Episode 133: GMOs, Glyphosate, Organic Food & What's Making Our Children Sick

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Katie: Hello, and welcome to The Healthy Moms Podcast. I'm Katie from wellnessmama.com. And this is going to be such an enlightening interview for any parents listening. I am here with Michelle Perro and Vincanne Adams, who wrote an amazing book called "What's Making Our Children Sick?" And we're going to go a little bit deeper into their background. But Michelle is a veteran pediatrician with over 35 years of experience at acute integrative medicine. More than 10 years ago, she transformed her clinical practice to include pesticide and health advocacy. I know I get a lot of questions from you guys about these topics. She has both directed and worked as attending physician from New York's Metropolitan Hospital to UCSF Benioff Children's Hospital in Oakland. She is currently lecturing and consulting, and working with Gordon Medical Associates, an integrative health center in Northern California. Her credentials are a mouthful.

Vincanne Adams is a professor and Vice Chair of Medical Anthropology at the University of California, San Francisco. She has previously published six books on the social dynamics of health, scientific knowledge, and politics and is currently the Editor for "Medical Anthropology Quarterly." So they're both highly qualified and I can't wait to jump in. Welcome, Ladies.

Michelle: Thank you, Katie. Thanks for having us.

Vincanne: Yes. Thank you, Katie.

Katie: So I'd love to hear to start, it always is great to hear someone's story, how did you guys both get into your respective areas, to begin with?

Michelle: Happy to share that, Katie. I'll start. Michelle here. So my training, as you mentioned already, is in pediatric emergency medicine and I'm an acute care doctor. And what happened, there were several things going on at the same time. For starters, my own son had some health issues, and he's 24 now and doing super-well, which led me into the path of more integrative tools to help my own child get well. Some years later, actually, I was working and approached by a group of moms here in Marin County, who needed me to

help them stop the spray of a pesticide that was gonna be sprayed along the entire coast of Northern California. And I was so reluctant to get into this, Katie.

I was a busy mom, running my own practice, PTA Chair. I had so much going on, and I reluctantly said, "Yes." And that was transformative because, through these smart moms, I learned about not only pesticide advocacy and pesticide health issues, but genetically modified food. And that was a gamechanger for me, and we can go into it during this conversation. But through that relationship with these incredible women, it literally transformed the work to where I'm now doing mostly integrative care and working with a lot of legislators to try and stop herbicide and pesticide use overall.

Vincanne: So my story is, as you said, I'm a medical anthropologist and I've published, for many years, research on the social dynamics and politics of health and medicine. And, you know, my training is in the ethnographic method, which means I look at human effects of the social and structural problems. And when I met Michelle, I just found that her story about how she got into this and the kind of medicine she was practicing was so compelling that I thought, "Boy, I'd like to write a book about all of this," and then I found out that she wanted to write a book about it.

And first, I thought, "Well, maybe I can get someone to help you write the book." And in the end, I decided that I actually was so interested, and I had information about some of the context issues around the medicine she was practicing and also the issue of genetically modified foods, that I decided I would write it myself with her. And I want to say that what surprised me, you know, is that like a lot of people, I was initially really skeptical of Michelle's positions on genetically modified foods.

And anyone looking at the internet would be easily convinced of the same thing, that genetically modified foods are safe and that those who oppose them are just conspiracy theorists. But after I really did the research and looked over her shoulder, reading the articles she was reading, talking to the scientists who were involved with this, reading some of the politics about it, and interviewing her patients, I really decided that, you know, she's right. There's a lot here that we still don't know, but we know enough now to be worried. And so I just couldn't resist. I jumped in, wrote the book, and it's been a great project for me.

Katie: That's awesome. And I know we're going to delve into it more as this discussion progresses because I think that's an important topic, and I get a lot of questions about it. But I think the title of your book is the perfect place to start because I see this every day in comments from readers and in my own research. Kids are getting sick a lot earlier and with things that never used to be even considered childhood illnesses. So let's start with the title of your book. What is making our children sick?

Michelle: So this is something that has been plaguing me as a clinician. I'm a pediatrician. And by definition, I'm a child advocate, right? That's what pediatricians do. And approximately 15 to 20 years ago, when I was still mostly doing acute care medicine, I started recognizing a trend. Right in my clinic, you know, right on my exam table, the kids were sicker. And what I mean by that, I was doing acute care, so I would see a child with an ear infection. Right? Super-common, see those, you know, every day. But mom might say, "Oh, yeah, this is his eight infection," and the kid was 10 months old. Or kids on asthma medications and had been on steroids for three years, or children with chronic constipation who couldn't come off MiraLAX or other common pharmaceuticals used by pediatricians.

And coupled with that, I was very shocked by an alarming trend in autism, autistic spectrum disorder, as well

as other learning issues and what we call "neurocognitive disorders." And this alarm coupled with what I had learned about genetically modified food and pesticides led me down a different path. And I learned to treat my patients differently and use a different toolbox because what we have in traditional, conventional medicine does not address the chronic new-age child. I had to expand my palate, so to speak, and broaden my perspective to now begin to these chronically ill children.

And we can go into the statistics later if you want, Katie, but they're alarming and they're from the CDC. This is not voodoo medicine. We have great stats on this, and kids globally are sicker.

Vincanne: So I would just jump in and add that one of the things I noticed after studying Michelle's practice and looking at her patients, and listening to her explain the cases is that, you know, kids are chronically sick for a lot of reasons. They're exposed to a lot of toxicants. They get exposed to a lot of pathogens that are known to Western medicine. But one of the things that became clear is that there was a pattern of her recognizing that kids have leaky guts, and I'll let her explain that later. They have dysbiosis in their gut, which means an imbalance of bacteria. And because of this, they've got this problem of immune systems being chronically taxed but underperforming.

