

# **THE** MODEL **HEALTH** **SHOW**

**EPISODE 649**

## **The Shocking Connection Between Metabolic Health and Mental Health**

**With Guest Dr. Christopher Palmer**

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**SHAWN STEVENSON:** Welcome to The Model Health Show. This is fitness and nutrition expert Shawn Stevenson and I'm so grateful for you tuning in with me today. The World Health Organization estimates that this was in 2017, almost 800 million people on our planet were suffering from mental health disorders. This represents about 10% of the world's population. Now when substance abuse disorders are included in this count, that number climbs up to nearly a billion people here on our planet today, dealing with mental health challenges and/or substance abuse disorders. Now the rates of these disorders are higher in the United States than anywhere else with approximately 20% or one in five of our citizens being diagnosed with a mental or substance abuse disorder, something is clearly awry. Something is going on right now and we need to have this conversation because as you'll find out today our treatments, for these skyrocketing rates of mental health challenges, we're talking about the whole range today. You're going to find out some insights about depression and anxiety and even schizophrenia that you have likely not heard before, there are real solutions. But our conventional treatments for these things are not bearing out very good results and you're going to hear why as well.

We've got a leading expert in this field. Somebody who's been working in the field of psychiatry for almost three decades and who recently, and you'll hear this story, had some huge revelations and seeing radical improvement in patient outcomes and looking at, and this is the most important piece, the connection between our skyrocketing rates of chronic diseases and poor metabolic health and our skyrocketing rates of mental health conditions. These two things are not on parallel tracks. They're intimately connected, and this conversation today is so important because it's rare that you're going to find someone who isn't struggling with a mental health challenge and/or somebody that they know who's close to them. This information needs to get into more people's hands and hearts. And so again, I'm very, very grateful to have this conversation today. Now being that our brain is a primary organ of our emotions, obviously our nutrition for our brain is of the utmost importance. Not only is our nutrition literally making up the actual structure of our brain itself, literally providing the raw materials to make our brain cells and our neurotransmitters and our hormones, but your brain has a diet that is a little bit more exclusive. As we're going to talk about today, there's an intimate connection between what's happening downstream and upstream absolutely, because it's all connected in the same being but your brain is a little bit more selective.

We have neuro-nutrition, we have certain nutrients that are able to traverse into the brain and provide fuel, provide structure for our brain cells to have signal transduction and be able to communicate and to be able to send messages from dendrites and the axon terminals, and all this really remarkable connectivity that takes place in the brain. Now we've got billions of

neurons by the way that need to be working in a symbiotic nature. And so, when we start to have a breakdown in what's actually fueling our brains and the nutrition that our brain cells are utilizing, really, really negative things can start to happen. Now one of the things that's increasing today, more than ever, and is creeping its way, is the not so fun fact into the top five leading causes of death in the United States, it's a form of dementia. In this particular form, there's many forms of dementia, but this one is most pervasive and it's Alzheimer's disease. Again, it's number six currently on a leading cause of death in the United States. And most people are unaware of just how bad our rates of Alzheimer's have gotten, also the connection between Alzheimer's and mortality in the first place. Now where we are today, we know that Alzheimer's looks very similar to an insulin resistance taking place in the brain and it also it's being dubbed as type 3 diabetes in some scientific circles. Now why would we develop this insulin resistance in our brain?

Well, it's because the brain itself is able to confiscate a lot of the glucose or sugar that we're taking into our bodies and it's just getting shuttled into the brain in droves. Researchers at Harvard actually uncovered that the brain will gladly confiscate about half of the sugar calories that you consume in any given meal. And so obviously the construct of a meal today, in our society here in America, can be very, very high in sugar, in a scary movie type of demonstration. So, when this happens, we have to have a down regulation in insulin sensitivity. Because just shuttling all of that fuel into the brain cells can kill those brain cells. And so, we're developing this insulin resistance in the brain. Now remarkably researchers, and this was published in the Annals of the New York Academy of Sciences, sought to find out if we can utilize an alternative brain fuel for the glucose derange brain cells that we're seeing. We start to have cognitive decline, the onset of Alzheimer's and dementia, and what the scientists discovered was that utilizing medium-chain triglycerides or MCTs, they were number one, able to traverse past the blood-brain barrier and be used directly by our brain cells. But also more notably was that MCTs were quickly metabolized by our liver prompting the production of ketones and those ketones can be utilized as an alternative fuel, for again, glucose impaired brain cells of Alzheimer's patients.

Now here's what they found. They found that the consumption of MCTs directly led to improved cognitive function in even mild to moderate forms of Alzheimer's disease and cognitive impairment. It's largely considered to be non-treatable. You can't get better; all you can do is try to stop the progression. Well today we know for a fact that utilizing key things with our nutrition, like MCTs, can provide improvement even with Alzheimer's disease.

For me, this is something I... On a daily basis, there's hardly a day that goes by that I'm not utilizing MCTs. Particularly MCT oils, the sourcing matters so much, you want to make sure that you're not getting your MCTs from a company that is not growing things properly, sustainably, that's not littered with pesticides and herbicides and all this stuff in the growing

process, but just doing stuff the right way. This is why I get my MCT oil from Onnit. Go to [onnit.com/model](http://onnit.com/model). That's O-N-N-I-T.com/model, you get 10% off their incredible MCT oil made from coconut by the way. Coconut derived is the best. Their incredible MCT oil, but they also have emulsified MCT oils that are really akin to like a coffee creamer. But none of that craziness with those vegetable oils, artificial colorings, and all that stuff. High quality MCT oil emulsified, so it's like a creamer you can use for coffees and teas and smoothies and things like that. Highly recommend. Your brain loves MCTs. Go to [onnit.com/model](http://onnit.com/model). That's O-N-N-I-T.com/model for 10% off. Now let's get to the Apple podcast review of the week.

**ITUNES REVIEW:** Another five-star review titled “knowledgeable and actionable” by CMyers13. “This podcast always drops facts and knowledge in a way that is easy to digest. It also provides actionable steps to go with that knowledge that you can take for yourself and apply to your life and those around you. Thanks for not only impacting my life, but my family and friends. So many people to reach, keep going.”

**SHAWN STEVENSON:** That's what it's all about. Thank you so much for leaving that review over on Apple podcast. That truly means the world to me and listen if you get to do so, please pop over to Apple podcast and leave a review for the Model Health Show and on that note let's get to our special guest and topic of the day. Christopher Palmer, MD is an assistant professor of psychiatry at Harvard Medical School and the director of the Department of Postgraduate Continuing Education at McLean Hospital, the premier hospital for psychiatry. For the past 27 years he's been an academic physician with administrative, research, educational, and clinical roles. Dr. Palmer received his medical degree from Washington University School of Medicine and completed his internship in psychiatry residency at Harvard Medical School. And he's making some huge waves in the field and real sustainable change. I'd like to introduce you to the incredible Dr. Christopher Palmer. Dr. Palmer welcome to The Model Health Show. It's so good to see you. Thank you so much for coming to hang out with us.

**DR. CHRISTOPHER PALMER:** Thank you for inviting me.

**SHAWN STEVENSON:** Of course, so I'm a big fan of results. I'm a very results-oriented thinker and for me, I'm always looking at what are the actual outcomes in various treatments, various nutrition protocols. And I think that we have this belief about efficacy and innovation when it comes to treatment for mental health today. But I think people are going to be very surprised to hear, for one of the biggest issues today, number one cause of disability which you highlight in your book so eloquently, is depression. So, can you talk about the real state of affairs with depression and our modern treatment for depression? How is it actually working out right now?

**DR. CHRISTOPHER PALMER:** It's a really important question and the field will say we have tons of evidence-based treatments and people should get help for depression and if they get help for depression our treatments work and if we just got more people help everything would be fine. And the reality is we've got dozens of different antidepressants. We have tons of different psychotherapy, psychodynamic, and cognitive behavioral, and all sorts of things. We've got ketamine injections, we've got electroconvulsive therapy, we've got transcranial magnetic stimulation and other things. So, with all that treatment you'd think we would be doing a pretty good job. But as you mentioned, depression is now the leading cause of disability on the planet, above all other medical diagnoses and it's not because people aren't getting treatment. It's because our treatments fail to work for far too many people.

