THE FAT SUMMIT

Separating Fat From Fiction

Transcript:

Interview with Neal Barnard
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Interview by Mark Hyman, MD
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Dr. Hyman: Hi this is Dr. Mark Hyman. Welcome to the Fat Summit, your chance to separate fat from fiction. And we're here with my friend and amazing physician, Dr. Neal Barnard who's been in my radar for a long time as one of the leading thinkers in how to actually use food as medicine to reverse disease, and he's been doing this for a long, long time. He looks very young, but he's actually older than I am, and it's a testament to his eating a really healthy diet.

So Dr. Neal Barnard is the President of the Physicians Committee for Responsible Medicine. He has led programs in preventive medicine, nutrition and ethical standards in research. He's a professor, an adjunct professor at George Washington University School of Medicine. He's written over 70 scientific publications, many of which I've read and about 17 books , including the "Power of Food" book, "Power of Foods for the Brain" and the "21-Day Weight Loss Kickstart" which were *New York Times* best sellers.

So he's also a very active guy in policy and we've even collaborated on a number of things, recently the ENRICH Act where I was with some of your team in Washington. We were helping to kick it off, which is to fund nutrition education for doctors. What a concept, that doctors should learn about nutrition. And you've worked on the eat-for-health program, food stamp revision to get all the junk food out of food stamps, farm subsidies and how we actually fund process foods and corn and soybean that's usually mostly used for processed foods.

And we've also collaborated on a nutrition curriculum for Zumba, of all things, to actually help train Zumba instructors on how to be health coaches and teach their students about nutrition.

So I'm really excited to have you here and to talk about fat. And I think when you and I have had conversations over the years, and I think we agree on a lot of stuff and we disagree about some stuff.

And I think I'm going to start off with the things we actually agree on, which is that we should be eating mostly plant foods, that we should be eating nutrient-dense foods, that we shouldn't be eating processed foods, that we shouldn't be eating foods full of antibiotics and hormones and pesticides, that we shouldn't be raising animals in ways that are unethical or harmful that are actually filling them with all sorts of hormones, antibiotics and feeding them foods they're not actually meant to eat and producing harmful meat products.

And I think we agree that we need to revise our farm subsidies that we need to train doctor's nutrition that we need to actually really rethink our whole food landscape in America. So I think we agree on most things.

There are some points of difference. And I've joked, I was once at a conference with my friend, Joel Cohen, who's a vegetarian, vegan cardiologist, another doctor, Frank Lipman, who's more of a paleo guy, and I was in the middle, and they were going back and forth. And I'm like, "I guess I must be, if your paleo and you're vegan, I must be a pegan." And I joked about that because I really think we do need to downsize our meat consumption and upsize our plant consumption and we need to rethink our diet.

So why don't we start by talking about fat because that's what this summit's about. And I've read a lot of your research, and over the years, you've looked at low-fat vegan diets and I'm curious about your take on some of the research that's been coming out of a colleague you've worked with a lot, David Jenkins, who's the father of the glycemic index, and you published a lot of studies with him.

And he's recently published a study. I didn't like the title of it, it's called "Eco-Atkins." But essentially the idea was a higher fat versus lower fat vegan diets for weight loss and cardiovascular health. Using plant fats like avocados and almonds and soybeans and so forth. So I'd love to hear your thoughts on that, and what your take is on that concept of low fat versus high fat vegan diets?

Dr. Barnard: Sure. First of all, Mark, thanks for including me on your program. I'm grateful to you. And I also have to say a word to my grandfather who's probably rolling in his grave as we are talking right now. Because as you know, I grew up in North Dakota, and I come from a long line of cattle ranchers. My grandpa raised cattle and his father, and as far back as I can trace, they're all in the cattle business, and my father also did as well.

But my dad was different, that he didn't like the business, and he left, and he went to medical school. He then became the diabetes expert for most of North Dakota and Western Minnesota. And yet we still ate like we were in the cattle business. Every day, it was roast beef, baked potatoes and corn. Except for special occasions when it was roast beef, baked potatoes and peas. And that was...

Dr. Hyman: And it was just three peas on the plate, right? It was just mostly the roast beef, right?

Dr. Barnard: It was like that, it was like that. And a couple of things about it. It was a very meaty diet. I personally drove cattle to slaughter, myself. I hunted. I can't say I'm proud of any of that. If I could wave a magic wand and have the entire culture there be converted to an agrarian culture, I would certainly do that and everybody there would be a whole lot better off. But nonetheless, that's my

background. And so I spent the first half of my life doing all the things that I'm going to counsel people against.

And the other thing I might say is my dear father who, he's now enjoying his celestial reward, I never once heard him come home saying that a person with diabetes no longer had diabetes.

Dr. Hyman: That's right.

Dr. Barnard: In other words, he expected as every single person expected, that if you got diabetes that is a diagnosis for a lifetime.

Dr. Hyman: It's a one-way street.

Dr. Barnard: It's a one-way street, and it's going to get worse and worse and worse. So to get around to your question, I have to say I was extremely impressed with plant-based diets and Dean Ornish's work. I think Dean is a genius. And he showed that you can do something that people didn't even think was possible, which is you can reverse heart disease. We have applied a similar kind of work to people with diabetes and also people who just want to lose weight, and totally plant-based.

Now, David Jenkins, who as you said is a great friend and I think a genius, really one of my inspirations. I think David's just such a wonderful researcher. He's shown that there's a couple of kinds of low-carb diets. There's the meat based low-carb diet that Atkins was promoting where you're having gravy and pork and so forth. And what you see with those people is they don't lose one ounce. They don't lose anything.

Dr. Hyman: Which people – the ones who are eating...?