And in some ways, it's sort of like a grand theory, but it does explain a lot of the systemic problems that you see in brains, on the skin, in the immune reactions, in the digestive tract. You know, kids with ulcerative colitis are only nine years old. That's ridiculous. And so there is sort of a theory, and one of the connecting points for her on this is that food is one of the culprits. It's not the only culprit, but it's one of the culprits. And then, what we go on to say in the book is that it's not just the biological problems that are at stake here, or that are causing this.

What we really see is that there's a context, and there's a political and social and economic predicament that we're facing as well, which is a cataclysm of three things. We've got reluctant medical communities who are faced with a massive epidemic of chronic disease in our children. And they have an inability to deal with them and they don't deal with food enough. A food regulatory system that is full of holes. And then a history of the science on genetically modified foods and pesticides that has actually obscured the facts and made it very hard for people to figure out what the truth is on these things.

Katie: Yeah. That makes total sense, I know for me just in my own head, when I try to think of like all the factors that can go into it. Because I know food is a big one. That's my background as well. And I explain it to my kids, kind of like the bathtub effect of you could put like all these different things in a bathtub. But once it gets to the top, it's going to overflow no matter what you put in it. And when it overflows, it's going to create problems. So that's how I kind of think of it like we're putting in all these negative inputs and creating these problems.

But I want to go a little deeper. So let's clarify some of the language. Because like you said, there's a lot of confusion on some of these terms online. So when you talk about pesticides, what are you including in that? And when you talk about things like industrial food and modern food, and genetically modified food especially, what are you talking about? Because I know people… I hear online a lot people say like, "No, genetic modification is totally natural. They've been doing this forever. It's where they crossbreed plants." So I'd love for you to explain what you're talking about and go a little deeper there.

Michelle: Yeah. Absolutely, Katie. These are great questions by the way, and they are confusing. So pesticides

is the broad category for two groups of chemicals used – herbicides and insecticides. So some are targeted against plants, some are targeted against insects, and they're not all the same. For example, what we talk about, Roundup, is an herbicide. And so Bt, another type of genetic modification, and we can go into that later, is an insecticide. DDT – everyone knows what that was – was an insecticide. So this is just sort of a classification.

Hybridization is not genetic modification. Hybridization has been around for, oh, thousands of years. Farmers have experimented crossbreeding different plants, different food crops. But what that is just sexual crossbreeding. It's not the insertion of genes, which is what genetic modification is. Industry, agribusiness, would be more than happy for people to be confused about these ideas, that genetic modification is just a form of hybridizing. But it's not. The genetic modification process changes the genetic order by the insertion of desired gene traits.

In this case, it's herbicide tolerance, Roundup Ready seeds, to produce a trait where that when an herbicide is sprayed, the plant does not die. In the past, if you spray an herbicide, all the plants die. But now, we have these Roundup Ready crops, stuff kids like to eat such as soy and corn that when you spray, the plant does not die. So I hope that clarifies for your listeners that there are distinctions. And this genetic modification process, and we can go into it during this chat today, is not without issue and that's something we've been looking at for the past two decades.

Katie: That's fascinating. And I know, because I, actually, as a high-schooler, went into the belly of the beast, so to speak, on a tour of like our honors program we went into Monsanto's headquarters and they were bragging about how they were doing all of these things. And I know that one thing they said is genetically modified crops, that they were inventing them to decrease the use of pesticides. And so I'm curious, in your research, is that actually happening? Or are we getting increased toxic exposure because of it?

Vincanne: So I can answer that one. You know, the two kinds of genetic-modified crops that we're interested in, in the book, and that we talk about extensively are the type that Michelle was talking about – those plants that are designed to not die when they're sprayed with Roundup. Meaning, they're not going to be killed by the active ingredient, called "glyphosate," or any of the adjuvants that go along with Roundup. And then the second type is a type that is designed to act like an insecticide. It's the use of something called "Bt," which is a naturally occurring bacterial toxicant that kills insects.

And what happened… This kind of insecticide has been used and is still used in organic farms as a spray that can be washed off. What genetic modification in Bt terms does is it injects the toxin, the protein, into the DNA of the plant so that all cells in the plant express this gene and this protein such that if insects eat the plant, they'll be killed. Now, what they didn't know when they made genetic… And the Bt plant is actually the plant that is supposed to reduce the amount of pesticide needed to raise a healthy crop and, in fact, it does initially. Initially, it did reduce the amount of insecticide that was needed. I mean, these technologies were developed in the wake of the DDT era, when we wanted to get that out of the food system.

And so it did do that in the case of insecticides. What has happened over time… And I should say, with Roundup Ready crops, we've never reduced the amount of pesticide. It's actually made it so that you could increase the amount of pesticide in herbicides that were used on these crops. But what's happened over time, and it's been 20 years now that they've been in the food supply, is that we've developed huge weed resistance and insect resistance. So that now, we're having to spray even harsher chemicals on plants and use harsher

insecticides in order to make sure that the crop doesn't get infected by these pests.

Now, one thing that's important to know is that the Roundup Ready pathway that kills plants operates on something called the "shikimate pathway," which is the process by which a plant produces amino acids. And when they originally designed this product, they assumed that it wouldn't harm humans because human cells don't have the shikimate pathway. It's something plants have. But we now know that the human body consists of massive numbers of microbes, and the microbes in our gut… I mean, microbes are all over our body, but the microbes in our gut actually have the shikimate pathway. And so the concern is that this enzyme that's used to kill weeds is actually having an effect on the microbiome.

