VIDEO_ Diet Doctor Podcast with Dr. Sarah Hallberg (Episode 10)

Dr. Brett Scher: Welcome to the DietDoctor podcast with Dr. Brett Scher. Today is my pleasure be joined by Dr. Sarah Hallberg. She's the medical director at Virta Health and medical director at Indiana University where she runs a weight loss and diabetes management clinic there. And you've probably heard of Sarah because of the amazing work she's been doing along with the folks at Virta Health with their scientific data and their studies which is really upended the way we see diabetes.

Diabetes has always been taught as a disease that is chronic, that you just manage. But what they've done is they've disrupted that whole concept to now show we can reverse diabetes, we can normalize people's numbers and get them off their medications while helping them feel great.

So I'm so excited to have her on to discuss the work they've been doing and to discuss some of the maybe downfalls of the study the way it was conducted and maybe some of the problems with applying it to real-world scenarios. But these are the issues that we deal with on a on a regular basis.

And you can see from her energy and her knowledge that she is a fantastic advocate in this field. So I really hope you enjoy this interview with Dr. Sarah Hallberg. Dr. Sarah Hallberg thanks so much for joining me on the DietDoctor podcast today.

Dr. Sarah Hallberg: Thanks so much for having me.

Bret: So you've been very publicly well known in the low-carb sphere ever since Virta Health came out with their study, first their 10 week study, then their one-year study, but in case anybody doesn't know you, give us a little background about how you got to this point in your career that you're basically upending how we treat and see diabetes.

Sarah: Well, I got to this point through a little convoluted path which in hindsight was the best way to get there. I started out my career as an exercise physiologist, I have my master's degree in that and worked for a while in cardiac rehab. Actually I got into a fight with a cardiologist, that is the moment that I decided I was going to med school.

So I didn't want to go since I was five. And then I worked to primary care for a while and then was approached by IU, Indiana University Health, which is where I'm still currently the medical director at the obesity program there, approached me about starting the obesity program, so I had to figure out what to do. Like, "How do you solve the unsolvable problem?", is what I always used to say.

And so I spent a long time reading everything. I mean I read literature for a year to try to say, "What can we do? Why does nothing seem to work?" And what I really realized then was that the advice that I had been giving for almost 20 years at that point was really not based in evidence, that I just took what everybody told me and thought it was fact and went on and gave that misguided advice to my patients. It was a real, "Aha!" moment of... "Holy cow, I've been contributing to this problem!"

And so from day one we opened the clinic at IU, as a low-carb clinic and quickly the focus changed from obesity which was the original intention of the clinic to diabetes because that's what we were seeing the biggest impact in. I mean, you know, what was impossible, people's diabetes going away.

And at that point it was not in the literature this was not a thing, if you will. And I got really mad because, you know... how can this just be for the patients at my small clinic? We did a small pilot study then I had the great fortune of running into Steve Phinney at a conference telling him I wanted to get funding for a larger study and the rest is history.

Bret: Well, that's fantastic. Now what I find most remarkable is that you saw what other people don't see or at least you acted upon it. And so what was different for you? Because so many physicians out there are trying to treat obesity, so many physicians out there are trying to manage diabetes.

But somehow you were able to see the difference and say, "What we're doing isn't working, and here's what we need to do." So many people don't take that next step. So I guess where I'm going with this is what's different about you, how do we get more people to take that next step and realize that there's more out there?

Sarah: Well, I had a really wonderful opportunity to have a moment to take some soul-searching so to speak. I mean I had this opportunity where I really had a year to decide what we were going to do. And, you know, spent all this time reviewing the literature and had that moment where I realized that I had been doing the wrong thing for people.

And I was able to pause and just say, "Oh my goodness, you clearly are at a fork in the road at that point." Do I continue on with sort of the easy path that we know is wrong,

but is what's readily accepted? Or do we consider trying something that there sure seems like there's more evidence?

I mean this was a number of years ago, so there wasn't as much evidence for it as there is today. I mean black-and-white almost difference in the two times. But then you say, "What is my goal?" And clearly my goal-- and I think most healthcare providers say, our goal is to help people, is to really help people.