Dr. Barnard: A person following an Atkins diet, they don't lose anything. They don't lose one gram of weight unless their calorie content falls. In other words, they're eating all these fatty foods. But if you add up the amount they're eating, it's actually less than they were eating before. In other words, they're throwing out all the potatoes and they're throwing out all the carbs, which is half of what people eat, and their calories drop until they lose weight. If that doesn't happen, they don't lose any weight at all.

And about a third of these people, their cholesterol levels start to rise, sometimes astronomically. What David Jenkins says, "Wait a minute." If you want to get away from the carbs, why don't you eliminate them, but have everything

else be from plants." So you're having something like all the green leafy vegetables, which as you know very, very healthy, very nutrient-dense, and you may or may not have legumes and whatever. And he showed that that's a dramatically better diet, and I think he was really right that that's a better way to go.

Now having said that, if you look around the world, and this is going to be a big theme – who's the skinniest, who's the healthiest?

Dr. Hyman: The Maasai are the skinniest. They're super skinny.

Dr. Barnard: Let me come back to the Maasai. If you look at Japan, this is the thinnest, healthiest, longest lived population. And no, it is not the Maasai. This is wrong. If you could be...

Dr. Hyman: They're pretty tall and skinny.

Dr. Barnard: Let's talk about populations that have actually been studied. If you look at Japanese populations, rural Japan, what are they eating? They're eating a huge amount of rice, starchy vegetables, noodles and they're very, very thin. Despite the fact that Atkins would have said, "Wait a minute, you ought to be fat. You're eating all that carbs." And they do great until McDonald's shows up and then they're eating less rice. In Japan, they're eating much less rice now. They're eating more chicken, more meat in general. Dairy products have invaded and they gained weight...

Dr. Hyman: Well, they didn't eat any processed food before. They only had real food. They had fish, they had vegetables, they had rice, noodles, you're right. But they also...

Dr. Barnard: So it wasn't a fish-based diet, it was a rice-based diet, it was a grain-based diet. And in Okinawa, it wasn't really a rice-based diet, it was more sweet potatoes. And Okinawa, the granddaddy of all Blue Zones, there are more centenarians than anywhere, their dietary staple is not fish, it's not rice, it's not tofu, it's certainly not pork or beef – it's sweet potatoes. But in any of these places, when you take that away, and you put in cheese and meat, chicken, fish, any of those things, people don't do nearly as well.

Dr. Hyman: Sugar too though, the sugar. The amount of sugar that's in soda and processed refined flours and sugars is huge in those countries. Right?

Dr. Barnard: It may be. It depends on the type that you're thinking about. Back with the westernization in Tokyo and rural Japan, the big change that we saw was a big influx of meat, and then dairy was a little bit later, and more recently

there may be more soda as well. None of those things are healthy. So in our research studies, what we have done is we've used really three steps. So a person comes in, they've got Type 2 Diabetes. And as you know, Mark, they don't just have diabetes, they also...

Dr. Hyman: They have everything else – high blood pressure, bad cholesterol, yeah.

Dr. Barnard: High blood pressure, cholesterol problems, and they're overweight, their joints hurt and everything else. So we use really three steps. The first is we avoid the animal products, so it's a vegan diet. Incidentally I don't say that they're a vegan person. I use the word vegan to refer to what's on their plate, not who they are. Because he's still Hank, but his diet changed from being meat, and now it's vegan. The second thing is we reduce the fat content.

So instead of taking that olive oil and going glug, glug, glug all over their pasta, they'll use a low fat tomato sauce or a fat free squirt of something on their salad. And we've done some studies with just that alone. Mark, I got to tell you, what we find is that people lose weight without counting calories, with unlimited portions, unlimited carbs.

However, there's one thing. We did a study like that and people did really, really well – their weight went down, their lipids improved, everything gets better. Except I noticed that triglycerides were all over the map. For some they fall, and for others they rise. So in 2003, and I know you don't know where this is going, in 2003 the NIH funded our team to use this kind of diet for people with Type 2 Diabetes. If you're...

Dr. Hyman: Yeah. Is that the Glycol Trial?

Dr. Barnard: No, this is before Glycol. This is when we were published in Diabetes Care in 2006, and then in the American Journal of Clinical Nutrition, the long-term findings in 2009. And there, instead of it being just vegan and just low fat, we added a third step. So it was a vegan diet, low in fat, but also low glycemic index. And...

Dr. Hyman: Yeah. Which is key. Which is super key.

Dr. Barnard: Well, it was helpful. What it did was it seemed to bring the triglycerides down more uniformly. So without worrying about glycemic index, people do lose weight. They get healthier in every way. But I have to say, I find the glycemic index really handy for two things – one is diabetes control and the other is triglyceride control. I think it helps with those.

So if somebody came to me and said, "Give me a perfect diet." I would say, it would be no animal products, keep the added oils low. So, there are natural traces of that in everything, it's going to change a little bit of that, and then I use the glycemic index to sort out what's left.

Dr. Hyman: So what do you think about Jenkins' stuff though, with the Eco-Atkins where you looked at weight loss and all the lipid parameters? It was better when they had more plant fats like avocados and nuts and olive oil and things like that. Did that not make you think about whether maybe the fat is not so bad? How did you sort that out? Because it was pretty convincing. And he's a vegan and I think he's pretty committed to this approach, but he also pointed out...

Dr. Barnard: Well, all the researchers are vegan, Mark, so obviously. Of course, he's not going to eat animal products because they're not healthy. But I think David does great work, and I would encourage you to obviously talk with him about it, let him present it. But I think he's done a tremendous service by showing that if a person wants to do a low carb diet, that the way that he's showing to do it is I think head and shoulders better than any other way of doing it.

