breathtaking,” he says.

After undergoing several more transplants, Jason began speaking in complete paragraphs and interacting socially. He is now mainstreamed at his school. (To see Jason’s recovery, check out the video at www.drperlmutter.com/brain-maker.)

“We all have the opportunity to rewire our brains and make different connections,” Perlmutter says. “Nothing about the brain is indelible.”



By the time she visited the office of John Cline, MD, Laura was in bad shape. In addition to severe IBS symptoms (including blood in her stool), the Canadian businesswoman had acute joint pain in her wrists and ankles, headaches, night sweats, shortness of breath, and an inflammatory eye condition called episcleritis.

Her symptoms had been flaring up every few months, with progressively worse episodes, and then had mostly gone away. She had been admitted to the hospital several times, but no doctor could identify a cause for her symptoms.

Doctors had prescribed a variety of meds. During one hospital admission, a rheumatologist concluded Laura had arthritis and put her on prednisone, painkillers, and nonsteroidal anti-inflammatory drugs, including ibuprofen.

When Laura went to see Cline, she was swallowing a whopping 4,800 milligrams of ibuprofen daily. (The suggested maximum dosage is 3,200

milligrams.) She had also taken a leave of absence from work.

“She was quite ill,” recalls Cline. “She had symptoms that affected many of the systems in her body. For me, having someone like this come in, it’s like entering a jungle. My job is to help them find a way out of that jungle.”

The key, he says, is looking at the big picture.

As Cline started taking Laura’s history, he learned that she had been pretty healthy until one year prior to the development of her current symptoms, at age 44. Given the episodic nature of those symptoms, Cline asked Laura if she had done anything unusual in the days leading to her flare-ups.

Her answer was a bit like stumbling on the Rosetta Stone: She told Cline that a couple of days before each episode, she had sprayed her yard with malathion, a broad-spectrum insecticide.



When people are missing the glutathione pathway, even small exposures to toxicants are huge. **They cannot effectively detoxify, so the toxicant will start to accumulate in the body.**

Cline ordered lab tests, including one to identify chemical sensitivities, and a digestive stool analysis. Not only did he find that Laura had low levels of healthy bacteria in her gut, but he also discovered she had a number of genetic variations called single nucleotide polymorphisms, or SNPs (pronounced “snips”), that affected her ability to detoxify. (See our article on SNPs at [“Making Sense of SNPs.”](#))

“She was missing the glutathione pathway, a key pathway for detoxification of metals and chemicals,” Cline explains. “When people are missing the glutathione pathway, even small exposures to toxicants are huge. They cannot effectively detoxify, so the toxicant will start to accumulate in the body.”

Each time Laura was exposed to malathion, she could not detoxify or metabolize the insecticide. Over time, the toxin built up in her system. It turns out that it was the main cause of all her symptoms.

To help Laura heal, Cline focused on helping her detoxify and repair her gut. He put her on an elimination diet and recommended foods that would support her body’s detoxification pathways, including cruciferous veggies

(cabbage, cauliflower, and broccoli) and allium veggies (onions, garlic, and leeks).

Cline also recommended supplements, including fish oil, vitamin D3, manganese, curcumin, and probiotics. In addition, he prescribed a medical food product to support detoxification and urged Laura to avoid any further exposure to malathion and other chemicals and heavy metals.

At the one-month follow-up visit, Laura said she was feeling much better. Her joint pain and swelling had improved dramatically, and her IBS symptoms and night sweats had completely resolved. She still had occasional headaches and some eye inflammation, but she had returned to work and started exercising again.

Three months after her original visit, Laura told Cline she felt “ridiculously well.” She had been reintroducing foods into her diet and found that if she ate more than a small amount of gluten every few days, she experienced abdominal bloating and cramping, so Cline suggested she continue to avoid it. She happily complied.

For many patients, being asked to make lifestyle changes is daunting. But struggling for years or decades with chronic conditions can provide powerful motivation. “When people come to my clinic, they’ve usually been to many practitioners and they’re often desperate to feel better,” explains Cline. “As a result, they are usually more than willing to take charge of their health.”

For those who’ve been told, in effect, “Sorry, but there’s nothing we can do,” being empowered to improve their own health can feel like something of a miracle in itself.

MAKE YOUR OWN HEALTH MIRACLES

Many progressive practitioners take a systems-based approach, exploring how their patients’ environment and lifestyle factors interact with their unique physiology. While treatment plans are highly individualized, here are some powerful tips that any of us can employ to safely jump-start our own healing process.

Try an elimination diet. Most integrative and functional-medicine experts agree that a comprehensive elimination diet — removing common irritants like gluten, dairy, corn, soy, tree nuts, and sugar — is one of the most effective clinical tools available. Best of all, “it’s free,” says Bette Bischoff, MD, RD, a Tulsa, Okla.-based functional-medicine doctor.

Eat a wide variety of plant-based foods. Do your best to eat a diversity of veggies, legumes, and fruits to minimize inflammation, improve immunity, and support a healthy microbiome, suggests Thomas Sult, MD, a functional-medicine doctor in New London, Minn.

Move your body. It can be as simple as taking a walk, says Sult. If you're sick or fatigued and exercise often makes you feel worse, he suggests trying "subsymptom threshold exercise": "If an hour of walking makes you sick but 40 minutes does not, then walk for 40 minutes. Simply stay below the threshold that makes you feel worse."

Take high-quality supplements. A whole-foods-eating program is a cornerstone of functional medicine, says Bischoff, but soil depletion means our fruits and veggies are less nutritious than they used to be, and most of us don't eat as well as we might intend. As a result, it's estimated that anywhere between 30 and 90 percent of U.S. adults suffer from one or more nutritional deficiencies. Taking a high-quality multivitamin with minerals, plus vitamin D and a fish oil or other omega-3 supplement, can help you avoid that fate.

Work with what you've got. Even if you are saddled with a family history of chronic disease, know you are not a prisoner of your genes. It's the way your environment and lifestyle choices *interact* with your genes that matter. "People need to understand that their lifestyle choices have a huge role to play when it comes to chronic disease," says neurologist David Perlmutter, MD.

Beware of toxins. "Most people aren't aware of how disruptive environmental toxins can be, especially when it comes to our hormones," says Margaret Christensen, MD, a functional-medicine gynecologist in Dallas, Texas. Some of Christensen's top tips: Use clean, organic personal-care products. Don't use toxic herbicides or pesticides on your lawn. If you remodel, use low-VOC paint. Don't cook in Teflon or other nonstick pans. Don't microwave plastic. Avoid exposing food to Styrofoam and plastic wrap.

Avoid excessive antibiotic use. Although antibiotics can be lifesaving, they are also powerfully disruptive to your body's microbiome. Let your doctor know you prefer a conservative approach to medication. If you do need antibiotics, ask for a targeted drug versus a broad-spectrum one, Perlmutter suggests. Finally, be sure to add a high-potency probiotic (25 to 50 billion live cultures) while you're taking the antibiotic, he advises. Continue it for at least one week after your prescription, and ideally longer.

Don't rush things. People with chronic illnesses are often desperate to get better right away, but in most cases, even "miracle cures" take time. "You can't do everything at once," says Bischoff. "I tell my patients to picture a downward spiral: When people finally make it to a functional-medicine practitioner, they are usually somewhere within that spiral. It takes a while to reverse course."

SPECIAL Subscription Offer



Get a one-year subscription
for only \$21.95!

SUBSCRIBE

EXPERIENCE LIFE