So, if you look at the initial treatment for depression, somebody comes in off the street with their first episode of major depression and gets treatment, gold standard treatment, an antidepressant and/or psychotherapy. The statistics that usually get cited are 70% will have a response rate, meaning some of their symptoms will get at least a little bit better. But only 30% will have a remission of illness, which means that they will no longer have five out of the nine criteria for depression. It means they will have four or fewer of the symptoms of depression. So put another way, if you come in for treatment for depression and get gold standard treatment, there's a 70% chance, after six months, that you're still going to have depression, the whole thing. You're going to meet full criteria for depression and even more people than that 70% are still going to have some lingering symptoms of depression. When researchers followed people with depression for 12 years and looked what happens to them long-term, how many of them are really getting better and staying better, the really shocking and sad news is only 10% of people went into remission and then stayed in remission. That means 90% of people who get treatment for depression, the depression keeps coming and going, it doesn't go away, and they still have symptoms. And on the average, people in that study had serious symptoms of depression more than half the time.

**SHAWN STEVENSON:** That is just outrageous. So, we're talking nine out of ten people who are seeking treatment for this issue that's become so pervasive in our society, again you said the number one cause of disability, so this is above cardiovascular issues, low back pain, which is another big one. Whatever the case might be this is the top thing today it's depression and our treatments are only helping successfully, really mapping things out long term, one out of ten people. So, 90% of folks are not getting adequate treatment or not really figuring out what the root cause is.

And so, with that being said, again, there's an appearance of innovation and of efficacy. We've got so many different things that we throw at people, but is it working? That's the question really. And for us to just take a good look, step back, take a meta perspective like this is not working very well right now. We need to recalibrate but we're not really doing that. And is this

a result of just getting educated on what we should be doing and just getting locked in in tunnel vision on treating people like this?

**DR. CHRISTOPHER PALMER:** I think the real answer is that people don't know what to do. Well-meaning psychiatrists and neuroscientists and administrators, I think everybody on the planet has a sense that we have a crisis in mental health. The rates are going up, so many people are suffering, their lives are ruined by mental illness, depression, bipolar, schizophrenia, all of it. But the answer is that people haven't been able to figure out this really simple question, what causes mental illness? So, we're just shooting in the dark. We're just trying this treatment, that treatment, we don't even know how a lot of these treatments work. We just know they kind of sort of reduce some symptoms. So we're just shooting at the dark, throwing anything we can at it. And the sad reality, as you said, is it's not working.

**SHAWN STEVENSON:** Yeah. Now this is so revolutionary because not only... The first part of the book you're really deconstructing the paradigm that we're experiencing right now in so many different ways and it is amazing because it gets to the place where I can really accept this alternative theory. Which once a theory actually has so much credibility and you've been able to replicate it again and again and help people to be able to be empowered in their bodies, it starts to really teeter into this might be something for us to focus on. And if you could, can you talk about some of the individual factors that go into depression? Because what we tend to see is, we see a manifestation of symptoms, right? It's like a cluster and that's how we diagnose. So, can you talk about what the field is doing right now, currently as far as depression, which you mentioned five out of nine symptoms, something like that, being able to take one away and that's like seen as a success, right? So, what are these various symptoms? Is this genetics? Is this events that happen in our lives? What are the things that we're looking at here?

**DR. CHRISTOPHER PALMER:** That is like the holy grail question in the mental health field is essentially what exactly is causing it. And right now, we use this thing called the bio psychosocial model, which says no one knows, but we know some of the factors that play a role and they include biological, psychological, and social factors. And so, we know that genetics might be playing a role, seem to play a role because these disorders run in families. So that must be genetic. We can come back to that if you want. But other people talk about neurotransmitters and the chemical imbalances. Others talk about hormonal imbalances. We know thyroid hormone plays a role, but women's hormones play a role. Like some women experience definite mood symptoms around the time of their periods or postpartum. They can get severe postpartum depression or even psychosis. Other women experience mood symptoms around the time of menopause.

So, we know hormones are playing a role. We know people with type 2 diabetes have much higher rates of mental illness and depression. But there are all sorts of psychological and social factors too. Trauma, stress, adverse childhood experiences, all of these things we know play a role and put people at higher risk for developing depression and other mental disorders. But how do all those things fit together? Nobody knows. And right now, it's 'cause well, the brain is just so complicated and there's so many different factors. How can we possibly make sense of them? It's an impossible puzzle. It is a complex, overwhelmingly complex, impossible puzzle, and that's why our field is struggling so much. It's not because anyone has bad intention, it's not even because they're not really trying hard, it's just because they're just overwhelmed by all of these different factors and the complexity of them.

**SHAWN STEVENSON:** Yeah, that's the thing too is that we are inordinately complex, but we tend to treat people the same or at least again in these very pithy boxes. And this speaks to, even when we're talking about this conglomeration of inputs, for me this really highlights the fact that no two cases of depression are the same. And that should be startling for us to really get that. And yet we might have this cookie cutter, this little intimates box of assorted things that we can go to. But this why we might see relieving of a symptom or the worsening, that's the other part that you're bringing forward in the conversation is like, what if this treatment is making people worse? And that end of itself, again is going to ruffle some feathers but we have to be honest about this. And it's pretty well-known at this point in certain circles, but not by the public at large.

**DR. CHRISTOPHER PALMER:** It should be well known to everyone. I mean if you read the package inserts for all of the psychiatric meds that we dole out, they come with pretty significant warnings. We know that antidepressants can induce mania or bipolar disorder. Other people report pretty severe sexual dysfunction. A lot of people report weight gain. And you start to get into other psychiatric meds, lithium antipsychotics, mood stabilizers, the side effect list gets longer and more severe. Now we're talking type 2 diabetes, massive amounts of weight gain, early death, cardiovascular disease, permanent neurological problems. And again, right now every clinician knows all of that. And we say, well that's the price we have to pay. These disorders are ruining people's lives. We have to try something, and these are the only tools we have available. But as you and I just discussed, it ain't working.

**SHAWN STEVENSON:** Yeah.

**DR. CHRISTOPHER PALMER:** We're putting people at risk for these horrible side effects for a disorder like depression, for a 10% chance of long-lasting remission of your illness. Nobody talks about that. And I think it's really unfair. I think it's really unfair to the people who are suffering and whose lives are ruined by this. 'Cause they go to their doctors trusting, they go to their doctors begging for help, crying in tears, like please help me do something. So, they'll

do anything. They'll take any f-ing pill. They'll let people apply electricity to their brains. They will do anything and we're not getting them better. And I'm here to say there is a new way based on science and we need to do a lot better.

**SHAWN STEVENSON:** Yes, absolutely. And you just mentioned it's all, all of the medications have this black box warning and what we do is because again, we want to help people, we justify the collateral damage, right? We find ways in our minds to make it okay to do this and again seeing very few people actually getting well. But we hang on to that, especially again if you see one person, even yourself, if something works for you, you think it works for everybody. It's these natural biases that we have but it can become dangerous when we have a bias take place within a group of people who are in such a place of influence. And like you said, when we're in pain, we just want to get out of pain, and we'll do whatever it takes. Whatever is advised by the person that we're entrusting in because we just want to get better. And you know with that said, I mentioned genetics earlier. I want to share this study and we'll put this up for everybody on the screen. This was published in PLoS ONE, Public Library of Science ONE. The title of the study is Genetic Factors Are Not the Major Causes Of Chronic Diseases. Now we've known this for a while again, and this can get published in a prestigious journal, but we still keep bringing that card up, right?

And obviously it does play a factor, but there's something that trumps all of this, and it's the field of epigenetics which has been around for quite some time as well. But it's even deeper than that and this is what probably, the most remarkable thing about spending time in your world and learning from you and reading your book, was the influence of our mitochondria in epigenetics. Let's talk about that.

**DR. CHRISTOPHER PALMER:** Yeah, so to maybe just reiterate what you said, so many people are told that their disorders are genetic, and the implication is they're screwed. And they don't, there's no way around it. They're just going to have that disorder for the rest of their life. And so as you said, the, the research tells us now that's not true. It's not true. Researchers mapped the human genome over 20 years ago. We have had artificial intelligence on the job. We have had the greatest minds in science on the job and they keep coming up empty-handed over and over again. There are no genes. There's no genes here. It's not in the genes. We need to wake up to those answers. Those aren't frivolous answers, that's not a negative result. It's a positive result. It tells us stop looking at for a gene to explain these conditions. We also know that genetic conditions don't go up exponentially in a population and so that then takes us to this whole field of epigenetics, which is the expression of genes. Which genes get turned on and off, 'cause that is changeable and malleable. And if you really want to understand that, as you just said, you have to do a deep dive into these tiny things in our cells called mitochondria. And once you understand mitochondria, you can actually start to understand epigenetics for

instance, because they are the single most powerful signal that control the expression of different genes in our cells.