And I knew from my almost decade in primary care that what I was doing was frustrating people with a low-fat advice. I knew that, I saw it, I had those moments where people were like, "But I'm doing it." In my own self I doubted, I did like so many other providers did that said, "If you were just listening to me." I had those moments along the way but I knew that I was just frustrating them, I knew that everybody-- that couldn't be happening with all the people that we were seeing.

Bret: Isn't it convenient how we put it on the patient, that is their fault, that they're just not doing a good enough job instead of questioning the advice that we're giving?

Sarah: Absolutely but it just seemed so-- it couldn't be that all these people were wrong, it couldn't be the advice, because I hadn't taken the time to go back and read until again I was setting up the obesity program. And then you just look at all the facts in front of you and you say, "I know it was frustrating people, "we're way getting worse and we're continuing to do the same thing. Look, there's evidence for a different way of doing it." And ultimately you got to have your moral compass and check, "What is my goal?"

My goal is to do the best thing I can for my patients. So again I had a little advantage over-- the situation presented a good advantage and my experience in primary care gave me I think what I really needed which was so much experience with frustration from patients standpoint to say, "We're not going to do it that way anymore."

Bret: And then fortunately you get connected with Dr. Phinney and as you say the rest is history. And the rest is actually rewriting history because med school, residency, fellowship, clinical practice, you are taught you manage diabetes, you adjust their insulin doses almost always adjusting up, you add oral medications, you manage, you don't reverse, you don't take them off medications. And now it's a different story, it's a completely different land out there, it's a completely different world for diabetes largely based on the study that you did.

Sarah: Well, isn't it a wonderful time for diabetes in diabetes care? Because what excites me more than anything is when you look at a patient and say, "You can reverse your type 2 diabetes", you've given them so much probably most importantly control back in their life.

Bret: Right.

Sarah: Because they felt like they had just lost all control. They continued to get worse and so it's an exciting field to begin, it's an incredibly rewarding field to be in, just a great time to be in this space and really be able to see patients transform before your eyes. It's an honor to be able to accompany them on that journey, it really is.

Bret: So let's talk about the study briefly. At the one year mark there was 83% compliance with the diet, people who still stayed in it, the hemoglobin A1c reduced from 7.6 down to 6.3, 94% of people either lowered or got off their insulin and there were improvements in CRP, triglycerides, HDL, in the ALT, the liver function test. Now the LDL-C went up by 10%, but with no change in ApoB, which is the more important marker.

So these are revolutionary stats coming from a dietary management for diabetes. So you would think everybody would be getting in line, lining up and saying, "Yes this is what we need to do to make the standard of care to treat type 2 diabetes." But that's not the case... people aren't lining up.

Sarah: It's not a pill. So you say a couple of things that it's just so shocking... you know, over 50% of the adults in this country have diabetes or pre-diabetes and what I say is, "What if that was an infectious disease?" What if over 50% of the adults in this country had an infectious disease? What would we be doing collectively? This would be like the world most nonpartisan thing. We would be all coming together and we would be doing anything and everything that we could to battle this.

But it's got to do with food so we're able to ignore it and then the solution isn't a pill. It's food again. And somehow with results this remarkable we're able also to say, "Okay... move on." And it shocks me, it truly does. And this is a fantastic solution for people. They don't have to have surgery, don't have to take yet another medication and it's not just the diabetes that reverses. I mean people feel better.

It's remarkable the improvements people have in their overall quality of life. So I'm just excited to keep doing the research, plugging away, continue to talk about it, because I think our solution to our current health epidemic is in front of us.

Bret: So there can be a couple of different pushbacks on the study. It wasn't randomized, it was only one year, it involved a very intensive management with very high touch. This isn't something where you see them in the office every six months. Is it applicable to the real world? Those are all sort of the pushbacks I guess that people would give to this study, that I'm sure you've heard hundreds of times if not more. So how do you address that to say this is still evidence that applies to the real world?