Dr. Hyman: Well, then that brings a good point, is what is it that's actually creating the benefit? When I look at the studies, it's really important to see what the comparison diet is. So if you take someone who's on a typical American diet – eating soda and processed foods and McDonald's and tons of refined sugars and flours and processed fats and refined oils, and you put them on a healthy vegan diet, they all do better. Absolutely hands down.

The question is, no one's really done the study where you compare a super healthy vegan diet to what would be considered a, what I would call a pegan diet, which is mostly plant-based, with good fats and small amounts of animal protein, and then see what happens to people in terms of weight and in terms of their health.

There was a study published a few weeks ago by Walter Willett, David Ludwig and Frank Hughes from Harvard, it was a meta-analysis of 53 studies, 68,000 people, looking at comparisons of high or low fat diets over the course of a year or more. So longer term studies. And they found, hands down, that the higher fat diets actually did better in terms of weight loss. So it's not that someone who's eating a vegan diet won't lose weight. We know that's true. We know they will if they get off the crap, they're going to lose weight.

But the question is what's the optimal diet, and what's the best diet for health? And I think that's the question I have, is it something that's very low fat or higher fat. I think my reading of literature just seems to point to the benefits of fats. Like Omega 3 fats, the benefits of olive oil, monounsaturated fats, avocados. So how do you sort through the contradictory data that you see out there in literature? Because...

Dr. Barnard: Well, I think it's a terrific question, Mark. The first thing is if you're looking at just observational studies, which is what you were describing. You generally want to put those...

Dr. Hyman: No, these were randomized trials. They looked at 53 RCTs. These were randomized trials, interventions, not observational studies.

Dr. Barnard: Okay. All right, fair enough. Let me just come back to this for a second. If you look at just observational studies. The Adventist Health study was an interesting one, 61,000 people, and the beauty of studying Adventists is that you get a big group of meat eaters, semi-vegetarians, pesco-vegetarians, meaning fish but no other meat and then ovo-lacto vegetarians, and the vegans.

And when you compare those five groups, even people from a generation or more ago, when there really wasn't soda and junk food the way there is today, the meat eaters were the heaviest, the fish eaters were in the middle, the vegans were the thinnest and they were really the only group in the healthy weight range. And then with diabetes, you saw the same kind of gradient. In other words, the vegans are the healthiest and the thinnest with regard to diabetes or lipids or body weight.

So we've put that to the test and then sort of what you're describing, where we had a control group following the National Cholesterol Education program guidelines. It says eat meat, but have a small amount. Maybe three to six ounces a day, not more than that in a whole day, more white meat, less red meat, that kind of thing, and keep total fat low. And then we compared that to a diet that had no meat at all. And I have to say our randomized trial which lasted two and a half years showed that the two groups diverge and that the people following a plant-based diet do well.

Dr. Hyman: I'm sure, because the American Cholesterol Education program diet is not what I would call an optimal diet at all.

Dr. Barnard: Right. I'm with you. And it's unfortunate that for a lot of people, they think, "I'm eating chicken. Isn't that better?" But Mark, here's another kind of simple-minded way of thinking about it, and I know you've given this such a

lot of thought. If a chicken eats too much, I know that's a funny way of thinking about it, a chicken eats a little too much. Where's the chicken going to store those extra calories? The chicken has chicken fat and that's what its role is, that's what fat's for. Fat is the way to take the most calories and put it in the smallest possible space.

If the chicken had chicken bread, he would be as wide as a truck, trying to keep all that into those stored calories somewhere on her thighs. But chicken fat allows you to store a lot of calories in a small space. So when you eat chicken fat, you tend to get a lot of calories really fast. For any of your participants who haven't heard this number, fat has nine calories per gram, and carbs have four.

So when you eat those, you get a lot of calories. And so what sometimes happens, Mark, is when people do research studies and they compare different diets, they'll statistically adjust the results for caloric intake, which sometimes makes sense, but sometimes can be a mistake depending on what you're looking at. Because vegans just eat fewer calories. They fill up on high fiber foods, but their...

Dr. Hyman: Right. How much broccoli can you eat? If you eat 21 cups, it's only 750 calories, right?

Dr. Barnard: All of that fiber tricks the brain into thinking you're full. If you throw that broccoli out and you were eating cheese instead which is 70% fat, your caloric intake is going to be higher than everybody else's because that Velveeta is just going to be stuffing you.

Dr. Hyman: Yeah. Well, I think it's an interesting conversation about all calories being the same, right? So as we begin to look at the research on calories, when you eat them, and Dr. David Ludwig has done this amazing, really elegant and very meticulous studies with isocaloric diets – shifting low or high fat diets – who, for example, took large groups of people and put them on a crossover trial studies where he got 60% fat in one group, 20% carbs, and on the other end was 20% fat and 60% carbs.

And at the end of the study, the ones who were on the higher fat diets burned 300 calories more a day. So when you eat the calories, yeah, it's a different amount depending on if it's fat or carbs, but the actual effect on your body can be very different. So...

Dr. Barnard: Yeah. But I guess it raises the question, why would you want an isocaloric diet? For anybody who's watching this and wondering what are we talking about, what you're saying is, let's say I take a meat eater and I say, "You

eat a vegan diet and eat until you're full." What you discover is that you eat a couple hundred calories a day less.

And so to do the study as you're describing, an isocaloric diet, you say, "No, no. You've got to keep eating until you're eating as many calories as the meat eater is eating." And he says, "I'm full. I don't want to eat anymore." You say, "You must, it's a scientific study." And then you publish the results showing there's no benefit to the vegan diet. It's a funny way of doing a research.

Dr. Hyman: Well, the fact is that eating the same amount of calories had a different effect on the body. So the whole nine, four-calorie thing is being challenged by the evidence around how calories work in the body and the effect on insulin and the effect on metabolism and...