The same is true for the Bt case. What the initial assumption was is that these pesticide proteins, the Bt, wouldn't have an effect in the human gut because it's not the same pH as the insect gut. But we now know that most of the Bt is already activated. And what happens in the insect gut is the actual protein gets into the gut of the insect and pokes holes in the lining of the gut so that the insect dies of a form of septicemia. And, you know, we don't know what Bt is doing in guts of humans, but we do have animal studies that are showing it is having an impact.

Katie: Wow. That's pretty terrifying. And I want to make sure we clarify, before we go any further, about glyphosate specifically. Because I know that word gets tossed around a lot, and it's got a lot of, like you even said, mixed information online. So can you like specifically define glyphosate and why we all need to be aware of that?

Michelle: Yeah. Glyphosate is a very interesting small molecule, N-(phosphonomethyl)glycine. It has glycine, which is an amino acid, a very common body amino acid, in it, and it has several interesting roles of what it does. It first came about as a chelator. So what that means is it binds various minerals of metals. It was used as a metal pipe cleaner. And what they noticed when they brought it out in the 1960s by this company, Stauffer Company, that the herbs, that plants around the metal cleaner and the ground were dying off. So that's how they figured, "Well, gee, it's a metal cleaner. Oh, look, it's an herbicide."

So what we suspect is, and we have some good cow studies on this, that what it's doing is it's binding certain minerals in our children's bodies and our bodies as well, such as zinc, magnesium, manganese, copper, chromium. And these substances, these micronutrients are key. Particularly for, guess what? Brain function. You need zinc in over 200 functions in your brain. Without enough zinc in your brain, one of the symptoms it can cause is hyperactivity. And what are we seeing a lot of, is ADHD. When you measure these nutrients, Katie, by the way, in kids, a lot of them are extremely low.

So let's just go over what else glyphosate does. So it's a chelator. It was patented as an antibiotic by Monsanto in 2010. So it has an effect on the microbiome, not only in our guts but in soil. So a lot of soil has become sterile. Dead soil is not good soil. In addition, what glyphosate… Glyphosate is such an interesting thing. And because of these, it's now being reported that it blocks the uptake of certain harmful chemicals in the body such as arsenic. This paper just came out two, three days ago now by Dr. Seralini in France. And so it also may be blocking toxic chemicals which are increased in plants and when we eat them. And this is just research hot off the press. So those are some of the things that glyphosate can do.

Now, lastly, one of the big ones and last, but not least, certainly, in March of 2015, the World Health Organization based on the work of the IARC, which is an international research group, declared glyphosate is a

probable human carcinogen. And the state of California has taken the bold step of labeling, "Is it a carcinogen?" on something called "Prop 65," here in the state of California. And so, we now know… We've known that glyphosate has carcinogenic potential since it was first looked at in the 1980s. So this is not new stuff, and we know about the immune dysfunction.

So these are some of the three big things, not to go over every single thing that glyphosate does because it does other things as well. But for your listeners, those are, I think, the top three – chelator, antibiotic, and potential carcinogen.

Katie: Yeah. As if those weren't enough on their own, right? I know in the book, you draw a connection between Rachel Carson's fight to get rid of DDT and our current situation. Do you think we're in the midst of a similar situation here? Like do you think there will be awareness and change over time? Because you mentioned, you know, the foods like corn and soybeans and wheat. And that is, unfortunately, and sadly, like half of most children's diets these days. So I mean, to me this is a very pressing thing. Do you think we're going to see a change eventually?

Vincanne: Well, you know, we hope so. I mean, we wrote the book partly to raise awareness about this and to, you know, contribute to possible activism like we're seeing in California already. You know, it's very interesting that it's so hard for the average person to decipher the science, and it's so clear that claims about there being a scientific consensus are not really trusted by the majority of the public. And just as in the case of DDT, it wasn't the science that convinced government and regulators to change the policy about DDT. It was actually the public activism that did this. And so, you know, there's hope that enough people will get on board and demand organic foods.

You know, it's so true, there are food movements happening all over the country. Michael Pollan has been a champion of getting people to eat real foods instead of packaged foods. He doesn't really go into the GM debate, but he definitely has, you know, argued against eating packaged foods. And of course, the packaged foods, the soy, corn, canola, sugar beets, these are the most prevalent GM foods in the country and, you know, most of the packaged food is full of them. So a lot of people are eating these things without even knowing it.

But, you know, glyphosate is an interesting problem because it's not just the farming community that's generating problems with glyphosate. People use glyphosate in Roundup in their backyards. It's sprayed on parks and in schoolyards and, you know, everywhere. It's pervasive in our country. We have increased our use of glyphosate by 240-fold over the last decade alone. So even if there were studies early on that suggested it was safe, no one's really looking at the increased amounts of exposure that we're getting now and looking at the effects of that.

Katie: Wow. Yeah. I know I've seen it. You know, neighbors spray it. And I know like we used to live in an area where there was commercial farming, and it was drastic how much and how often. I mean, they would fly planes, they would have tractors, everything, like spraying so often. That's why we always… It made me wonder like, "There is no way this is decreasing our pesticide and herbicide exposure." And then the flipside of that is all this is getting into the food, and I know that that's a kind of controversial subject as well, the regulation of genetically modified foods and if they should be labeled or not. Why do you think this is such a controversial area?

And also, I'd love to hear, what do you say to the critics? Because I know you must get them, because I get them, those who say, like you mentioned in the beginning, that genetic modification, this whole thing, it's a conspiracy theory and there's nothing to worry about. How do you answer them?

Michelle: Well, there are so many good questions you've asked here, Katie. These are really good questions. Regarding the labeling, the American public wants food labeled. And the non-GMO verification program has been very successful in labeling. And the rate of organic sales and non-GMO verified foods has gone up significantly, and companies are taking a look at that. So that's what people want. Companies fought that through the grocers, manufacturing association, and they gave massive amounts of money to those states that were trying desperately to label, such as California, Washington, Colorado, and we all failed due to the massive amounts of money that were pouring in from industry.