Sarah: So first of all as far as the non-randomization goes, my pushback to that is no it wasn't randomized because we were doing a long-term trial. And if you don't include peak patients choice in it, you're going to get a huge drop out. I mean patients are the number one people who get to choose what they do, right? I mean we can't be telling them.

So we allowed patients to choose; "Would you like to go into the intervention arm or would you like to continue on with standard of care?" And so you know that is a critical piece without question to the long-term sustainability. And that goes to another point you had which is generalizability. "Do I think everyone in the world who has type 2 diabetes will choose to do this?" I don't think, but I think a lot of people will.

And so this is geared towards the people who are interested in reversing their disease, who don't want to have surgery in order to do that. And the idea that that's not a big percentage of the people who have type 2 diabetes is crazy, of course it is.

Bret: And that's what I find so interesting because when I talk to friends in endocrinology, one of my good friends runs hormonesdemystified.com, you know, his main pushback is, "Everybody should be doing this, but in my personal experience, just a small fraction actually want to do it." And that's what so frustrating, how do we get people over that hurdle to understand how important this is and want to do it? Because we're so ingrained in our society that we need our grains, no pun intended, that we need our carbs, that is too much of a sacrifice to do this type of diet.

But on the other hand you could say it's too much of a sacrifice to lose a limb or have kidney failure and yet there's this disconnect there. So how do you see us getting more people over that hump? And it has to start sort of in the community with regular doctors and everyday doctors and not from Virta Health. So do you how do you see that disseminating?

Sarah: No one is going to choose to do it who doesn't know it's an option. That's the absolute bottom line. And so in many of my talks that I give like in grand rounds and going to speak to various physician groups, I talk about diabetes reversal. I mean in the take-home message is always, "it is a reversible condition". I mean you can do it with bariatric surgery, you can do it with extreme calorie restriction or you can do it with a low carbohydrate approach.

No one should be choosing which one of those choices patients make other than the patient. But if they don't know that it's a choice, if they don't know that there's actually something that they can do about it, of course they're never going to choose that. So the number one thing we need to work on is just the concept and allowing

people to understand that type 2 diabetes-- it's very important to make sure we clarify it's type 2 diabetes, is a reversible condition especially if you start early.

So we just need to continue to work really hard. And I call on everyone, I certainly call on healthcare providers to talk to their patients about that. But I call on the general public too. When you know someone, you know, they probably don't have any idea that this is something that they can take control of and that they can reverse. And I think the more and more that we get the word out and I do think we're making a difference in that.

Bret: Sure.

Sarah: The more we can continue to work and get the word out that this is something patients can take control of themselves, the more people will choose it.

Bret: Now what about governing bodies and guidelines, you know, the American Diabetes Association and the European version of that and even, you know, family practice guidelines for managing diabetes, why has this not taken those-- made them totally revitalize their guidelines and include a low-carb diet? Is it simply because Pharma influence? Is it because they think more data is needed? Is it because they're concerned about the LDL or the saturated fats? What kind of resistance are you getting there and why do you think?

Sarah: Well clearly I think there was resistance there since my TED talk was "ignore the guidelines". But since that time we have made some good moves in the sense that just recently in the last few weeks the American Diabetes Association and their European counterparts did come out with new recommendations and they are now including low-carb as a recommended eating pattern, which is a move in the right direction.

I don't know that it's a strong as a move because they still for example have DASH as a recommended eating pattern and the amount of evidence for DASH for type 2 diabetes is basically nonexistent. In fact in the one study that they cite triglycerides actually worsened in the intervention group. So the evidence is there, I think they're starting to pay attention to it, the governing bodies if you will because the amount of evidence is just overwhelming. For example there are 25 randomized controlled trials looking at a low carbohydrate intervention for type 2 diabetes. Five meta-analysis.

You know, how many for the DASH study? Two. So there's no comparison anymore. Mediterranean diet - very few. I mean there's no eating pattern that even comes close to the amount of randomized controlled trial evidence that there is for a low carbohydrate diet. And I'm going to offer again that we need to look beyond just randomized controlled trial data.

There are additional other studies in the low carbohydrate evidence-based including ours that are longer-term and maybe not controlled. And once again when we're looking at long-term sustainability patient choice, i.e. not randomization, is just going to be a key component.