Dr. Barnard: We published a meta-analysis in the Journal of the Academy of Nutrition Dietetics where we've looked at plant-based diets, which could be a vegetarian diet or a vegan diet, and you look at did people lose weight or did they gain weight. And you know where this is going...

Dr. Hyman: Yeah, they...

Dr. Barnard: Every single study shows that people lose weight.

Dr. Hyman: Absolutely.

Dr. Barnard: And it's for two reasons. The big reason is the one that you mentioned. You're getting so much fiber you just push away from the table and...

Dr. Hyman: Although chips and soda's a vegetarian diet. There's a lot of chips and soda vegetarians out there, and so we were talking about as a whole foods, plant-based diet as opposed to a junk food vegetarian.

Dr. Barnard: What I'm speaking of is just any vegetarian diet, any vegan diet in regard...

Dr. Hyman: So you don't care if they are drinking Coke and having chips and Doritos?

Dr. Barnard: ...regardless of whether [inaudible].

Dr. Hyman: You care if they're having Coke and Doritos, you don't think that's part of a healthy diet. I know you, you don't think that.

Dr. Barnard: What I was saying is that in the meta-analysis that we did, we didn't place that restriction on it.

Dr. Hyman: Yeah, got it.

Dr. Barnard: What we did is we looked at any published study where people avoid animal products, and what you show is very consistently, there's weight loss. But your point is right. If you're a meat eater who is eating meat and potato chips and Coke, and then you become a vegan who's eating vegan food with potato chips and Coke, that's a good change. You made a really good change. And if you take an additional step of getting rid of the potato chips and Coke and having healthy foods, that's better.

But there's one other point that I really want to make, Mark. I think you're right to raise the alarm bell about processing because there's so much of it. But you know what my number one processed food is, the food that I'm really worried about processing?

Dr. Hyman: What?

Dr. Barnard: It's cheese, cheese.

Dr. Hyman: Cheese, yeah.

Dr. Barnard: People think cheese, isn't that natural? You know what cheese is? You take the protein and calcium that is in a plant. Grass, the cow eats it, it goes down the esophagus into the stomach, gets digested, and it gets put into milk that the farmer then extracts. And then you take that milk and you add bacteria to it to ferment it, and then you separate out the whey and the sugar and you coagulate the protein. You greatly increase the fat content. You add a lot of salt to kill the bacteria now, you might add various funguses to make it blue cheese.

And then you pretend that that's unprocessed? It's the most nonsensical thing. High cholesterol, high sodium, very high in fat. And I think it's one of the biggest reasons Americans are overweight because they're eating more cheese than ever.

Dr. Hyman: Well, I agree. I think the cheese problem is a big problem in America. We had the Dairy Council work with the government to actually find ways to, when we created all this low fat products, to create all these cheese products, then pump it into the food supply through all these processed cheese products that are in supermarkets, that are in all the fast foods.

And I think that's one thing you and I do agree on is the dangers of dairy. I know you've done a lot of research on this, on dairy and diabetes, dairy and weight, dairy and acne, I'd love for you to share some of that because I think it's one of the concerns. And whether you're vegan or paleo, both of those groups don't believe that dairy is good for you. So there must be something there.

Dr. Barnard. Yeah. I think it really is true and they've gotten kind of a free ride for a long time thinking that dairy might help your bones. And of course, as you know, it's been shown not to help bones, either for kids who are developing bone structure or at the end of life when people are at risk for osteoporosis. Dairy doesn't help in either case according to the best research that we have. So I'm glad that people are realizing. You do need calcium, but there's calcium in green vegetables, in beans...

Dr. Hyman: I would say where do cows get their calcium, right? They get it from grass. And if you've ever seen a cow bone, they're pretty strong.

Dr. Barnard: Exactly. And we're not going to recommend grass, but there's plenty of other more palatable plants that you can get calcium from. So I would say skip the dairy. And if you do, the earth is going to breathe easier too, which is another thing that my dear grandpa rolling in his grave would get upset about is that there's nothing more anti-environmental than the kind of farming that our family did. You got a whole bunch of belching cows out there, spewing methane. And the dairy industry has got a lot to answer for, I'm sorry to say.

Dr. Hyman: So what are the things you found in your research, for example on dairy and diabetes, or around weight, acne? I know those are some of the studies you've done. Can you talk about that?

Dr. Barnard: Yeah. It's surprising, in some ways a murky literature. The thing that really got our attention back in 1992, I held a press conference with Benjamin Spock where we wanted to alert parents. You remember Benjamin Spock? He wrote "Baby and Child Care."

Dr. Hyman: Yeah, of course. I met him when he was older. And that was actually I think where I might have first met you, it was a conference in 1996 and he gave a talk about how he had prostate cancer and went on a macrobiotic diet and actually got healthy.

Dr. Barnard: It just revolutionized his thinking. Because for the first six editions of "Baby and Child Care" he said kids need meat and they need dairy. And then in the seventh edition he said, "I was wrong. You're better off not

feeding your child any of that stuff and that the kids following a plant-based diet are healthiest."

But anyway, in 1992, he and I held a press conference along with some diabetes experts. Because there was an amazing study published in the New England Journal that looked at children who were recently diagnosed with Type 1 Diabetes. Every single one of these kids, when they did blood testing, they found antibodies to a particular dairy protein.

Dr. Hyman: Casein, right?

Dr. Barnard: Well, it's a chunk of that protein. And what the concern was that kids should be breastfed by their mother, obviously. But because culturally we've drifted away from that and have fed kids formula from a cow, and the idea was somehow, this is setting up a reaction in the baby's body, forming antibodies to try to destroy those foreign proteins and those antibodies ended up destroying the insulin-producing cells in the pancreas. That was a theory and it's still a theory today.