The reason why labeling is so important, is because you can't track diseases if you don't know what we're eating. So example, when HIV/AIDS first came onto the scene in the late '70s and early '80s, we were tracking it so we can do a surveillance program, so we can figure out patterns, what's happening with the population, treatment, etc. But because we don't label our food, we don't know where it is and who's eating it. So it doesn't allow us to track it. There can be no surveillance system if it's not labeled. So that, hopefully, addresses your labeling question. Did we answer that to your satisfaction, Katie? Did that make sense?

Katie: Yes, absolutely.

Michelle: So now, what do we answer our critics? Well, unfortunately, Monsanto and other agribusiness, particularly Monsanto, has been caught with their pants down, so to speak. Carey Gillam in her recent book, "Whitewashed," goes into this in depth. The Monsanto Papers have come out, as well as other documents which show that there was a significant amount of collusion, ghostwriting by scientists, and obscuring data. So whether agribusiness can be trusted in terms of the literature and science they're putting out is hotly debated and questionable at this juncture, particularly among anyone who just questions what we're reading.

So this has created a massive concern for us, is that we cannot trust the science that's been put out by big agribusiness that GM foods and their associated pesticides are safe.

Vincanne: And I would say, you know, in terms of responding to critics, it sort of depends on where the critic is speaking from. There are so many different constituencies that are opposed to skepticism about GM foods. If you're talking about a mother who's trying to be healthy and make healthy choices with her child, we devoted a whole chapter to the women we call the "warrior moms" in the book. They need huge support. You know, the reality of kids getting sick is not an imaginary thing.

And the fact that food is probably one of the main reasons their kids are getting sick shouldn't be ignored by anybody. So on that score, it's total support, 100%. Whatever they're trying to do, however, they need to make sure their kids are healthy, we're behind them. If you're talking to farmers, you know, there are a lot of farmers who would say, "You can't take away my Roundup. You know, this is what makes my business viable." There's a lot of farming community pushback on anybody who's skeptical of GM foods.

And my personal sense of that, reading the reports that are coming out now from the Board of Technology, Medicine, and Science. The report from the group that's a government-funded agency that's supposed to be neutral scientists on technology, science, and medicine – the Academy of Technology, Science, and Medicine.

Or Science, Technology, and Medicine, sorry about that. That they're actually starting to recognize now that because of weed resistance and because of soil damage, farmers are having to spend inordinately higher amounts and increasing amounts every year of money on pesticides, on fertilizers, and on the seeds.

And it's not really clear that the GM food model is that financially viable for farmers. And, you know, we would say, "Yes. You should rethink the relationship you have with companies like Monsanto because it's easy to say that in some ways they're your competitors and not your supporters." And then there are the communities of physicians and scientists who really, oftentimes, have a very eye-rolling reaction whenever I mention that we're working on the issue of GM foods. And I haven't quite figured this out entirely yet, but I think part of the resistance is not based on the fact that they've actually read the GM science and the critical science, or the original data. It's mostly I think because the world of genetic modifications is pervasive in biomedical research.

A lot of the basic lab technologies that are used in science today with lab animals, mice, use recombinant DNA techniques, and these are essentially genetic modification techniques. And there are also many products that have come out for use in biomedicine that use genetic modification. Insulin, for instance, is a good example. And, you know, these are really important resources for biomedicine now. And even though there are some people who would even criticize that, you know, we're not trying to criticize that. But the world of biomedicine and its use of genetic modification technologies is very different from what you find in the plant world and in the food supply.

In fact, none of those plants that have been genetic-modified have been tested on humans. Everything that comes out of the biomedical community is rigorously tested on humans. And the use of these technologies to produce lab animals is not a concern for the food system. We don't eat these lab animals, so it's not something that we need to worry about. So I think that is one of the reasons that a lot of biomedical scientists really are resistant to the idea of any criticism of GMOs because they think it's going to undermine their ability to do work. But I think that, you know, with a finer-toothed comb or a more searing lens or careful lens on the differences between plant technologies that use GMOs and biomedical use of GMOs, they too would possibly come around.

Katie: That is a really valuable explanation. I had never heard that connection, as far as the doctors, and that makes sense. It helps me get in their mindset a lot to understand that, and that would seem like a very logical thing from their perspective. I know that you guys probably have actual data on this. I only have my own, you know, "research group" of six kids and then blog comments that I hear from. But I hear from a lot of moms, obviously, whose children are in these chronic illnesses and struggling through things.

But then I also hear from some critics who say that, you know, today's generations are actually healthier and have a longer life expectancy. And they have less instance of infectious disease, for example, so they're actually healthier. And I know from my research, that doesn't seem to be true. In fact, that's what got me into blogging in the first place. But I would love to go a little deeper on, especially for moms listening who maybe have a kid who has one of these conditions, what the actual data is on children's chronic illness and why this is so important for us to understand.

Michelle: Yeah. This is a good question, Katie. Because I'm not sure where that data came from because kids are definitely sicker and they definitely have a higher rate of infection as well. So when you look at… So what are the stats? What are we looking at? Some of the biggest changes have to do with something called "atopic diseases," and those consist of three things – asthma, allergies, and eczema. And all three of those diseases

are markedly elevated. Food allergies now affect approximately about 40% of all kids. And if we take into account food sensitivities and intolerances, and in my practice, before I left my last job, it was approaching 95% of all kids. So that's for starters.