Bret: Yeah, it brings up a great question about evidence and scientific research in general, the randomized controlled trial versus the observational trial patient choice trial as you say. For a drug a randomized trial is great.

Sarah: It is... perfect.

Bret: But for a lifestyle choice that you have to buy into, randomized controlled trial may not be the best choice. And this is the better way to go yet, where we're so ingrained in our brain that it has to be randomized to be the highest level of quality. And you bring up some good points, maybe that's not the best approach for this. Because we want to know, does this work in the real world?

Sarah: And does it work long-term?

Bret: Yeah and what your study showed is clearly the model at Virta, works long-term. Other studies have shown maybe even outside that model that a low-carb diet works. But now your model has that higher level of touch.

Sarah: Yes.

Bret: It's got the technology behind it and it's got sort of the best of both worlds, the medical science and sort of the Silicon Valley tech flare to it. Do you think that is scalable to the hundreds of millions of patients-- well, the millions of patients that we need to help reverse this condition?

Sarah: I do and I think that's the key. And the point that you made earlier was this is a high touch situation and that's not what we're normally doing. But wait a minute, that's what we need to be doing. Because let's face it, making a lifestyle change is hard. If it was easy, everyone would do it. So people who are embarking on this, who have the goal of reversing their type 2 diabetes need to have a lot of support.

And so the remote care model that we are utilizing at Virta is giving them that. And so yes this is the way that it can be scaled, because you can do away with the brick-and-mortar, you can make it very convenient for patients, they can get their information, they can get their medication changes, they can get their support and their questions answered when it works for them.

And so yes, does the higher touch cost more money than going to the dietitian every other month or something like that? It does but it saves money, because with the

dietitian we're just continuing we know adding more medication if we are seeing them-- especially I should say all dietitians, if they're recommending the standard of care low-fat approach, we know that that causes progression of disease and more medication over time.

Yeah is more intense but very needed when you're doing something as difficult as a lifestyle change. If you're doing that you can pull people off of medications, you can get rid of a disease that is financially crippling this country. So the high touch is absolutely needed and can be scaled and can be done financially in a cost-saving model.

Bret: So why aren't insurance companies banging down your door to save money this way?

Sarah: Well, I think that that is beginning. So, I think as we see again our continued results we'll be seeing more and more people being able to offer Virta to their employees or their insured populations.

And so as you brought up too that it was only one year, but we are looking forward to the publication of our two-year data, so it's been recently submitted and as you know it can take a while to go through the actual publication process. I can't get into the details of it but what I can say is that we were really excited to show that our results are sustainable and that's really exciting.

Bret: Now, when you present data like this, so you generally present the average... everybody does it, you present an average... but what's helpful to know is do most of the people hit those averages or there are huge swings? Do some people reduce their A1c from 8 down to 5.5 and others go from 6.8 to 6.7. Some people have spikes in their LDL and some people have declines in their LDL or their ApoB. Can you give a sense of what kind of variation you have across that mean in your data?

Sarah: Sure, there's some variation, but actually much less than you would think. So what we see is that most people are getting better, sure with an average, some people are a little below and some people are certainly a little above, but let me bring up one of the important questions that you just post, which is with the LDL-cholesterol. Like the average ApoB didn't change, but there were patients who had skyrocketting ApoB.

And actually when we compared them to the control group, the variance there was not any different than what we would expect or what we saw with the control group. So in other words we didn't see these huge rises out of a couple of people that would give us reasons to be concerned. So the variance was about what was seen with standard of care.

Bret: That makes sense because the patient population you're working with is overweight, they're diabetic and the patients that we see those rises in ApoB tend to be the leaner, healthier, nondiabetic individuals. So I think that's an interesting dichotomy if we use your evidence to say nobody gets a rise in ApoB.

Obviously that's not true, there are certain subsets that do and it looks like that's a fairly safe subset. But do you have a policy at Virta how to address that if it does happen? Because it's controversial, there's no one right answer. And when you have a big company and you have protocols in place, you have to be a little conservative I would think about that.