But what we know is that when kids are breastfed, their risk of developing Type 1 Diabetes goes down. And so what Dr. Spock was saying and I think he was right is that parents need to understand that there are risks from drinking milk and it's not just Type 1 Diabetes that we're concerned about. You see anemia in kids who are raised on milk. How can that be? Because drinking milk reduces iron absorption. It also causes...

Dr. Hyman: It also causes intestinal bleeding, right?

Dr. Barnard: Yeah.

Dr. Hyman: Which increases iron loss.

Dr. Barnard: It does. And that bleeding can be very subtle. So it's not as if you're seeing it in the stool.

Dr. Hyman: You're seeing it as microscopic.

Dr. Barnard: It's microscopic. And so he was very concerned about that because there's such a contrary message. But he was a man who was ahead of his time in so many ways. And there's been a lot of work since that time on all of these variants.

But unfortunately the industry itself funds a lot of studies trying to defend it. You probably remember the study saying if you include milk in your diet, you'll lose more weight, which turned out not to be true. Anyway, we live with these encumbrances. But luckily I think the population's realizing you don't need milk. If you want to splash some soy milk or rice milk on your cereal, fair enough. But the truth is you don't need, really, any kind of milk at all.

Dr. Hyman: Right. And it's one of the biggest causes of pimples, too.

Dr. Barnard: There was an interesting epidemiologic study, a review...

Dr. Hyman: I see that in a lot of my patients who have sensitivity to dairy, and they get a lot of pimples.

Dr. Barnard: Yeah. And when they get away from the dairy, for some reason their skin clears up. I honestly don't know why that is, but there's no reason to drink milk, and it's a nice thing. The most recent thing though I have to say with regard to dairy is the work on prostate cancer. The Harvard cohorts, the Physicians Health study and the Health Professionals follow-up study resonate with the international studies that show milk-drinking men have more prostate cancer. To this day, we don't know why.

But what we suspect is happening is that in the same way that a calf drinking milk has an increase in IGF-1 in the blood, insulin-like growth factor, the same thing happens in a man or a woman, and that IGF-1 causes the growth of the cells. Incidentally it may not just be prostate cancer, it might also be breast cancer, although the data there are harder to sort through. But for my money, you ought to be breastfed when you're a child. After that, there's really no requirement for milk at all.

Dr. Hyman: Yeah. Well, I want to come back to the grain issue. Because I think there's a question I have about that for you. Because as a clinician, I hear what you're saying about Asia. I lived in China, and honestly the Chinese, they ate a bowl of rice, like a huge bowl of rice with a couple of condiments of meat or vegetables on top, and that was it.

But they also were working out all the time. They didn't go to the gym, but their lives were hard. They had to cut up board to build a house. They literally had to saw the board by hand from log. In order to grind flour, they had to walk around in circles, grinding it with a grinding mill. They were out in the fields for 12 hours a day working. And so they burned all those refined carbohydrates off.

And what I see in my patients who are typical Westerners, fairly sedentary, they're not out in the rice paddies all day, they have struggles with their glycemic load of their diet. And then diabetics who are eating a basically healthy diet, even if they're eating rice, it seems to jack up their blood sugar, jack up their insulin, and they struggle. And even Type 1 Diabetics I know say that when they eat beans, they know that their blood sugar goes up more than if they don't. And if they eat more fat, they're actually fixing it.

And so even Dr. Joslin from the Joslin Diabetes Center, and this is actually shifting over there, he used diets to control diabetes back in the '20s of 70% fat, 20% protein and 5%...sorry, 20% carbs...no, 20% protein and 5% carbs, and he was very effective in keeping his blood sugar low. And I just, as a clinician struggle, with that. I think whole grains are good, but I'm concerned that they do have this glycemic effect for people who are very insulin-resistant.

Dr. Barnard: Dr. Joslin was quite a man. My father trained under him.

Dr. Hyman: Really?

Dr. Barnard: Yeah, my father went to Boston, did a fellowship there.

Dr. Hyman: Amazing.

Dr. Barnard: He came back with a story. He said Dr. Joslin was jealous of another...envious of another research institution that had just gotten a $25,000 grant, which was an astounding amount of money in those days. And Dr. Joslin said to the assembled residents and physicians, he said, "Gentlemen, we don't need a $25,000 grant. What we need here is a new idea."

And I want to share with you what that new idea is, Mark. First of all, it's true that many people in China work hard, just like many people in the United States. But they also have accountants, and they have barbers, and they have people who are relatively sedentary, and those people were eating rice too, but they were not obese. So the myth that everyone in China is a poor laborer, knocking out 3,000 calories...

Dr. Hyman: Not anymore. They're obese now.

Dr. Barnard: They're obese now that McDonald's has invaded. But what I'm trying to get at is we like to create this myth that everyone in China was eating rice, and that it's filled with carbs and calories, and that's why they'd be fat if they weren't bicycling 20 miles a day. It's a myth. There are plenty of sedentary

people in those countries. There are college professors and poets and musicians who are not laboring with an ax, and they're as skinny as everybody else.

So just a couple of biochemical facts and then let me get to the point about blood sugar. It's true that carbs have four calories per gram compared to fats that have nine. But if you eat too much in the way of carbs, I know you know this, but some of the people watching me don't.

Dr. Hyman: Yeah.

Dr. Barnard: If you overeat on carbs, what happens? You store it as glycogen in your liver and in your muscles. And if you keep eating beyond the point of satiety and you've stuffed all that into your liver and into your muscles as glycogen, so now you're ready to run a marathon, you've got even more carbs coming in, what happens? You can build fat out of it.

But to do that, to turn a bean into fat is hard for your body. So about a quarter or more, roughly a quarter of the calories in the carbs are simply burned in the conversion. So the point being, if you want to try sometime to eat only rice as much as you can, it's almost impossible to gain weight on that kind of diet. It's almost impossible. Okay?