**SHAWN STEVENSON:** That's so remarkable because it's just like I think we hear this term and we understand like epigenetics are going to influence how our genes are expressed, but what is the mechanism that's making that decision or helping to influence what's happening? And this goes to our mitochondria. And so, we have mitochondria in virtually every cell in our body, trillions, not to mention we might have hundreds or even thousands of mitochondria in a single cell, depending upon the cell. So, we're like mitochondria machines, right? Really when it boils down to it.

**DR. CHRISTOPHER PALMER:** We are.

**SHAWN STEVENSON:** And so, the health of our mitochondria, I would assume, is going to influence the health of our brain and our cognitive function and our emotional outcomes as well.

**DR. CHRISTOPHER PALMER:** Absolutely. When you do a deep dive into the science, and I imagine we're probably going to get more into it, when you do a deep dive into the science, the shocking thing for me... 'Cause I didn't start off on this path to come up with a unifying theory of what causes mental illness. I didn't start off on this path to do anything all that special. I was just trying to figure out how the hell is a keto diet helping some of my patients with Schizophrenia or bipolar? How the hell is that happening? And that all led me to mitochondria and then the more that I uncovered and unpacked about mitochondria, the more I realize oh my god, this is connecting the dots of the mental health field. Mitochondria are involved not just in epigenetics, but they're involved in the production and regulation of neurotransmitters, of key hormones like cortisol, estrogen, testosterone, progesterone, of inflammation, they help turn inflammation on and off.

The gut microbiome is actually communicating with mitochondria and vice-versa. Mitochondria help control whole body metabolism and so when you look at all of these different roles, you can actually start to make sense of wow, once you get it, we can start to understand why are the brains of people with mental illness malfunctioning if you will. Why are they producing anxiety when they shouldn't be? Or why are some people just plagued with chronic depression and it won't stop? Or why are some people having hallucinations and delusions? Once you understand mitochondria, the powerful roles, and the very different roles they play in the ways cell function, we can actually start to connect all of the dots and put them together.

**SHAWN STEVENSON:** This is starting to paint a picture here and we're going to do the real work of understanding even when we're dealing with a particular set of symptoms, a symptom cluster, this is going to be unique to us and the role of our practitioners and also ourselves as well, is to be able to put the pieces together because we're also unique and each of us has a unique way that our puzzle is fitting together. But there, as you just mentioned a unifying theory here. There's a unifying causative agent that has to be addressed here. That is synonymous with humanity, really life on this planet and this has to do with metabolism. Now here's the problem and you know this as well, when we hear the word metabolism, we put it into another pithy box. We think about burning fat. We think about calories and things like that, but truly metabolism, for me, is everything about life, right? It's just like if you were... I remember when I was in college, and I took this personal trainer certification and the lead person who was teaching us said that if you don't eat breakfast in the morning your metabolism isn't on. And so, I just parroted that thing, then one day it hit me like if my metabolism isn't on I'm dead.

It just doesn't make sense. And even our immune system, for example, there's this whole entire growing field of immunometabolism and looking at the metabolic function of our immune cells and how it's utilizing energy, creating waste products, growing, developing, sharing data, all that has to do with metabolism. And for the first time truly, you are highlighting how our metabolic health is really the tip of the spear when we're talking about our mental health epidemics. These two things are intimately connected. Let's talk about how that is.

**DR. CHRISTOPHER PALMER:** Absolutely. So, I'll start with something that might on the surface seem shocking, but usually when I say it people are like, oh my god, that can't be wow, but yeah, I know that kind. At the same time that we have growing epidemics of obesity and diabetes in our population, those are metabolic disorders, we also have a growing epidemic of mental disorders and it's across the board. A lot of people don't realize that. It's all of the mental disorders essentially. It's not just anxiety and depression, but they are the most common disorders. So they're the ones that get talked about the most 'cause they affect the most people. So that's fine but autism, autism has tripled in the last 20 years. If you go back to the 1970s, it's up something like 83 times, 83-fold increase. That's 8300%-fold increase, which is crazy. And if you look at bipolar disorder, the rates of bipolar disorder have doubled in adults, and they've gone through the roof in terms of children and adolescents. It's like a 40-fold increase but that's largely because it was non-existent prior to the 1970s, but now it's getting commonly diagnosed. The rates of ADHD are up, rates of personality disorders are up. Everything is going up and on the surface, everybody's scratching their head like what is going on here?

Why are all these mental disorders increasing? This can't be. It can't. So, some people go into the category of I can't even believe it and other people are like, well, maybe we're just

recognizing it more. But the researchers really doing this work are saying no guys, no folks, these rates are really skyrocketing. And so, when we think about metabolic health and mental health, what I'm arguing is that they are inseparable. That at the same time a bad metabolism or a faulty metabolism or an insufficient metabolism, whatever we want to call it, a metabolic problem can make someone overweight or obese. There's no question about it.

A metabolic problem can be associated with having a heart attack or a stroke, everybody kind of knows that. But what I'm saying is metabolic problems also affect the brain, plain and simple. In the same way that a metabolic problem can make you die of a heart attack, and it can adversely affect your heart, guess what folks? It can affect your brain too. The brain is not just immune to metabolic problems. We know that metabolic problems affect the heart and the kidneys and the liver and your fat cells and all sorts of other things, why the hell does anybody think the brains not affected? At the end of the day, it's that simple.

**SHAWN STEVENSON:** Yeah, and when we have our model again, that you talk about this as well in the book, the DSM and being able to identify certain symptom clusters and diagnose somebody. How often, if you could because this is your world, can you talk about how somebody's diagnosed because on the surface it's going to be based on a conversation but are we doing blood work? Are we looking at these metabolic factors? Are we looking at their insulin levels, their blood glucose, their inflammation markers? Are we looking at what's going on with various hormones?

**DR. CHRISTOPHER PALMER:** We're not...For the most part, some really good clinicians are doing some of that work. Tragically most are not and so DSM is the bible of psychiatry. And the premise of DSM is that there are all these different diagnoses, schizophrenia, bipolar, depression, alcoholism, autism, anorexia. And when I say those words, everybody knows automatically. Those are household words. Everybody's heard them for their whole lives. I've heard them my whole life. Everybody knows what those are, and they represent very different things. They're very... Somebody with autism is different than somebody with schizophrenia, who's different than somebody with anorexia and that's different than somebody with anxiety. And so, on the surface DSM makes sense but the reality is DSM is just a bunch of syndromes.

It's a word we use in the medical field to describe a constellation of symptoms when nobody knows what the hell's causing it. And that is what all of our diagnoses are, everything in psychiatry by definition, is cause is unknown. As soon as we know the cause, it goes into another field. If we know that the cause is multiple sclerosis, if we know the cause of your depression or your hallucinations, is multiple sclerosis, it's no longer a psychiatric disorder. It's now called MS and we have treatments for that. So, psychiatry is left with everybody that we're like scratching our heads like we don't really know what causes this. So, on the surface DSM

makes sense. The problem with DSM, is two things, really three things. One is something called heterogeneity, another is called comorbidity, and another is called validity.

So, heterogeneity means if I look at two people with schizophrenia, they can actually look very different from each other and have very different symptoms. Two people with depression can have wildly different symptoms. One might be oversleeping and suicidal and gaining weight and the other might be losing weight and not able to sleep at all. So that's heterogeneity like even though the labels sound good, when you look at real people, they can look wildly different from each other. The real problem is comorbidity. If you get diagnosed with one disorder, you're much more likely to have more than one. Although we package them up, if you look at real people getting treatment on average, they have three to four different disorders. And that means if I look at a group of people with schizophrenia, they're more likely to say have depression and OCD.

But if I look at a group of people with anorexia, they're more likely to have depression and OCD and if I look at a group of people with alcoholism, they're more likely to have depression and OCD. And so, it all starts to fall apart. Well wait these people are starting to maybe look a little more similar than different, yet they got some differences going on and as you said, at the end of the day, they're all unique individuals, with their own set of symptoms, with their own diagnoses, with their, all of it. And ultimately when you look at validity, none of the diagnoses are valid constructs. And meaning that although everybody thinks schizophrenia is a real disease and trust me the symptoms that people are having are real.

I'm not here to deny that mental illness exists. I'm not here to say that it's not a real thing. It is a real thing. When somebody is hallucinating or delusional, that's a real thing. But the label schizophrenia actually is not a real biological diagnosis. And although some people are probably like Chris Palmer you sound like a quack. You can't... Well, what the hell are you saying? You can't say that. I'm not alone. The National Institutes of Health abandoned DSM over a decade ago 'cause they were like we're not getting anywhere with it. This sh\*t isn't real. It's just not real. Wait, like we got to move on. We got to move on to some other model. Unfortunately, we haven't moved on.