Asthma is now affecting one in eight children and 1 in 6 African American children. I haven't seen recent data on Latino children, but it's probably close to one in six. They're a high risk and they also live in areas that use more pesticides in agricultural areas. The rate of autism last reported in 2016 was 1 in 43 boys, 1 in 68 children overall. I have anecdotal evidence now from colleagues that it's really now at 1 in 34 boys. It had kind of leveled off, and it's recently increased again. We have levels of ADHD approaching 10% of children. I believe it's probably higher now. We have rates of obesity of 20% of American children, and we now have children with sleep disorders. Two out of three children under the age of 10 now have something called "dyssomnia" or a sleep disorder.

If you also couple in mental health issues, over half of our children now are suffering from mental health issues, including anxiety and depression, at unheard of numbers. And we can go into this as well, but it's linked to the gut. When the gut is inflamed, we get secondary brain inflammation – leaky gut, leaky brain. So, I didn't mention either is autoimmune disease. I mean, I've left out categories of diseases because it's affected just about everything. And this data is irrefutable and most of it comes from the CDC, Center for Disease Control. And anybody can, you know, google it and find this data. And infection rates are higher.

Now, once you have a gut issue, you can suspect that there's going to be secondary immune issues because 70% of your immune function comes from your gut. So we, as integrative docs, often begin with the gut, which is everything from the mouth to the tush. Because if the gut's not working right, you can bet that the rest of the biologic systems are not going to work well either. So that's to kind of lay for you the statistical groundwork of what we're looking at.

Vincanne: And I would add too, you know, a lot of the statistics that you see or read about how healthy we are, it all depends on which numbers you're looking at, what issues you're looking at. If you're talking about mortality rates, we've definitely improved on that. You know? Our kids live longer lives in the U.S. than certainly in most developing countries. But if you look at the chronic morbidities, we've got terrible succe-… We have no success with that. We're going backward on that front.

So even though we've eliminated a lot of the major parasitic or infectious diseases, some of the viral problems, we have an increase in the number of chronic morbidities, which, you know, I'm not the doctor. Michelle is the expert here. But my sense of it is that we've created more systemic, you know, system failures of the body than we've ever had before.

Katie: Yeah. I absolutely agree.

Katie: And a friend of mine actually said one time, and I wholeheartedly agree that, you know, everyone says the medical system is broken and that they don't agree, that the medical system is not broken. It still does exactly what it was designed to do, which is address trauma and infectious disease. And if you break a bone or get in a car accident, or have like an acute infectious disease, certainly, go get medical attention in the United States because you're going to have good odds. But the problem is we're now trying to treat chronic illness as an infectious disease and to like tackle symptoms and go after it, and it doesn't work on that kind of model.

And I think that's why it's brilliant, people like you guys taking the integrative approach and looking at the whole body. And I think that's what's going to eventually address the problem. And I love that you talked about the microbiome because the mouth and the microbiome are my two like pet areas of research myself. Although, I probably don't have near the data you do. So it would seem to me like all these factors are pointing into, you know, genetically modified foods are potentially affecting our children. And, you know, we know that that can potentially affect gut bacteria.

I've seen some preliminary research there. But I would love to hear, like what studies have you actually come across in this, and why are we not doing more studies on this? It seems like it would be a really big deal to tackle.

Michelle: So there is a ton of research coming out now, Katie, on the effect of glyphosate, for example, on the microbiome and, particularly, in animals. Just in this past two weeks, there was one on sea turtles, and there are articles coming out on specifically how herbicides affect the microbiome. So it's coming out all the time. You know, when I first started looking at the microbiome about 15 years ago, there were a few hundred articles and I think we're up to a few… We have like over 10,000 articles on the microbiome. It's impossible to keep up with this literature. And it's burgeoning, it's in the forefront.

And not only is this microbiome data so key, it's linked to distinct diseases. So we can now pinpoint microbiome profiles or fingerprints with certain diseases, such as autism, such as diabetes or certain autoimmune diseases. And we're now doing targeting therapy using specific organisms. There is great research that came out in 2012 out of Germany, still some of the best studies I've seen. A gal named Dr. Kruger and her group looked at the chicken microbiome and glyphosate. And they found that glyphosate selectively killed off beneficial bacteria such as lactobacilli and Bifidobacterium, and selectively increased the growth of clostridial species which can wreak havoc, as well as salmonella. And there have been other studies on cows since then and their microbiome.

So we don't have any human data on the microbiome and selected herbicides. We don't have it, but we do

have a lot from animal literature. And we, as clinicians, integrative practitioners, can extrapolate because indeed we are related to the cows and the pigs and the rats. We share genetic information. We can extrapolate that data to ourselves. And the other thing we, as integrative clinicians, can do, Katie, and this is really important for your audience to know, is that we can look at the microbiome in children and it's not difficult to do, and see what's going on. We have all things that we can measure. It's in our integrative toolbox, and we can prescribe, imagine this, based on what we find.

Katie: That's awesome. And that was gonna be my next question because I think we've like definitely done a good job of kind of painting the picture of how bad things are and that we have big challenges we're facing. So now, I'd love to shift gears and hear, I'm sure you guys have also done the research on, first of all, "Is it fixable?" Because sometimes, I know that it seems like an ominous task to tackle. But is it fixable? And if so, how?

Michelle: Yeah. This problem is fixable. You know, you should not go away saying, "Oh my god. Doom and gloom. Frozen. There's nothing we can do." And we talk about this in the book as well, is when people are overwhelmed with information, they often from fear do nothing. So absolutely not. So the first thing we have people to do is switch to organic food. And let's get out of this mindset that organic food is for the wealthy or fringy, or for a bunch of old hippies, you know, chewing on granola. That is something that's been propagated by the media, and that kind of, you know, image has to be dispelled.