So, now back to your point about blood sugar. The work done by Shulman's group and others at Yale completely turned us on its head, where they looked at what's causing that insulin resistance? What's causing blood sugars to rise? And what they showed is that the fat builds up inside the cell of the person who's got diabetes. We don't like to call it fat because that's only got one syllable, we'll call it intramyocellular lipid. But this is not belly fat, it's fat inside the cell. And that buildup of fat inside the cell causes insulin not to work anymore.

So the patient comes in and they see you and they say, "Anytime I eat any kind of carbohydrate, my blood sugar goes up." Over the short run, that's true because they've got so much fat inside their cells that it's interfering with insulin's ability to work, and they eat a grain of rice and their blood sugar goes up. So the well-meaning doctor says, "Well, gee, I guess you can't eat rice. Don't eat it. Eat fat." And since fat doesn't have any sugar in it, their blood sugar doesn't rise, or as time goes on, they don't get better, but their blood sugars are normal and they die with diabetes.

Instead, what we do here in our research work is we take that person, we put them on a vegan diet, which is high in natural carbohydrates, modest, quite modest in fats, got more than enough protein. The first two or three days, their

blood sugars do go up a little bit, not in every case but some cases, because they're still insulin-resistant, they've got fat in their cells.

But because we're not feeding them fat or very much fat, the fat inside their cells starts to dissipate, or at least we believe that's what's going on. Because after a few days, you discover their blood sugar starts falling and falling and falling and falling and falling. They're eating more like that rural Chinese person, and their weight comes down, their blood sugars come down, their insulin sensitivity corrects itself, and so they do well.

So my suggestion to clinicians is don't get nervous. Return to the healthy plant-based diet. And your patient who's stored up a lot of fat, for the first few days, they may show that their blood sugar goes up a little bit. Stick with it, make sure that they're following a healthy diet, and that will turn around, and they're going to do dramatically better. Our NIH trial lasted a year and a half, and we just showed that the benefits just keep on coming.

Dr. Hyman: Your work is good and I read it, but it is often comparing it to a crappy American diet, not really great diets. And so the challenge for me is I read all the literature. I'm not a researcher, so I just tend to scan everything and try to make sense of it. And what I'm seeing out there is that there's a lot of studies looking at higher fat diets or paleo diets, seeing dramatic changes in diabetes. People actually reversing it. There's been huge reviews of literature looking at various ways that actually fat doesn't actually cause weight gain. It actually causes weight loss, and that it actually can reverse diabetes.

And I've seen that in my own practice, as I begin to experiment with patients. I used to tell them to be vegetarians or low fat diets, and I never saw people really reverse diabetes. And now, as I actually have increased fat in their diets, I see people literally getting off their insulin quickly. I've given people up to 50% fat diets, and in three days, they get off their insulin, and then they lose tremendous amounts of weight – 100 pounds, 150 pounds - and it's interesting to see the body responds.

And so I'm guessing what's happening is that the body has a wide range of capacity to respond to different diets. And if you're eating a basically whole foods diet, there's a lot of degrees of freedom within that, and it's really individual what people respond to. But how do you make sense of all that varied literature? Because if you're talking about your studies, they're going to show mostly that vegetarian diets are healthy, but what about all the other data that contradicts that?

Dr. Barnard: Well let's look at points of agreement. First of all, you're not feeding them bacon. You're not feeding them lard, I'm presuming, or chicken fat or butter or cream, that kind of thing. So the first thing is I think everybody, well hopefully every reasonable person, is going to say let's get away from the animal fats. And then if the point of controversy is just whether extra virgin olive oil is good or bad, or whether or not avocado is good or bad. If that's the only question, then I'm happy with that.

Dr. Hyman: Well, no, there are people using actually healthy meats and healthy animal fats not from feed lots, and from grass-fed animals and actually seeing the same kinds of results and showing all the bio markers like the lipid profiles, the inflammation levels, insulin resistance and coagulation profiles. All those things change really dramatically when they switch over, even eating high saturated fats diet.

So I think it's confusing out there for people, for the average person watching, because they're hearing all these things and they're confused about it. Even the U.S. Dietary Guidelines now, the advisory committee has said, we shouldn't worry about fat and we shouldn't even worry about cholesterol. We should still worry about saturated fat, but not about the others. So how do you make sense of that?

Dr. Barnard: Well you asked a whole lot of questions...

Dr. Hyman: I did. I'm sorry.

Dr. Barnard: ...very quickly, Mark. Where should we start? We could start with the dietary guidelines. Let's go there.

Dr. Hyman: Basically how do you make sense of all the varied literature? There's just so much contradictory literature.

Dr. Barnard: I deal with this question constantly.

Dr. Hyman: Yeah, I'm sure.

Dr. Barnard: People will say to me I just read a new headline about some new study that shows this, and I have to say short of, I feel your pain. Short of actually reading those studies, people have a hard time making sense of it.

Dr. Hyman: Even reading the study, it's hard to make sense of it.

Dr. Barnard: Sometimes. With regard to the Dietary Guidelines Advisory Committee. As you and I are speaking now, the committee report has been released, but the guidelines themselves haven't yet been. And I'm quite sure that soon they will come out and we'll have to see what they say. But the committee I think did a really good job in almost every respect.

They said that there are three healthy dietary patterns. Vegetarian is one, Mediterranean is one, and healthy U.S. is one, whatever that means. I was very glad that they would say that a vegetarian diet is one of the major mainstream ways of being healthy and they were good in raising the environmental issues. Although they got hammered by the meat industry, I'd have to say they were right.