**SHAWN STEVENSON:** Right. Yeah, and we were talking about this before we got started and how long it takes. A major revelation can come about and published in a prestigious peer-reviewed journal, proven, takes on average about 17 years for it to get integrated into conventional education and start to be used in practice. And this is why I'm so grateful that you wrote this book to get ahead of the curve, to get this information into people's hands, to empower folks now because also again, people struggling with these conditions would love to have help like yesterday. But often so much of that perceived help is not helping and also, it's disempowering us further because we've become so... I think this brings us back to this

important distinction which you already brought this up and I'm going to say it really clearly here.

In conventional medicine and treatment, we've separated the mind and body. We've separated the brain and the body and it's ludicrous. It's completely stupid to do that because it's all existing in the same organism. If there's something going on, truly like with your knee, it's affecting your brain and vice-versa. Every single cell in your body is connected to the other and communicating data back and forth constantly. We do know that there are some principles that can really cause major disruption with that communication, major disruption with organs and organ systems, and one of those hallmark things is inflammation. And of course, you address that but also, I love this in your book you keep bringing it back to causality as well. Because just because we have inflammation that doesn't mean inflammation is the thing. What's causing? We got to keep on digging and investigating. But that takes work and the way that our system of medicine is constructed folks are not getting the time.

No matter how much efficacy they're wanting to broadcast or how much they want to help people it's constructed in a way they're not able to take the time to actually find out what the root causes are nor are getting the training. And so, this is a lightning rod. This is something that you're bringing about a paradigm shifter here and with conversations like this as well, getting this information to people's hands, it could change things very quickly. Now to bring this back to more of a point of tangibility for people, like in some of these things that we're aware of, especially in this community. Talking about metabolic health and mental health, you shared some insights on insulin in the brain for example, because we think about insulin again, this hormone that helps us to open the cell up, store some energy, get things going, whatever the case might be, but insulin works a little bit differently in the brain. Let's talk about that.

**DR. CHRISTOPHER PALMER:** It does, and you know, it's interesting 'cause researchers have known for many decade that There are insulin receptors in the brain but up until about 20 years ago, they largely ignored that. They just thought well they can't possibly be there for any good reason because they assumed that insulin is only produced in the pancreas and that insulin is about you eat food and especially food that has carbohydrates and then your pancreas pumps out insulin to help that glucose get into cells. That's the end of the story with insulin. It's about eat carbohydrates, get those carbohydrates into cells for energy and insulin is like the lock and key mechanism. Probably about 20 years ago a group of researchers started diving a little deeper into insulin in the brain and this has been an exploding area of research over the last 20 years. And what they found is that insulin actually plays a really critical role in brain function There are some lines of evidence that strongly suggest insulin is actually probably produced in brain cells, at least some brain cells. And that when it is, it's probably functioning more like a neurotransmitter than it is like the lock and key mechanism to let

glucose into that cell. Insulin ends up playing a profound role in mitochondrial function of brain cells and so it's still connected to metabolism.

It's still connected to energy production, but it gets much more complicated in the brain. And the real answer is this is a new area of research, we, by far, we don't have it all figured out but what we know is that number one, insulin plays a powerful role in brain function, number two, it's not as simple as the way the model of insulin that we've had for a long time, and number three, when this insulin signaling is off, in some way or another, problems with brain function and brain metabolism can occur. So, one thing that can happen for instance is this thing called glucose hypometabolism. What that means in plain English is that some of your brain cells aren't getting enough energy from glucose anymore.

And we know that that's associated with Alzheimer's disease, so some people are calling it type 3 diabetes. But it's also associated with schizophrenia and bipolar disorder and even chronic depression, and believe it or not, alcoholism. And so, all people with those disorders and diagnoses have different areas of the brain that aren't getting enough energy from glucose. We think insulin in the brain is probably related. It's not the whole story, it's not the whole thing, but at the end of the day, it's about brain energy. That's why I love... That's why I titled my book Brain Energy, 'cause it's all about brain energy, getting enough energy to your brain cells so that they function properly.

**SHAWN STEVENSON:** Yeah, I love this. This brings me back to... Again, we tend to get tunnel vision. We make a discovery, and it just becomes, "This is the way that it is." And this reminds me of melatonin, this discovery of this sleep-related hormone has really been labeled as "the sleep hormone," but it's downplaying how important it is for overall circadian health and impacts it has on our cell replication and reducing rates of cancer, the list goes on and on. But for the longest... And still, I think a lot of people, even today, even in the healthcare field, believe that melatonin is produced in the brain, end of story. And today, we know that we've got these enterochromaffin cells in our gut that are making melatonin, that can store melatonin as well. We can have our pineal gland removed, which I don't recommend. But we still have ample amounts of melatonin in our bodies, and it's just like, why? What's going on here? It's because, again, we're thinking that the brain is just cut off from everything downstream. It's just like it's not related, right? This thing is happening in this part of the body, that doesn't have sh\*t to do with the brain.

But in reality, a lot of the things that our bodies are doing, the brain does as well. And it even does a lot of stuff itself, like the production of cholesterol. Your brain makes cholesterol. And we have this tunnel vision on that whole story. And so, this is bringing me back to this point with insulin. So, we know that it has a more complex role potentially in the brain, and still, just... I just want to talk about the surface level understanding with insulin and what can happen if,

for example, we're eating a diet like we eat today where 60% of the average American's diet is ultra-processed food. And it was actually researchers at Harvard denoted that the brain will easily confiscate up to 50% of the sugar calories that you consume. Like the brain is just, through our evolution, is just hardwired to sop up that glucose because it's only 2% of our body's mass, but it consumes like 25% of our calories, right? Especially sugar if it becomes available. So, what happens if sugar is just getting shot into the brain in droves? Is this going to disrupt insulin? Can it create insulin resistance in the brain? What can that do? So, let's talk about that.

**DR. CHRISTOPHER PALMER:** It does. So, high levels of sugar, we know that high levels of blood glucose will adversely affect brain function and the brain overall. They result in this... They kind of... A simple version would be this, all that glucose overwhelms mitochondria, and it causes something called oxidative stress in mitochondria. And so, what that means is they're producing more reactive oxygen species. This is where antioxidants come in, is like, saving the day 'cause we want to reduce oxidative stress. But when they get overwhelmed with all this glucose, higher levels of oxidative stress, that leads to higher levels of inflammation, and it can result in this whole cascade of events of now we've got insulin resistance. The shocking thing is this glucose hypometabolism. So, high levels of glucose can end up resulting in your brain cells having less ATP than they should. So too much fuel results in the engine not working as well. You can think about it as... For people who like cars, think about it like flooding your carburetor. Your carburetor needs very finite, discrete amounts of gasoline infused at the right time, in the right way. And if you flood your carburetor, like if you're really pushing on the gas and trying to start car and stuff, you flood it, now it's not going to work at all.

Something kind of similar is happening in the brain. If you flood the brain with too much fuel or glucose, the engines, which you could think of as the mitochondria, actually start to break down, and they get overwhelmed and now they're not producing enough energy, and all sorts of havoc can be wreaked as a result. If that goes on long term, brain cells can shrink and die, they can stop functioning properly. When they stop functioning properly, you can get mental symptoms. You could get brain fog or memory impairment, you might have depression or anxiety, and in extreme cases, hallucinations, or delusions. But at the end of the day, too much glucose can lead to insulin resistance, and/or it can go the other way; insulin resistance can lead to too much glucose. It's kind of a circle. But once you get into that feedback loop, you've got poor metabolic health and then your brain and body aren't functioning properly and then you start getting symptoms of some kind of chronic disorder.

**SHAWN STEVENSON:** Yeah. Wow. You just said this vicious circle happens and then we get into this place of learned helplessness, trying all these different things. And I love the analogy with the cars. It's a fast and furious analogy. And even thinking about the sugar impact, just fast and furiously getting driven into our brains, and then we get this... We'll call it the Vin Diesel effect

with the carburetor, and it down regulating our ability for our brain to make energy. Like, wow. And it just... But again, it's logical because if we think about insulin resistance or leptin resistance and this thing happening so frequently and the body's making adaptation because it could be dangerous to do too much of this thing, or it can be like there's an environmental mistake happening here.

There's no way this amount of sugar can be coming into this brain right now. Like, we just didn't evolve with this kind of excess. But yet we have all these sugar gates that allow us... Wow, it's so fascinating. And this reminds me of something you mentioned, these skyrocketing rates of autism and something that was incredibly rare is now becoming more and more common and we've got to take a step back and ask why. What is happening? And there's actually some really sound evidence on this... Again, we think that in some cases, this is just happening, right? We don't know why, but we know that this could even have something to do with the metabolic health before the child even arrives here. This can have something to do with the parents. Let's talk about that.