Organic food should be conventional food, and conventional food should be pesticide food, industrial food, or modern food. So organic food is what should be conventional food, food grown without chemical additives, and that's what our children should be eating no doubt. Parents can do simple things by switching their kids' diets, using a simple water filter. You know, it could be a simple refrigerator filter or some type of Brita or Pur filter, whatever, handheld filter, because the water may have certain chemicals added that are not so good for kids. And what they can do simply at home is decrease the use of the other toxins and toxicants that we've been referring to, so that the entire load on children is reduced both internally and externally.

And guess what? You save money when you switch to nontoxic alternatives, even from cleaning products, cosmetics, etc., what you put in your yard. It actually saves you money. So there are ways that parents can easily act. And you know what? Giving three things for parents to do is more than any busy mom or dad can handle. You know, running around with three kids and trying to do all these things, impossible, right? So you want to keep the list short and the things simple we can do. They're simple, and they're super-effective.

Vincanne: And I would add, you know, on a societal level, there are lots of things that people could think about as well, in terms of supporting or even actually getting involved. In terms of the government and making sure that the regulatory agencies are doing their job and keeping the most toxic things out of our food system, that's a huge battle that has to be fought immediately, actually. We've got plenty of evidence that not just glyphosate, but much more toxic chemicals are being used in a lot of the crop production in the U.S. right now, and it's deadly. And it's particularly deadly to people who are near the fields and farms, including schools that are near these. But it also is deadly for other people who just eat the food that's grown in these environments.

The government can also… This is a long shot but, you know, ever hopeful. We could talk about government subsidizing organic growing instead of nonorganic growing. Because we subsidize a lot of our crops in the U.S. right now, but we subsidize them to grow things in ways that are really toxic for the environment and aren't necessarily good for the nutritional quality of the food as well. And it forces them to put those ingredients –

you know, the soy, corn, canola – into packaged goods because you can't live on fresh corn all the time. You have to eat it in a packaged form.

And so, you know, eating real foods is so important. And, you know, if we subsidize the organic industry the same way we subsidize the nonorganic industry, it'd be an interesting experiment to see how things turned out. Well, and I was also going to say, you know, there could be more activism in the medical community as well. You know, as doctors are increasingly facing the problem of chronic disorders and recognizing that the acute model doesn't really work to take care of these people, then they hopefully will start learning more about and applying to their clinical practice efforts that really do a more ecological approach to health. In the book, we talk about something called "ecomedicine" which, in a nutshell, was this idea that, you know, our guts are only going to be as healthy as the soil that the food we eat is grown in.

And so to think about the whole ecosystem as a nurturing, microbe-filled environment, where there's a direct relationship between what the soil is doing, what the food tastes like and contains, and then what that does in our bodies. And, you know, ecomedicine, of course, places an emphasis on food-related healthcare, something that's surprisingly not very well-developed in our medical system and our medical model right now. And then, you know, parents can get involved as well, and making good, healthy choices at home. And Michelle is really the expert on that, and I've seen it happen. I've met her patients.

And, you know, they say again and again, "You know, we were skeptical of this. We didn't think we could afford organic. And then we made the changes and not just our kid got better, but we all got better." And, you know, it's kind of the proof in the pudding. But, you know, it's a public health problem. We're not just talking about, you know, one or two kids. We're talking about a massive number of kids who have these problems. And when we see it that way, we really need to think of it as a problem of public health proportions. And so maintaining a healthy food supply is a public health problem. You know, organic food is not that easy to get in a lot of places, both in urban and rural areas. And so, you know, that needs to be dealt with at a societal level, not just on an individual level.

Katie: I agree 100%. And I'm curious, is this approach enough for parents whose kids already have, like some of the ones you mentioned, asthma, allergies, eczema? Will that alone work? Or do kids who are already in that cycle, do they need a little bit more intensive help?

Michelle: Katie, I don't know. I just might have to hire you because you seem to get it really well. Absolutely, changing the diet, not going to do it, Katie. Once those kids are really in the loop, they need a lot of intervention and they need a… It requires a layered approach to their health. It takes a while to turn them around. They can be turned around. For example, it may take three years to turn around a kid on the spectrum with autism, doable. An average time is between one and three years for some of these chronic disorders. But what is hopeful to parents is they see incremental improvements right away in their kids' health and there are small, frequent successes.

What I tell parents is that it's not a straight shoot. There are setbacks along the way. As you start to treat the kids, you know, they get sick, they're stressed, they fail an exam at school, etc. And so there are setbacks, and then they move forward. And also, the other thing that's really hard is that the families have to embrace the change as a family. So even though you could have five kids and only one is sick, it's really not fair to little Suzie that she's eating kale salad and everybody else is chowing down on pepperoni pizza. It doesn't work that way. The whole family needs to make the change, and it's really hard for families to change food because food

is so cultural. But it has to be a systemic family dynamic change.

And one story that we talk about in the book, and it's one of my favorite stories of a boy with autism who did really well and was reversing his autism, doing great. And he was my patient, and I did so many things. At one point, I think I must have had him over on 20 different types of therapies. Okay? But dad, all dad did was change his diet, and dad only had 20% kidney function, he was heading toward dialysis rapidly. All he did was go organic, no other therapies, you know, were administered to him, he wasn't my patient. And when he went to see his kidney doctor eight months later, his kidney function returned to 80% normal, his hypertension resolved, and she was able to take him off his blood pressure medicine.

And when he told her, you know, what he did, she didn't believe him. She said, "There's no way." You know? "We must have misdiagnosed you," which is something we often hear from docs. So these are some of the things that it takes. So to get back to your original question, no, to heal chronically ill children takes many tools in the toolbox.