Because I don't care if your cow is a dairy cow or a meat cow or grass-fed or feedlot-fed, that cow, A, by the way, A, doesn't want to have his or her throat slit. So for all the people who say maybe there's an ethical issue here, well, obviously they're right. And I was on the other side of that for a very long time with my family business. But I have to say it is something that you have to wonder how people ever got into that kind of work.
Secondly, from the standpoint of the environment, hands down, if people were honestly environmentally oriented they would not eat animal products at all. Not fish, not meat, not dairy, none of it. And I think it's hypocritical that people pretend to care about the environment while they're still eating animal products. We've just got to get beyond that. But that's not what you and I are talking about. We're talking about medicine.

Dr. Hyman: Well, I think the ethical environmental issues are real, and I think that we have to grapple with them and I...

Dr. Barnard: Well, I don't think we need to grapple with them. Frankly it surprises me that we even have this discussion. Because there isn't a person alive who doesn't know that it's unethical to be killing the animals and treating them the way that we do. We rationalize it. Someone called it "excuseatarians." I thought it was a cute word. And there isn't a person alive who doesn't know that it's anti-environmental. But we rationalize these things, it's time to stop. The discussion could end there. But because we...

Dr. Hyman: Well I had dinner with the head of the U.S. Ranchers and Farmers Alliance, and he would disagree with you. It was a very heated discussion.

Dr. Barnard: Oh I'm quite sure they disagree and the people who run cocaine disagree with my stance on drugs as well. Back to the dietary guideline. They're I think terrific in every way except for one, and that was the cholesterol thing.

They made a major gaff which was just a mistake. They said that dietary cholesterol doesn't matter. And when they wrote that, I have to say I scratched my head and I started writing to researchers I know, and they said they had no idea why the Dietary Guidelines Committee would suggest that diets...

Dr. Hyman: Oh, well because the American Heart Association and the American Cardiology Association published a position paper outlining the research, and that was their conclusion. So they really drafted off of that.

Dr. Barnard: They cited that. But that's actually not what they said. But you're going in the right direction on this, Mark. The Dietary Guidelines Advisory Committee said, "Well it looks like the American Heart Association and the American College of Cardiology seem to think that dietary cholesterol doesn't matter. So we're going to adopt that position." The American College of Cardiology wrote to the U.S. government and said, "That is not our conclusion. Please, dietary cholesterol does matter. We never said any such thing." And if you go back to that very report they cited, it never says that dietary cholesterol doesn't matter. It doesn't say that.

Dr. Hyman: It says it's no longer "a nutrient of concern" which implies that you shouldn't worry about it.

Dr. Barnard: No, here's what happened...

Dr. Hyman: That's a direct quote from the guidelines. It's not a nutrient concern.

Dr. Barnard: Here's what happened. The Dietary Guidelines Advisory Committee used the phrase that you said, not a nutrient of concern and they were citing this American Heart Association, American College of Cardiology report. That report does not say that. That report doesn't support that and the American College of Cardiology wrote to the government not long ago saying, "That is not what we said. You have misquoted us. Cholesterol does matter."

And I have to say that I attribute this whole controversy to the egg industry. Here are the facts. If you eat cholesterol in the same way as if you eat sugar. Does your blood sugar rise? Sure it does. If you eat cholesterol, does your blood cholesterol rise? Sure it does.

Dr. Hyman: Not much, not much, right?

Dr. Barnard: That's right, not much.

Dr. Hyman: Because you've got maybe a couple of a hundred milligrams of an egg. You've got 20,000 milligrams of cholesterol running around your blood, right? If you've got 200 milligrams per deciliter, five liters of blood, you add it up it's like 20,000 milligrams of cholesterol, and you put a few hundred in there, it's just like putting a few drops in a big jar of water.

Dr. Barnard: I wouldn't read it that way. The studies have been done hundreds of times and they're extremely consistent and here's what they show. If you take people who are eating zero cholesterol to start and then you compare them to people who are eating more and more and more cholesterol.

A person who's eating no cholesterol to start with, that's a person following a totally plant-based diet. If you add an egg a day to their diet, their cholesterol's going to jump and it might jump as much as ten points. And if you take your average person, and raise their blood cholesterol ten points you're going to see heart disease. That you wouldn't otherwise see.

But then if you take people who are not following a zero cholesterol diet. You're taking people who are already eating an egg a day, and then for them you add another egg, you see that their cholesterol bumps up but not quite as much as the person who was starting from zero and then you take a person who's eating bacon and sausage and eggs and so forth, and you take that person and add one more egg. You see their cholesterol still goes up on average, but not as much. So eggs are the highest cholesterol food but there are others, chicken, beef, cheese are the worst...

Dr. Hyman: But I've also looked at the literature, Neal, and I've seen that there's really often very little impact of dietary cholesterol on interventional studies where they actually give people eggs or they give people cholesterol and they see there's very little rise, it's insignificant.

Dr. Barnard: Mark, when something is not statistically significant it doesn't necessarily mean it's not huge.

Dr. Hyman: Well, that's what it means though.

Dr. Barnard: No, Mark, that's not what it is.

Dr. Hyman: If it's not a thing in research, if it doesn't mean it's statistically significant, it means it's not really showing a correlation that’s meaningful.

Dr. Barnard: No, Mark, that's not what I mean. If I take six people, and I split them into two groups of three, and I feed some of them eggs and their cholesterol level goes up 20 points. And the others I don't feed them that and their cholesterol doesn't change at all. Even though the difference was very large and clinically important it could be not statistically significant because it could be chance. It could be chance. So the egg industry. Are you with me?

Dr. Hyman: Yeah.

Dr. Barnard: Okay. So the egg industry, actually today, funds about 90% of the research on dietary cholesterol, and do you know why they do it? I'm not kidding.

Dr. Hyman: They want to sell eggs.