**DR. CHRISTOPHER PALMER:** Absolutely. So, as you said, the best scientists in the world are scratching their heads like, "What is going on?" Autism shouldn't be increasing like this. And everybody's struggling to understand what's going on. But there are a couple of statistics that will help put this into perspective and be like, "Aha!" And this is not at all about blaming people with autism or autistic people, this isn't about saying they're eating a bad diet, this is about their neurodevelopment. And something made their neurodevelopment go offline or at least be different, neuro divergent, neurodiverse, whatever we want to use. And I'm not here to be mean to autistic people, I'm not here to bash them or say that they're disordered or that they can't be good, productive members of society, 'cause they can, and I don't want to diminish them.

But women who are both obese and diabetic when they are pregnant have a three to four-fold increased risk of having an autistic child. Men who are obese have double the risk of having an autistic child. There's something in obese men that's getting transmitted by their sperm to the egg, that is resulting in autism, double the risk. So, when people are like, "Why do we have these skyrocketing rates of autism?" All you got to do is ask the question, "Do we have skyrocketing rates of obesity and diabetes in pregnant women and men who are their partners?"

Yeah. Well, look no further, folks. That's where this autism is coming from. And it's not about fat shaming, it is about empowering people with knowledge and information. People who are obese, people who have type 2 diabetes, have a metabolic problem. And I think they need to be given information, they need to be told what they can do about it, they need to be given real information not just "Eat less! Eat less! Just eat less!" That's not helping too many people

right now. So, we need to be a little more sophisticated and give them empowering information. But that helps us understand where all this autism is coming from.

**SHAWN STEVENSON:** Yeah, yeah, it's a shame really that we have to make that caveat that this isn't about shaming anybody, this is about empowerment and education. Because we know that all-cause mortality, every single thing that can take us out early or dramatically damage our livelihood increases exponentially as we venture up in becoming overweight or obese. And it just... It is what it is. And with that caveat, it's a mission to really normalize what we're seeing here, which right now, over 240 million Americans are overweight or obese, right? Something that was incredibly rare just a couple decades ago, is now become the norm. It is abnormal to be metabolically healthy. And again, it's a shift in framing. And then we've got to think about, if that's the case, if we're shifting this framing and people are not doing well with their health, with their mental health, with their happiness and success, and all the things that we strive for, let's normalize suffering. Let's normalize obesity.

Who's profiting from that? Who's benefiting from that reframing? This can put some power back into our hands in one perspective and I realize that, which is, we also, on the other side, we were marketed to for so long that you should be this stick figure, modelesque, whatever, this is the epitome with all the movies and the magazines and this particular thing, and if you don't fit that mold, you might think less of yourself. No. Humans come in so many wonderful shapes and sizes. We're talking about being a healthy version of you, whatever that looks like. And so, we're speaking to metabolic health and not even somebody having a higher BMI, because even that, there's going to be genetics, there's going to be environmental factors in how your kind of print out, your expression is going to be. And you can be robustly healthy and not fit into the cookie cutter BMI.

But we know what we're talking about here. We're talking about when we're venturing into places where we're developing insulin resistant. We have high rates of inflammatory biomarkers. And so, you just shared something again. I really want people to get this, with the rising rates of autism and getting ourselves healthier as a species is obviously going to be able to have out-picturing benefits on our children. Which another part of this is with our children, the rate of obesity in children has tripled since 1980. Like, this is beyond genes. It's not just the genes, we're sharing the lifestyle, with even our pets!

**DR. CHRISTOPHER PALMER:** Yeah.

**SHAWN STEVENSON:** Even our pets, Dr. Palmer. Got a quick break coming up, we'll be right back.

Recently, scientists have discovered that the human gut is a mass of neural tissue filled with 30 types of neurotransmitters, just like our brains. Because of the massive amount of brain-like tissue found in the gut, it has rightfully earned the title of being "the second brain." Technically known as the enteric nervous system, this second brain consists of around 100 million neurons. Now, here's where it gets really interesting: Researchers at UCLA discovered that the trillions of bacteria in your gut are continuously communicating with your enteric nervous system, AKA your second brain. And researchers from CalTech reported that, "Certain bacteria in the gut play an important role in the production of hormones that are crucial for our mental health, body composition, and even our sleep quality."

With the impact of processed foods, stress, and environmental toxins, the health of our microbiome can be severely disrupted. In addition to a healthy, real-food diet, there are wonderful sources of nutrition that can improve the health of our microbiome like few things can. A recent study published in the peer-reviewed journal Nature Communications uncovered that a unique compound called, "theabrownin," found in a traditional, fermented tea called "pu'er" has some remarkable effects on our microbiome. The researchers found that theabrownin positively alters our gut microbiota and directly reduces excessive liver cholesterol and reduces lipogenesis, AKA the creation of new fat.

Another study published in the Journal of Agriculture and Food Chemistry found that pu'er may be able to reverse gut dysbiosis by dramatically reducing ratios of potentially harmful bacteria and increasing ratios of beneficial bacteria. This tea is truly incredible, but as with everything, the quality and sourcing matter a lot. This is why I drink the fermented pu'er tea from Pique Life. They use a patented cold extraction technology that extracts the bioactive compounds in their teas at cold to low temperatures and this process actually helps to increase the amount of antioxidants and phytonutrients that we are getting from our tea. And I also love that it's wild-harvested, meaning that it's even more concentrated in polyphenols than any other tea source.

Plus, Pique is making sure that it's triple toxin-screened for one of the highest levels of purity. And right now, in the industry with teas, there are a lot of things going on with heavy metals, toxic molds, so making sure that there's none of that in their incredible tea. They have over 20 delicious, award-winning flavors and I'm sure that you're going to find more than one that you love. Go to [pikelife.com/model](http://pikelife.com/model) and use the code "Model" at checkout and you're going to get 10% off their remarkable pu'er tea and all of their other tea varieties. Again, go to [pikelife.com/model](http://pikelife.com/model). That's [P-I-Q-U-E-L-I-F-E.com/model](http://P-I-Q-U-E-L-I-F-E.com/model). Use the code, "Model" at checkout for 10% off. And now, back to the show.

So, let's circle this conversation back to metabolic health because we've been putting puzzle pieces together. We've talked about insulin, we've talked about the mitochondria, and we've

talked about one of the bigger concerning issues of autism. We've talked about depression, anxiety. But as you shared earlier, everything's on the rise, from physical ailments to mental ailments. We're not doing well; we need to make a change. What brought you to the conclusion that our metabolic health is influencing our mental health so deeply and why specifically? You mentioned it in passing so I don't want to glance over it. You mentioned a ketogenic diet was found to be helpful for a myriad of different mental health issues. Let's talk about that.

**DR. CHRISTOPHER PALMER:** So, it's probably good to tell the chronological story there. So, that actually starts with my own personal story, believe it or not. And we don't have to go into great detail. I'm happy to if you want to, but... So, I struggled with mental illness when I was a kid, had all sorts of adverse childhood experiences at some point. My mom developed a chronic psychotic disorder. I went to live with her, left all my siblings behind, she and I were homeless together for a while. It was like a sh\*tshow. I almost didn't graduate high school, I was ready to drop out and somehow pulled myself together, end up in college to... Figured out how to do really well there and then ended up in medical school and I'm doing pretty well. And I did really well in med school and then end up in a Harvard residency and at that point, I'm diagnosed with metabolic syndrome. And I'm doing everything right. I'm technically not overweight. I'm on my low-fat diet just like they're telling me, eating my Entenmann's because those are supposed to be healthy for you.

**SHAWN STEVENSON:** Low fat.

**DR. CHRISTOPHER PALMER:** Low fat. I was on my low-fat Entenmann's and low-fat ice cream. As long as it was low-fat, it was supposed to be healthy for you, so I was doing it. I was exercising pretty regularly but I was diagnosed with metabolic syndrome. Year after year, the doctor's like, "You got to do something, you got to do something. Do a lower-fat diet, exercise more." I'm doing it, doing it, nothing's working. I finally break down and do a low carb, what ended up being a ketogenic diet. And within three months, my metabolic syndromes completely gone. The shocking thing to me were the changes in my mental health. I noticed dramatic improvement in mood, energy, concentration, sleep. Everything was getting better. So I start telling friends and family about this and the ones who are doing it are equally saying, "Oh, my God, I feel so great on this." So, within a couple years, I start using this in patients in my clinic who have treatment-resistant depression. They've already tried 30 different antidepressants, mood stabilizers, all sorts of pills. They've tried shock treatments, they've been in decades of psychotherapy, nothing's working for them. What do we got to lose? I'm going to see if any of them want to try this diet and see if it helps. Few of them try it, get dramatically better.