Sarah: Yes, we do, I mean we definitely take any change in any biomarker that may be concerning incredibly seriously and we act upon. So we definitely-- and I'll tell you, when we have a rise in LDL, whether it's someone who is healthier or someone who has metabolic disease, I sit down and we have a huge discussion about it and I prescribe statins very often in that patient population. I want my patients to be better in everything. I want all of their risk factors to be controlled. And that's absolutely my goal.

Bret: Yeah and I think it's a good perspective if they still have metabolic disease. It's not like diabetes and metabolic disease go away like that, it's a progression. So an elevated ApoB as they are still on that progression, they still have insulin resistance, they may still have elevated inflammatory markers, that's a completely different situation than someone-- these classically mess hyper responders who have actually know insulin resistance, their inflammatory markers are perfect, their HDL and triglycerides are perfect, those are two different scenarios that need to be approached differently.

Sarah: Yeah, I can say confidently in the patient population that we treat we don't often see a rise in LDL-cholesterol. Anyone that does, what's important is each individual patient to all of us. I mean each individual patient to be treated as an individual and not as an average. So anyone who deviates from what normally we see is something that we get on top of and that we have a discussion with the patient and we treat.

Bret: What about other side effects or adverse effects of the diet people point to? You know, gallstones or even kidney stones, or G.I. distress? What have you seen that is really something that can happen and what have you seen that is just people putting out information that really has no basis in reality?

Sarah: I mean the "side effects" are that people feel great and they lose weight. Those are the big side effects. So a lot of these other things are just chatter. So from

a gallstone standpoint, people think they can do it, they don't have a gallbladder. Oh my gosh, so many of our patients don't have gallbladders, they do fine. And gallstones are caused from a low-fat diet, because the gallbladder isn't squeezing in response to fat that's consumed.

So you know we certainly wouldn't expect formation with gallstones with a low carbohydrate high-fat diet. And kidney stones, I mean do we see patients who have had a history of kidney stones get a kidney stone? Sometimes. But do we see patients getting kidney stones who don't have a history of them a lot? We don't. I think in the literature there is very little about this in adults. In kids there's about a 5% chance of forming a kidney stone with a ketogenic diet. that's what the literature--

So we don't have any evidence of the risk increasing in adults, but it's also never been well studied and I can just tell you that I haven't had a big problem with it in my practice.

Bret: Do you have any people that you see for intake or any protocols that say if on intake patient has X, Y, and Z they are probably not a good candidate to enroll in this?

Sarah: So in other words who is not a good candidate for a ketogenic diet. And really we've only come up with one. And that is anyone who has hyperchylomicronemia should absolutely not do a ketogenic diet. So they have to be on an almost no fat diet. But that's one case every 1 to 2 million people. Otherwise I've done this in patients who have had liver transplants, kidney transplants, I mean I've utilized it across the board.

And the hyperchylomicronemia thing is something you would have to consider seriously in a child, but as an adult, I mean the adult would know about it already, because these are people who get pancreatitis all of the time and it can actually be a fatal disease, it's genetic. So usually you're not surprised by a case of that.

Bret: Now with the rise in type 2 diabetes in teens and adolescents is that something you're starting to see as well? Does Virta focus only on adults at this point?

Sarah: Only on adults at this point, but yeah I think we're going to eventually have to expand, especially if we continue with the trends we're currently seeing, because of course type 2 diabetes is not an unheard of case to see in an eight-year-old anymore and that's unbelievably concerning.

Bret: What about bone loss? Actually that was another side effect I was going to ask about, because that's out there in the chatter world that there you risk increase bone loss especially in elderly women on a keto diet.

Sarah: Well, I'm smiling because... hold the phone on that.

Bret: Oh, you have some data coming out on that too?

Sarah: The data is coming out.

Bret: Excellent, now another topic that gets a lot of attention for type 2 diabetes and weight loss with some very good results is intermittent fasting and time restricted eating. And just saying intermittent fasting can mean anything from a 16 hour fast to a 16 day fast and so it gets a little confusing and I know there are some people within Virta who are not proponents of fasting, but I think the devil is in the detail when we talk about what kind of fasting. So is there any discussion about fasting, any use of fasting or time restricted eating in your protocols?