Vincanne: And I could just weigh in on what I observed with Michelle, and it's important for people to hear this. You know, she's a regular doctor and an integrative doctor. So she's got all the tools of the regular physician. So when I… You know, I watched her treat, diagnose, her initial diagnosis takes a long time. It's not a 15-minute visit. It's a two-hour visit, where she does a whole inventory of what these kids are exposed to, what they're eating, what their issues are. She has them keeping food diaries that she reads afterward. She does tox screens to figure out if they're being exposed to chemicals, toxic chemicals, metals, and other things. She looks at their microbiome to see what their gut microbes look like and how healthy they are. She looks at their food sensitivities.

This is a big thing. You know, most doctors will only evaluate whether a kid has an allergy to a food. But there are these other reactions that are less significant than the allergic one that show that the immune system is being activated. And then she starts pulling them off of the things that are causing the offense. So you get rid of the bad stuff, you take out the toxins, you take out the offending agents. And this is her language, I'm just repeating what she told me here. And then you start replenishing and rebuilding a healthy environment. And that can require… Sometimes it can require using antibiotics and regular tools, you know, the antivirals and things like that. Sometimes it can be helped with just herbal remedies, or to use as a homeopathic. Sometimes it requires a longer period of time. You know?

And like I've seen the autism situation and, you know, I did interview parents whose kids got significantly better following the regimen. And I also heard her, you know, say to me, "You know, not all autism is curable. It's not necessarily something that you can get rid of. But in a significant number of cases, you can see improvements and that's important. So it's a whole bunch of things. But it requires starting from the perspective of, you know, "It's a system failure, food has a big part to play in all of this, and it's going to take a while to change the internal environment of the body in order to get the kids healthy."

Katie: Absolutely. And as someone who has gotten thyroid disease in remission and reversed a dairy allergy in my son, I 100% agree with and echo what you're saying. And my encouragement to moms, especially, because I feel like it's sometimes harder to see your child struggle through something than to do it yourself. So when a mom has a child struggling through this, I remind them, "The body is designed to move back toward health. You're not going to have to fight your body to be healthy, you just have to figure out how to remove the things that are making it unhealthy and support it."

And so I think that's like a helpful mindset that I kind of think of. And I'm curious, so with kids, are you seeing any patterns or foods, things that come up as allergenic foods more often or lifestyle factors that tend to come up more often?

Michelle: Yeah. Well, first of all, congratulations to you, Katie. It takes a mom like you and a commitment, a really fierce warrior which you guys are, to get your kids healthy. So kudos to you, first of all. Let's put that right out there. And yes, there are big offending agents. They tend to be the things that kids like to eat most – gluten, dairy, eggs, and soy. So when you look at what kids like, they like gluten and dairy.

So what happens is, if the gut is inflamed, intestinal permeability, leaky gut, then when kids eat these foods, gluten, and dairy, they're not completely broken down. So the gut, you need to get them down in really tiny molecules in order to pass them on through. But if they're not, they can pass through this overly excessive porous intestinal lining. And when they cross through into your bloodstream, your immune system just sitting right there sees them as foreign invaders and mounts an immune response.

But in addition, like these inflammatory foods can circulate up, they cross over into the brain, and they bind certain feel-good receptors, the same ones, morphine-like receptors, that make you feel good, and they could cause inflammation in the brain as well. So the big offenders are gluten and dairy. Eggs can come up too, a lot, and then again soy. But I have found, if you can eliminate gluten and dairy from kids who are really struggling and have a significant amount of health issues and you switch to organic, they will often start to feel better. If parents don't have access to an integrative practitioner, they can start there on their own. And as they switch off gluten and dairy, what happens is you eat less processed food and you eat less junk food.

You have to do more cooking, yes. And it's not just mom getting in the kitchen, folks. Kids can cook. Dads can cook. You know, this is not just mom's job anymore. And so you eat less processed food, you have to cook more, and kids eat more fiber, more fruits, and veggies, which are good for the microbiome. Yes, that fiber, especially in veggies, is really good to feed your bacteria. And we write that in the book, "Love your microbiome." You've got to feed those guys, nourish them.

Katie: Yeah, absolutely. And I'll make sure I include a link in the show notes. But my kids took a course called "Kids Cook Real Food," and now they're like very well-versed at helping in the kitchen. And it does make them much more likely to try a food if they had some responsibility for making it. I think that's a great tip for parents, for sure.

Michelle: Very practical, Katie. Nice work. Yes. I support that.

Katie: And I love that tip because I know a lot of parents don't really have a doctor or a clinician anywhere near them who can maybe address this, this way. Why do you think we're not seeing conventional medicine embracing this ideology at all? Do you think it's maybe too hard to tell kids that they can't eat that, so they prefer to just… Because often, from doctors, I just hear like there's not really a correlation between food and kids having these problems. So why do you think conventional medicine isn't kind of getting with the program here?

Michelle: Well, I think it's several fold. First of all, medical education is mostly rooted in pharmaceutical treatments. So in med school, for example, it's still what's being done now, even though I'm old and I'm out of

med school quite a few decades, that there's a year of Pharmacology taught, and maybe two weeks of nutrition if you're lucky. Now, they're offering some elective courses in Integrative Medicine, maybe two weeks of Functional Medicine. So the treatment that we learn in med school as Western providers are pharmaceutical interventions, and that's what we call in the book "Pill for Ill" medicine.

But as we've already explored in this interview, that type of treatment doesn't get to root causes. And that's what we explore as integrative doctors, and that's not how we're trained to think. So doctors have to spend a lot of time on their own rereading and relearning, and literally becoming either functional medicine practitioners or, in essence, naturopathic physicians. We have to relearn a model of health based on systems biology and not on the way that we're taught. So the way that we were taught is not working anymore. So this lack of information about nutrition and food is medicine, and with the emphasis on pharmaceuticals, that's part of the issue.