But I was kind of on the down low with all that 'cause I'm like, you know, keto diet, low carb diet, that's... I'll get fired; I'll lose my license. I don't... I don't want to be making trouble, I'll just

lay low and just offer it to the people in front of me and try to help whoever I can. And then everything changed in 2016 when one of my patients was schizoaffective disorder, which is a cross between schizophrenia and bipolar. He asked for my help to lose weight. And he had been tormented by his hallucinations, delusions. He had tried 17 different medications, none of them worked. He weighed 340 pounds. He was basically a hermit. And he's like, "I want to get a girlfriend someday. And I know that I'm like a loser in a million ways. I'm schizophrenic. I live with my dad. I don't work I like, but I'm also really fat and maybe that's something I could do something about, will you help me lose weight?"

So, we decided to try the ketogenic diet. I didn't think it was going to do anything for his symptoms 'cause schizophrenia is totally different than depression or at least I thought at the time. And, but within two weeks he starts losing weight and I start noticing this powerful antidepressant effect. I'm like, well that's nice. Oh wow, that I didn't expect that with you because you've got schizoaffective disorder. I didn't expect you to be getting this antidepressant effect, but that's cool. It's great to see you feeling so good. And the thing that entirely upended everything that I knew as a psychiatrist was six to eight weeks in, he's like, you know those voices that I hear all the time, they're going away. And then like a couple weeks later, you know how I always thought there were all these families who were targeting me and could control my thoughts and were trying to hurt me? And he's like, I don't think that's true anymore. And now that I say it out loud, it sounds kind of crazy.

Like maybe I've had schizophrenia all along. Like everybody was always trying to tell me and I never believed and maybe it's going away. That man went on to lose now 160 pounds and has kept it off. But much more importantly, he was able to do things he hadn't been able to do since his diagnosis. He completed a certificate program, was able to go out in public, not be paranoid, was able to perform improv in front of a live audience, able to move out of his father's home for a period of time. That completely upended everything I knew as a psychiatrist 'cause schizophrenia is not supposed to go into remission. So, I quickly became an expert in ketogenic diet for mental illness. And for those listeners who may not know this, although the keto diet's a weight loss diet, it's also an evidence-based treatment for epilepsy. And that was really important to me as a psychiatrist 'cause we use epilepsy treatments all the time in psychiatry.

So, I did a deep dive into all the science that we know, the neuroscience, like how is the keto diet stopping seizures and does that play a role in mental illness somehow or another? And I quickly did all that and figured out, oh my god, this is a match made in heaven, this makes sense. Like there's all this science literature to back me up. Like this is a real thing. Like somebody needs to be taking this seriously. Like, so I start publishing articles and academic journals. I'm now collaborating with researchers around the world, treating dozens more patients, hearing from all these people who are putting their chronic schizophrenia, bipolar,

chronic depression into full lasting remission, sometimes off meds. But I didn't stop there 'cause I was still like, wait, bipolar is not supposed to go into remission. It's supposed to be a lifelong diagnosis. Schizophrenia isn't supposed to go away, that's supposed to be a genetic lifelong disorder that requires medication for the rest of your life.

These cases that I'm seeing, these people that I'm seeing, and it wasn't just my practice, it was people from around the world reaching out to me, clinicians, researchers, patients, just individuals just sharing their stories with me. I'm like, this is huge. This like, and initially I was really just perplexed. I was like, this is a really important clue to this big picture question, what causes mental illness? Like this isn't supposed to happen. This is going against everything I've been taught. And if I can maybe do a deep dive into this science, maybe I can better understand it. So, to finally circle back to your question, at the end of the day when I really did the deep dive into the science, I learned that all of this scientific evidence has been accumulating for over two centuries. Two centuries ago, 1800s, researchers knew that diabetes, type 2 diabetes, and mental illness run in the same families. They knew it before we even knew what insulin was. We now have tons of evidence to back that up all the way down to the cellular level. We have hundreds of studies to document that.

But that was known two centuries ago. Since the 1940s, researchers have been identifying metabolic abnormalities in the brains and bodies of people with serious mental illness, insulin problems, glucose problems, lactate problems, all sorts of differences in these metabolic biomarkers, higher levels of inflammation, all this stuff. So, at the end of the day, the metabolic theory of mental illness is not some wild speculation, it's not a shot in the dark. It's not, I'm just trying to explain away the keto diet. The metabolic theory of mental illness is taking all of the research that we have, all of it, every single piece of it, the biological, psychological, and social research that we have and putting it all together. But once you see the big picture, new solutions become obvious. And the frightening thing is that we can, I can actually understand that maybe some of the treatments we're delivering are actually doing harm. And I have to say that's the most heartbreaking thing as a clinician. That for 27 years I may have been prescribing pills that were reducing symptoms in the short run but might have been probably have been keeping people ill in the long run. And so, we need to like do better.

**SHAWN STEVENSON:** You're an exceptional human to be able to see that within yourself and to share that message and to share your story and to have that revelation. None of us wake up in the morning like, you know what? I want to be wrong today. Or you know what? I want to be wrong for the past 20 years. Like we build our identities around these things. And I think what makes you so exceptional is that you are a results-oriented person, and you kept seeking, you didn't turn it off, you didn't turn off that nut, that pestering thing. Like something isn't right here and then trying to figure out process, that investigation. And so here we are today, and again, even though this moment right now, being able to impact people in an entirely new

way, but also most importantly, influencing influencers, right? Because man, I mean this is so remarkable. You know what, from what you've already shared, it would seem obvious that what we eat impacts our mental health, right? It would seem obvious that the food we eat impacts our brain, our mood, our cognitive function, our behavior because our brain itself is made from the food that we eat. Our brain is made from the food we eat. Our neurotransmitters are made from f\*cking food.

Our hormones are made from food. These are providing the building blocks for our body to do all the things. But here's a part that can be missed though, and even that piece though, getting it... I went to a traditional university, we're not... We don't really make that cognitive connection. You know, when we become a specialist in whatever it is, we don't realize as a cardiologist that that heart is made of food or gastroenterologist. That that gut lining is made from food, right? We don't really make the connection. But it's not just that the organs and neurotransmitters are made from food. It's the energy that allows everything to happen in between, right? So, you gave that analogy earlier, the fast, the Vin Diesel analogy, with what's fueling all these processes and the quality of that fuel matters. And I actually set aside this particular study because again, understanding that nutrition deeply influences our mood, cognitive function, and our behavior is like every single person should know this at this point in our evolution as a species.

This was conducted by researchers at Oxford University, and I love your book because you keep on going back to causality and you keep questioning the questions. And so, I'm going to highlight this, but then we'll dive into some other pieces. But these researchers set out to find if providing more essential nutrients to young male prison inmates would have an effect on their violent behavior misconduct. Now they complete, this is a double-blind randomized trial. Double-blind, randomized placebo-controlled trial. In your book, you highlight how difficult it is to have studies of this caliber looking at mental health because there's an ethical thing to consider here, right? What we have here, even though this isn't good, it's not a good situation, we have a ward study where everybody's... You're not the... Some of these guys aren't going to Whole Foods. Everybody's getting the same thing. They completed a double-blind randomized trial that provided one group of inmates' essential fatty acids, supplement, and multivitamin/multi-mineral, while another group received a placebo.

Now, this isn't even just focusing on food with all those other cofactors. This is just basic stuff right here. The average length of the supplementation was approximately four and a half months. So, this is a pretty robust study period as well. During that period, the disciplinary offenses enacted by the young men receiving additional nutritional support dropped by 35%. This was nearly 30% lower drop than the placebo group. And what was especially eye-opening was that violent incidents of those inmates receiving additional nutritional support dropped by almost 40%. Now these findings were so shocking, peers didn't believe it. So, another set

of scientists replicated their study. This was published in the journal, Aggressive Behavior, pretty much the same outcome. And the reason that it was hard to accept is because no other treatment, no other therapy, no other intervention, came close to the results that happened when they changed what they were eating or they changed their nutritional inputs, right? And so, I want every single person to get this today, our food, our nutrition is... It's the foundation of all of this stuff.

And so, the question that I want to ask you is about... And this is just a brief back to the future moment, when you mentioned some of the metabolic ramifications of particular drug protocols, which again, for some people the protocols are effective and safe and all the things, but for the majority of the time it's not working. But you mentioned some of the side effects being weight gain, being other metabolic problems. Could this be because of this disruption that it could be having on our mitochondria or metabolic health? Is that why it's having those side effects?