Sarah: When someone tells me that they're fasting my absolute first question is, "What does that mean?" So I think there's data on time restricted eating and if patients want to do that I think that's fine. So I would like to see us do away with the word fasting, unless we're really talking about long-term fasting, which is not something that I recommend at all.

Time restricted eating, where patients keep their food intake during certain hours of the day, I think that's fine, you know, they're not going 24 hours without food or protein. I don't support that idea at all. But time restricted feeding for people who choose to do it, I think is a very reasonable thing. And again there's some data to support that. So it's something that we would talk to our patients to make sure that they're doing appropriately, but if they were interested in, then we would support them in doing that.

Bret: And the concern with going 24 hours is that from the protein loss, muscle mass loss mostly?

Sarah: Yes, and then refeeding syndrome too, which is a real thing. So we don't support that. There needs to be data behind that and I think the only data that exists right now is from George Cahill from many decades ago and supports the idea that we have muscle loss when we do prolonged fasts.

Bret: Yeah, I think that's where the data gets really confusing, because it's what type of patient population are you talking about? Are they already thin and lean or are they obese with plenty of fat stores to lose? What's the duration and how you measure it? And I think it gets very conflicting.

So I can see why Virta would say, "Until we have more evidence saying this is safe, let's stay away from it." But then you have people like Jason Fung and Megan Ramos at

IDM program who are using it with great success and safely. And I want you guys to get together, I want everybody to sort of agree on this and I guess it's not going to happen for the time being.

Sarah: It's not. I mean at Virta we are going to only practice things that are evidence-based. And so we will wait for evidence and we're open to any evidence that comes out, but we are an evidence-based practice without question.

Bret: So what about exercise and the use of that? Because that can be a double-edged sword for some people as they're trying to lose weight and if they are not ready for exercise it can cause injuries, sometimes it can spark hunger, but yet at the same time it can be a very important part of long-term health. So how do you incorporate exercise recommendations into your program?

Sarah: So the best time to get someone to exercise is when they ask you about exercise. So in other words it's not from day one. Because you're asking them to make a huge lifestyle change if you are telling them that they have to eat differently and now they have to exercise too and that's overwhelming. So again my background is in exercise physiology. I want everyone to exercise, I mean exercise is fantastic.

But when do you get people exercising? And when you get people exercising where they'll stay exercising is when they come to you because they're feeling better. Because they know that they are healthier, they have more energy, they've lost weight, the pain in their joints isn't as bad. That's when you can get someone exercising and they will stick with it. And there's no set time for that.

It's not like, "It's been six months, you need to be exercising." No, because for someone it might be a couple of months that they want to start exercising and for some people it's a year. I mean each person needs to make their own choice on when it's going to be right for them and we're absolutely here to encourage them.

Bret: That makes a lot of sense. And thus the benefit of that high touch frequent follow-up personalized care you can get an idea of when that timeframe is. Again not seeing them every six months, once a year or something like that where you're not going to have a good time frame on how they're feeling and how they are progressing.

Sarah: Right, because what if they want to exercise at, you know, three months and you don't see them again for six months? You missed your opportunity to talk to them and engage them and help them. Because what do you do? You need to be there with good advice and support. And again when that comes for patients, we want to be there at the moment that it comes for them to be able to support them and guide them and help them make it something that can be sustained as part of a new healthy lifestyle going forward.

Bret: Now in addition to your positions as chief medical officer at Virta health--

Sarah: Actually I'm not that. That would be Steve.

Bret: I apologize, that would be Steve... Remind me again.

Sarah: I am medical director.

Bret: Medical director at Virta and then at IU, you're also very involved on the policy side of things and trying to get guidelines change. Tell me about some of the work you're doing there and what you see as what's coming on the horizon?