And also, to really delve into a family's diet and talk about this stuff takes time. And in conventional doctors' defense, they don't have a lot of time with patients, right? Sometimes you see your doc, you've got 10 or 15 minutes, and there's no way they can get into all this. So it behooves our medical system to employ nutritionists and nurses, and nurse practitioners and physician assistants to meet with our families, or to do group visits. There are other ways we can do this to teach our families, especially with moms and dads with infants and in pregnancy, better yet, before conception. And this is where we can do it, in terms of group visits.

So I'm giving you some ideas of how we need to rework the system. But moms and dads can arm themselves and go to their pediatricians and say, "Look, I'm reading this data." And a good pediatrician will say, "Wow. Thank you. Let me take a look at this for ya."

Vincanne: I would also say, you know, being in a medical school, it's really interesting. It's not as if there aren't young, you know, doctors in training and nurses who are really interested in this. It's just that they don't have a lot at their fingertips. And, you know, there's so much you have to learn in order to become a doctor, and there are so many different specialties of medicine. So, you know, in some ways, doctors who are headed toward the path of neurosurgery may or may not need to learn some of this. You know, there's only so much time for training.

But, you know, there is a trend toward educating some doctors and those who are interested in more integrative pathways, and that's very encouraging. I mean, ideally, you'd want to have a little bit more on food across the board in medicine. I think the microbiome is one of these connecting agents that because the microbiome is relevant to neurosurgery as well as to basic gut health, you know, that might do a little bit of connecting. But I would agree with Michelle, that I think that the influence of pharmaceutical, you know, industries and pharmaceutical solutions has been huge in medicine.

And it's really hard to undo that because it's so convenient, and it's so much easier than having doctors have to tell patients that they have to change their behaviors. Patients don't like to change their behaviors. So, you know, that's another reason food hasn't been taken seriously. People don't like to change their food habits. And then some people can't change their food habits because of the environment they live in. So there are lots of, you know… And then the other thing is that, you know, a lot of the research that we talk about in the book is cutting-edge research in biomedicine.

And it's going to take a while before those find their way into what we call the "standard clinical guidelines for practice." Because there has to be a huge amount of investment in clinical trials that show by evidence-based methods that these treatments work better than other treatments, and so there's just a big lag. But, you know, anytime you can find progressive doctors who are well-trained and know what they're talking about, you know, it's probably those doctors who are gonna help you with the chronic disorders before others.

Katie: Yeah, for sure. And I want to make sure we wrap up on a positive note by talking about your book, which I will, of course, have the link at wellnessmama.fm in the podcast show notes. But I love that an MD and a Ph.D. united to tell parents this because I think it's really, really important. And I love that you guys did that. So talk about your book a little bit, and why even parents whose children don't seem to have any kind of chronic illness can still benefit.

Michelle: Absolutely. And I too… Thank you, Katie, for that acknowledgment. We too love the pairing of a clinician and a Ph.D. Because what it takes is my view in the clinic, the one-on-one, to Vincanne's broader view of the big societal issues as well. So we can really take the lens from very narrow to a very broad lens, and so that really kind of widens our landscape of what we're looking at. So I think that's really important. Thanks for the acknowledgment.

Parents, even without sick children, will benefit for prevention. If you're lucky enough not to have a sick kid, yay, you. And you can do things with your child's health, so they don't get sick. Certain diseases can take decades to develop, such as autoimmunity and cancers. And why not give your child the best footing possible? Also, even though we wrote this story about children, the ideas are relevant to parents and grandparents as well. You know, what we're referring to refers to entire families, so they can extrapolate a lot of this data. And women, in particular, are so good at networking and talking to other women.

So if your kids are healthy and you've made some changes, and you can share that with friends and neighbors and cousins, this is the way women work. We talk to each other a lot, usually, over lunch, a good meal and a good cup of coffee. So we, as gals, can get the word out there. So we can be messengers for other people who are struggling with sick kids.

Vincanne: And I would add that, you know, we had a lot of controversy about the title after we wrote the book. And we went back and forth with our publishers quite a bit on the title. And, you know, one of the things that I would hope that… You know, I didn't really want the title that just focused on kids. Because for me, the issue is really one of, actually, planetary survival. And I know that that sounds outrageous, but I do actually worry about the survival of our planet. And when I look at the generations that are upcoming who are, you know, being raised in environments that are extremely toxic, it's very scary to think about what the world is gonna be like.

So I feel like the book has much bigger implications than just children's health. But to the extent that children's health is really the future for all of us, you know, we all have to pay attention.

Katie: I agree. I think those are such important points, and I don't think it's overreaching at all to say that about planetary health. Because I know I've seen research on plastic chemicals and endocrine disruptors being in the Antarctic now. So this has reached a large scale, and I'm glad that you guys are addressing it. And I will also echo your point about autoimmunity taking years. Because I wasn't diagnosed until my 20s, and they think it was maybe partially to do with tons of antibiotics and other gut issues when I was a child. So I think

that's an important point for parents is our kids statistically are going to face a lot more of this even than we did. So I think it's a great time to prevent, for sure.

Vincanne: Super.

Michelle: Right on, Katie. That's absolutely right.

Katie: And I want to respect your time. I know you guys have a busy schedule. But thank you so much for being here. This was super-enlightening. And anyone listening, you can find their book and all the things we've talked about in the show notes. Thank you, guys, so much.

Vincanne: Yeah. Thank you so much, Katie. It's been really lovely to talk with you.

Michelle: And thank you for what you're doing, Katie. We appreciate it.

Katie: Thank you. And thanks to all of you for listening, and I will see you next time on The Healthy Moms Podcast.

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