**DR. CHRISTOPHER PALMER:** Absolutely. So, before I go further, I do want to just be a responsible psychiatrist and say, for those of you listening, if you or someone you know is taking these meds and you are going to be appropriately alarmed, concerned, freaked out, please don't stop your meds on your own. Please don't go and say, "Oh, I just heard this doctor and he's saying that my meds might be harming me, so I'm going to stop it cold turkey". That is a recipe for disaster. And I don't say that lightly. I don't say that to stand in anyone's way of trying to slowly but surely and safely get off meds. I'm a huge fan of helping people get off meds, but I want them to do it in a safe way. I don't want people ending up in the hospital or psychotic or suicidal or dead. So, please don't do that. But you know, that was actually one of the biggest challenges as I was developing this theory, is trying to understand that. Wait, like I'm doing all this research and it's suggesting that metabolic health equals mental health, but we prescribe all these meds that impair metabolic health, and they reduce symptoms. That doesn't make sense.

And initially I was like, well, I must be wrong. This theory can't be right. And if it is right, I have to understand how to explain that. I have to be able to explain that in a detailed scientific way for anyone to take this seriously. Because most of the psychiatrists and neuroscientists in our field will immediately... And I've talked with several, who point that out and say, your theory must be wrong because we prescribe meds that make people fat and diabetic and they reduce psychotic symptoms. So, your theory has to be wrong. And it forced me to keep digging and keep refining. I had to keep refining and editing this theory to line up with everything that I knew and to reconcile it with all of the existing evidence. And the easiest way to explain it is that when a brain cell, or any cell for that matter, is metabolically compromised, a few different things can happen to it that are very clinically relevant. Two of them are really critical to

understand and one is that that cell can become under active. So, in that sense, that makes sense to most people.

Like if a cell doesn't have enough energy, it's just not going to work right. It's going to be sluggish in its performance or maybe it's not going to perform at all. That makes sense. And that does explain a lot of symptoms of mental illness. So, somebody with ADHD who can't pay attention or concentrate, those brain cells that should be helping them concentrate and pay attention aren't working right. They're under-active because they're under fueled. And so that results in inattention or inability to remember things. Somebody with Alzheimer's disease, if their brain cells are really under fueled, that results in them not being able to remember something. But one of the other consequences of metabolic dysfunction in a cell is that the cell can actually become hyperactive, or something called hyper-excitability. And when a cell is hyper-excitability, what that means is that it's producing a sensation or something that should not be happening. The extreme version of hyper-excitability is actually a seizure in the brain, but you can get it in your muscles. Like a muscle spasm is a hyper-excitability muscle cell.

So, imagine that happening in a brain cell. Like part of your brain cells are going into a little bit of a hyper... State of hyper-excitability, or it's not really a spasm per se, but you could think about it in the same way and then it's producing something that shouldn't be there. So, if your muscle cells spasm, you kind of feel something that you shouldn't normally be feeling. You shouldn't really think about your muscle at all. But if it's spasming, you're like, "Oh, that hurts. I'm feeling it, it's getting tight," whatever. If the part of your brain that controls your anxiety is hyper-excitability, it means you're going to have anxiety when you shouldn't. If the parts of your brain that control kind of your dream state, for instance, are hyper-excitability, it might mean you might hallucinate or have a delusion. So hyper-excitability is really common and is really important to understand. And that comes back to the question, so why would a medication that impairs metabolism be helpful? Like, why are we prescribing them?

And at the end of the day, that is the fundamental thing, is that these hyper-excitability cells, the easiest way to stop them is basically suppress their metabolism altogether, to impair their mitochondrial function, so that they can't work at all. And that will reduce symptoms, which is good on the surface and in the short run. The problem is that in the long run, you're making those cells even weaker. You're making those cells even more metabolically compromised, which means you're not healing. And which means that you may end up with a chronic disorder because of the very treatment you're using.

**SHAWN STEVENSON:** Hmm. Yeah. Wow. Thank you for making sense of that and unpacking it. This would also speak to why a treatment might work short term, right? For a little while, you know, we take a particular antidepressant, and we feel normalized, we feel better, but then maybe two weeks later, maybe six months later, whatever the case might be, we have a new

manifestation of a similar symptom cluster, right? And it's just like, oh, that's not working anymore. Or different symptoms can manifest because like you said, we're not healing, we're not actually looking at what is the root cause in the first place. And also, we're suppressing metabolic function temporarily, which is going to lead to long-term metabolic breakdown for most people, more than likely. Now you mentioned with epilepsy and the excitability going on, I immediately thought about, I lost a friend, man, he's one of the best people I knew, you know, he opened this... He opened a bookstore in our community, which is a low-income community, just like a pillar.

So insightful, such a good human, but I didn't know this stuff then. I was working at the university gym and he's my client and friend and he had a seizure in the shower and died.

**DR. CHRISTOPHER PALMER:** Wow.

**SHAWN STEVENSON:** And this was about 15 years ago. And having access to so many... He had a very... He had a vegetarian... He's a vegetarian. So very high carbohydrate-based diet and all the things. And there's a tie in though, as you mentioned earlier, with epilepsy and the keto diet and also with mental health, and what is the crossover there? Like why is that... Why would this diet that's so effective for that... Is this because of what's happening with our nerves and the excitability and helping them normalize things? Let's talk about that.

**DR. CHRISTOPHER PALMER:** It is. So, epilepsy and mental health have so much overlap and a lot of people don't necessarily realize this 'cause epilepsy is a pretty rare disease. It's a rare thing. But we use epilepsy treatments every day in tens of millions of people with mental health diagnoses. Medications like Valium, Klonopin, Xanax, everybody's heard of those, those all stop seizures, too. And some of them were developed actually for seizure prevention. But all other things like Neurontin or gabapentin, Depakote, Tegretol, Lamictal, a lot of people who've heard those words know them as mental health treatments. Like oh, that's a mood stabilizer or that's an antidepressant or my friends on that for her anxiety. But actually, those are all seizure treatments So we've long known that seizure treatments can work because they're suppressing hyper-excitability, and again symptoms of mental illness are often due to hyper-excitability brain regions. So, it makes sense that anything that reduces hyper-excitability, at least in the short run, will help suppress symptoms of mental illness in the short run as well. But the overlap even between people with epilepsy and mental illness is strong. People with mental disorders across the board, depression, anxiety, personality disorders, ADHD, much, much higher rates of seizures. Much higher rates of seizures across the board.

Usually, it leads to double the risk. Sometimes like six to ten times the risk. So that's 600 to 1000% higher risk of having seizures but the other way it works too. People with epilepsy are much, much more likely to have mental disorders. One study found almost 50% of people with

epilepsy are suffering from depression at any given time. A lot of people with epilepsy try to kill themselves often before they even get diagnosed with epilepsy. So, everybody thinks well, I might try to kill myself if I had epilepsy that would suck. It's not psychological. The epilepsy is a symptom of brain metabolic dysfunction and suicidality is also a symptom of brain metabolic dysfunction. And so that brain metabolic dysfunction is causing both symptoms. But even for serious mental disorders people with epilepsy nine times more likely to have schizophrenia. They're much more likely to have bipolar disorder.

It depends on what study you look at. I found one study actually at one point that found a 25-fold increased risk of bipolar disorder in people with epilepsy, compared to people without it. It gets tricky because people with epilepsy will have mood instability and some clinicians will diagnose that as bipolar and other clinicians will just say well that must just be your epilepsy. I'm not going to label you with a mental disorder. You've got a neurological epilepsy disorder. We'll just leave it at that. But they still treat it as though it's bipolar disorder. And they're still flogging the person with all sorts of anti-seizure and mood stabilizer medications. So, the overlap is tremendous.

**SHAWN STEVENSON:** Holy moly, you just mentioned that myriad of drugs that were designed and approved by the FDA for this purpose but then the off-label usage is so rampant in the field and drug companies, little not so fun fact, they're not legally able to market those drugs for off-label use. But Neurontin, in the case of Neurontin, for example, there's a huge, huge fallout from that and it's still, it's one of the topmost prescribed drugs even to this day. But there was a massive fine. I think it might have been like one of those billion-dollar fines doled out. I believe it... Was it Pfizer with Neurontin? I got to look it up.

**DR. CHRISTOPHER PALMER:** It was.

**SHAWN STEVENSON:** Let me look it up. It was Pfizer.

**DR. CHRISTOPHER PALMER:** It was Pfizer. It was actually owned by a different company and then Pfizer took it over. I think it was the other company that was primarily responsible for all of... They had all of their reps basically telling everybody use Neurontin for whatever ails people. It's good for bipolar. It's good for anxiety. It's good for alcoholism. It's good for dementia. It's good for everything. You should use Neurontin, and everybody was using Neurontin. And then the unfortunate news for Pfizer is that they took over that company and then got slammed with that lawsuit.