Sarah: Well yes my partner in crime there is the wonderful Nina Teicholz as you know. So Nina has done some unbelievable amazing work in DC as far as trying to get our guidelines changed. And I help her out. And one of the things was that I just recently got to go and give a testimony at a Congressional briefing for the working group called Food As Medicine. And so I gave my discussion about diabetes and how is it that we're not doing more, here's a solution that can help. And so we got really great response there.

So I'm excited very hopeful that again we can see guidelines changed. Of course the American Diabetes Association guidelines, we are seeing evidence of that already. But we're poised for the 2020 dietary guidelines coming out soon. I mean 2020 is not far down the road. And so we are really looking forward to hoping that they focus on evidence-based medicine. We are supporting many evidence-based candidates on the committee and again we just continue to work in that direction. Evidence-based policy is what we need.

Bret: It's such an interesting term to use because if you asked the people who were involved in the last guidelines is this evidence-based... They would shake their heads and say, "Yes, it is." I mean I think it's clear they believed they were following evidence-based guidelines, but there a lot of holes in that and the quality of the evidence was poor, but yet that's what they believed in. So how do we get them to change, if they already believe they are following evidence-based guidelines?

Sarah: It's very clear that they did not. So the national Academy of Sciences was very clear in their report and recommendations about the dietary guideline process. So one of the things that Nina and the Nutrition Coalition did was actually get Congress to mandate what was really the first peer review of the dietary guidelines, the 2015 dietary guidelines by the National Academy of Sciences.

And they appropriated $1 million to that effort. And the report came out in just over a year ago, September 2017, and basically said that the dietary guidelines, what

impacts so many Americans, is not based on rigorous methodology. And has to be reviewed and completely re-structured. And so again we have the recommendations there and what we're really working on right now is to make sure that those recommendations from the National Academy of Sciences actually get put into action.

Bret: So when you were testifying, you said you were testifying in front of Congress?

Sarah: Yes, it was a Congressional working group called Food As Medicine, correct.

Bret: So I would hope they wouldn't have such a strong bias going into it, that they would be-- you know, they are not scientists, is not like they've made their career defending a certain guideline or certain way of eating so that they would be more open to it. Did you find that they were a little more receptive than when you talk to a group of endocrinologists or a group of researchers, or a group of people who are already involved in the American dietary guidelines? Did you find a different reception there?

Sarah: No, because I actually feel like I get a really reasonable reception even from physicians. When you pause with them for a little bit and talk to them, most of them-- of course there's always exceptions, are interested, and you could see them kind of reflecting on it and then they agree that it really makes sense. And the same thing happened at the briefing.

So there was a lot of interest in it, a lot of people asked for my slides afterwards. So I'm hopeful that, you know, is this one thing going to be the end-all be-all change? Absolutely not we need to continue to work to do things like this, chip away if you will at the old dogma of how we treat and recommend nutrition to people and we will get there.

Bret: And how much is industry and Pharma fighting this?

Sarah: I think what we're seeing as far as industry goes is there is some shift. I'm not saying that there hasn't been barriers due to industry, due to Pharma, But with industry at least you're seeing some companies began to shift to the whole foods idea and at least put some thought...

I don't think they're doing enough, no arguments there, but put some thoughts to this direction and how are they going to survive in a world where the consumers are asking for something different. And I hope at the end of the day at some point they become an ally in getting good food, but there's no question that they've been contributing to the problem for a while too.

Bret: Absolutely. I know we are short on time today because you have to run downstairs and give your talk. I appreciate you giving us time this morning so thank you so much. I know you've got a two-year data coming up, what else is on the horizon and get people excited about and where can they go to learn more about you?

Sarah: We have a number of papers actually that are going to be coming out. So two-year data, we've got a liver paper, a sleep paper... We've got a really exciting data coming out. And so yes to learn more, you can go to Virtahealth.com we will always be putting up all of our published papers there for people to be able to read. And keep watching, I think the field is changing and I think we're going to see guidelines really start to be impacted soon. And like I said, I am excited... it's a good change, it's a needed change.

Bret: That's fantastic, thank you for all your work and your advocacy. It's wonderful to see the whole field change and know that we can start to reverse this condition of type 2 diabetes.

Sarah: Thank you for having me.