**SHAWN STEVENSON:** And it was it was a big one again and again we should... The premise was to discourage, on the surface, the off-label marketing, but it still happened. It's very pervasive but it's also much more sleek today, that encouragement. And again, it's still under the guise

of helping people and that's what this is really about. And you also, there's nothing, there's no shortage of you giving tools, practical tools in the book for helping people. We've painted a big picture. There's so much more obviously to the story, there's so much more. But you put the focus in the second half of the book into solutions, looking at what are some of the lifestyle factors that are contributing to this epidemic of mental health issues? The dietary factors. Here are some changes that we can make. So, let's talk a little bit about that. What are some of the foundational things for us to really take control of our mental health today especially in the world that we're living in?

**DR. CHRISTOPHER PALMER:** And so, this is the really great news, is that it helps us connect all of the dots between metabolic health and mental health. It helps us connect the dots with all the risk factors that we know about mental illness So diet is one thing, and we could do, you do tons of episodes on diet I mean, there's so much to say about diet, but diet's a huge one. Exercise is an important factor. Sleep is really important. Stress, adversity, trauma is important to at least understand. Inflammation is important to understand. And a lot of times this isn't about shaming. So, you could get COVID, end up with long COVID and have mental symptoms, have chronic depression or brain fog or something else and that is probably because of the inflammation that you're experiencing from COVID. But understanding the bigger picture, how that's impacting your metabolism and then understanding all of the different levers that you can pull to try to improve your metabolism, even though you were unlucky and got long COVID, can help people reclaim their health.

So, it's not just sitting around passively waiting for the long COVID to go away. It's thinking about can I do something with my diet, exercise, sleep, stress, all these other things to try to repair my metabolic health? So, inflammation is a big one. Substance use is a big one. So, a lot of people are over-drinking or using marijuana or vaping like a fiend and those things for better or worse, even though I know I'm raining on everyone's parade right now, but those things are not helping your metabolic health. They are just not. And any good athletic coach already knows that. If you've got a good athletic trainer or a coach and you're running, you're preparing for a marathon or a competition, they're going to tell you all that needs to go. I'm sorry.

I'm you know, they're going to rain on your parade. So as a metabolic psychiatrist, I'm going to rain on your parade too and I'm going to say, if you're doing those things and you're healthy otherwise, just keep doing them if you want. Maybe you're healthy enough and resilient enough to be able to do them but if you're suffering in some way, if you're struggling with your metabolic health, if you're struggling with your mental health, those things might be playing a role and so those are levers you can pull. You can just at least be aware of them, but psychological and social things matter, relationships, having a sense of purpose in your life. Those things can induce stress responses. Like if you feel like I'm meaningless I'm empty,

nobody cares about me, I'm not doing anything important in the world, people probably wouldn't even notice if I was gone. That kind of emptiness and lack of purpose induces a stress response which absolutely plays a role in your mental health, but also your metabolic health. People like that are more likely to have heart attacks and strokes and die early deaths. It's all connected.

And the solution for that person obviously is to start to work towards getting a sense of purpose. Reach out, find some community, find something that you can do, find a meaning. Find something useful that you can do. So many people need help. So many causes, environment, pets. I mean so many things' people could find purpose in, lots of choices, but all of them matter. So even though on one end I want to stress it's not as simple as everybody go do the keto diet and you're all going to be cured. It's not that simple. All these other things play a role. So, in that sense people sometimes are like a little overwhelmed like well oh now it's sounds complicated.

But on the other hand, when I say all those things, everybody already knows them. They're not like come on folks this is not new information. It should not be new information. You already know these things play a role in your health. And make a list of all the things that are probably adversely affecting your metabolic and mental health and then come up with a plan. You don't have to do it right away. It's a journey. It's not like you overcome these things overnight but people can do it. They can get there, and I see people. I see people who had been told your life is essentially a second-class life 'cause you have this label. You have this, you have chronic depression, and we don't know what to do. You have bipolar. You have schizophrenia. You have a personality disorder. There's nothing we can really do for you. You're failing all the treatments and that's the way it's put. You're failing. I say the treatments are failing you and you need empowerment, and you can do something to get better.

**SHAWN STEVENSON:** Dr. Christopher Palmer, wow you just blew my mind. Wow. Thank you so much for doing this work and putting this book together for all of us at this time. We really need it and if you could, could you let everybody know where they can pick up your book and where they can get more into your universe and stay educated.

**DR. CHRISTOPHER PALMER:** The easiest place is to go to brainenergy.com. So, you can get the book there. It's available in most major booksellers. You can also sign up for our newsletter. We're going to be giving out free information. I am really hoping to start a grassroots movement because at the end of the day if people really understand this, they really understand that the pills aren't working, not just for you and the people you know, and you all are thinking you're just unfortunate, unlucky people, but what I'm telling those people is no you're the mainstream, you're in the 90%. Nobody, hardly anybody's getting better. I want to start a grassroots movement. I want people to stand up. The mental health challenges are

overwhelming. So many lives are ruined and decimated. We need major changes and although I describe a lot of self-help treatments in the book, some people are going to need help.

If you've got schizophrenia, you're in an abusive relationship, you've got if you're really hooked on alcohol or other drugs, you're going to need help and that's okay, but I want those people to be able to get help.

**SHAWN STEVENSON:** Yeah, we've got to get these pillars right. You know you mentioned those pillars with our nutrition, our exercise, our sleep, our relationships. If we just look at it like four legs of a table, we move one of those pillars out, all of a sudden, we've got a higher probability of this s\*\*t tipping over. And if we move, two were pulled out, guess what, we've got inevitability of problems. One the list goes on and on so where can we start to put some focus that's what this is about and also, like you said, this isn't a revolutionary thing for us to take care of these things. These are things our genes expect of us but are we doing it? Are we making it a priority in our "busy world" today which we use that as an excuse. There are so many cool ways. It's just really what are you tuned into and what are your priorities because you can knock out all four of those in like an hour to be honest, and the relation... You could do the exercise with your significant other, your best friend.

You know my wife just did that, did a workout with a friend yesterday and they grabbed some food and the whole thing. So, they've got those three pillars, three of those pillars knocked out and guess what, that fulfillment from the friendship, the exercise, making her need more sleep for recovery, all the things that feeds into the other thing. Bottomline all of this stuff feeds into itself and each other and thank you so much for putting this book together because as I mentioned in the very beginning of the episode, you spend a nice portion of the book deconstructing why things are the way that they are. Why do we think the way that we think, that's leading us to these to making choices that aren't working? Now let's do stuff that is working. Dr. Christopher Palmer, brainenergy.com?

**DR. CHRISTOPHER PALMER:** Yes.

**SHAWN STEVENSON:** That's where everybody can find the book, connect with Dr. Palmer, and thank you so much for coming to hang out with us. This has been incredible.

**DR. CHRISTOPHER PALMER:** Thank you for having me.

**SHAWN STEVENSON:** My pleasure Dr. Christopher Palmer everybody. Our ability to better relate with each other, with our family, with our community, with our society at large, deeply depends on our state of mental wellness. It's much easier to perspective take, to find common ground and to solve our problems when we can actually see from other people's point of view.

When we can have patience, when we can be understanding, when we can truly put ourselves in someone else's shoes. It's not that we can't do that when we're not mentally and physically well, it's just more difficult. This is why, one of the many reasons why this topic, this subject matter is so important because as we get ourselves physically and mentally healthy that starts to stretch itself into our family construct and into our communities.

This is how we make real change with ease and grace, is by getting our citizens healthier. So again, this conversation is so important please share this out with your friends and family on social media. Take a screenshot of the episode. You can tag me I'm @ShawnModel on Instagram. I'm doing more on Twitter now. I'm @ShawnModel on Twitter. On Facebook I'm @TheModelHealthShow and of course you can send this directly from the podcast app that you're listening on to somebody that you care about. I appreciate you so very much for tuning into the show today. We've got some epic masterclasses, world-class guests coming for you very, very soon. So, make sure to stay tuned.

Take care, have an amazing day, I'll talk with you soon. And for more after the show make sure to head over to [themodelhealthshow.com](http://themodelhealthshow.com) that's where you can find all of the show notes, you can find transcriptions, videos for each episode, and if you got a comment, you can leave me a comment there as well. And please make sure to head over to iTunes and leave us a rating to let everybody know that this show is awesome, and I appreciate that so much. And take care, I promise to keep giving you more powerful, empowering, great content to help you transform your life. Thanks for tuning in.