Dr. Barnard: They want to sell eggs, and they're doing studies to confuse you, Dr. Hyman, and all your listeners, and me, and the media, and everybody else into believing this nonsense.

Dr. Hyman: Listen, I hear you. But there's a lot of smart people on the Advisory Committee and for them to be duped like that, and they know the influence of industry, they know that these studies are funded. They looked at all the literature.

Dr. Barnard: No, you're being too kind, Mark. You're always kind, and you're being very nice. There are some of the people on the Dietary Guidelines Advisory Committee who work in institutions that get money from the egg industry. A lot of money. And in 2012, Tufts University requested $101,000 dollars from the egg nutrition center to do a study specifically challenging the limit on dietary cholesterol with the aim of challenging the limits in the guidelines. They got that money and they did a study and the study came out. And it cited fifteen prior studies on dietary cholesterol. Do you know how many of them were funded by the egg industry?

Dr. Hyman: A lot.

Dr. Barnard: Thirteen of the fifteen, and their conclusion was well your dietary cholesterol level does raise blood cholesterol but who cares. That's the world we live in now.

Dr. Hyman: No, it's challenging, you're right. You have to follow the money, I agree with you. A lot of the money...

Dr. Barnard: Here is the bottom line. When you eat sugar, your blood sugar rises. When you eat cholesterol, your blood cholesterol rises and it rises a lot. Unless you're already eating a lot of cholesterol and saturated fat, in which case it rises a little. But if you say to a man, he says to you, "How much cholesterol should I give my seven-year-old daughter?" How much? How many slices of bacon should I give my seven year old daughter?

You say, "What kind of health do you want for her?" And the answer is you shouldn't give her any. A healthy plant-based diet is what you want for your child. Now it's quite true that if a person is smoking three packs a day and they add three, four, five cigarettes. You're not going to see any effect.

A person who's eating a lot of cholesterol, you add an egg here, you're not going to see any effect. But that's no way to make guidelines. The other thing the Dietary Guidelines Committee said, "The other reason we don't care about cholesterol, is that Americans are eating so much less cholesterol than before." True enough, because the limits worked. Now what happens is they take the limit away and you see, unfortunately, a lot of news reports saying, "I guess those foolish scientists who thought cholesterol was a problem, well we've proved them wrong." And we have this nihilism now that I think many people have gotten sucked into...

Dr. Hyman: Well, they get confused because one day it's good, one day it's bad. It's like they give up, right?

Dr. Barnard: But the science is extremely consistent on this. Dietary cholesterol raises blood cholesterol period. There is no question about it. Where the controversy comes up is in news media headlines from people who haven't read the studies.

Dr. Hyman: Well, I've read a lot of the studies, Neal, and there are a subset of people whose blood cholesterol does go up when they have dietary cholesterol. But there's the majority, the 75%, don't in the literature that I've seen.

Dr. Barnard: How many don't?

Dr. Hyman: Seventy-five percent don't.

Dr. Barnard: Mark, God love you. That's just not true. Take any study and what you see is that the vast majority of people their cholesterol levels will rise. Now some of it rises a lot, and some of it rises not so much. They came up with a language for it. They'll call them hyper-responders and hypo-responders.

But a hypo-responder is not a person who's cholesterol didn't go up. That's a person whose cholesterol didn't go up as much as the average. So if you take a hundred people and you feed them eggs, you'll see some noise. There'll be some people where you don't see any change, it might go down, whatever. But that's not most people. The vast majority, their cholesterol levels will go up.

Dr. Hyman: What about the dietary fat recommendations? Because they actually took off any limits on total fat as one of their guidelines. Which used to be for years was restricting it to 30% or less or even less. And now they just took that limit off and they put no restrictions on total fat in the diet.

Dr. Barnard: I think we're back to, if somebody is looking at getting away from animal fat. That's something that almost anybody would think is a really good idea including me, and vegetable oils, for people who want to lose weight we do limit them. If you've got a young healthy person, and they want to have some guacamole and what not, I'm not really going to worry about it too much.

But when I see people who are really stuck with their weight, we limit the fats, the fatty foods as well. So that's with the nuts and the avocados and that kind of thing. There is a little bit of a danger in some cases when we're...sometimes these committees rely a bit too much on just observational studies. And when we look at our intervention trials, it's really quite convincing. That when people reduce dietary fat, they do tend to lose weight and you do see that quite a bit.

Dr. Hyman: Well I agree with you in terms of how the study was designed. But if you, like I said again, if you're really comparing optimal diets at ends of the spectrum. We don't actually have those good studies, and I was talking to one of the top researchers at Cleveland recently about how do we actually get funding to do that. Because that would be really useful to know that. Because I don't think we have that.

We have either a paleo diet compared to your typical American crappy diet, they're going to do better or a vegan diet compared to a typical crappy American diet, they're going to do better, obviously. But what if you compare optimal diets together, I don't know, I would love to see that.

Dr. Barnard: Yeah, you could. So I have to say what we do, absent that kind of study, is that we stick to the data that we have. And in the studies that we've done where we use plant-based diets that are also very, very low in fat, and then we choose the healthiest foods that are left, and we show that people do better and our data are quite compelling.

Dr. Hyman: So what would you say for breakfast, lunch and dinner would be an awesome diet for someone who's got diabetes, and wants to lose weight, and what would they be eating? Now you've read the book about this called "Reversing Diabetes" so you know a lot about it. So I want to hear how you help them.

Dr. Barnard: The diagram that we use is a plate that's got four quadrants and those quadrants are vegetables, fruits, whole grains and legumes, or you can think of them as beans, peas and lentils. And so, for some people they're more in one group than another. There are some people who really love to have fruit and if that's their thing then they can have all the fruit they want. I'm hoping that people will eat a balanced diet so that over the course of the day they'll get all of those healthy food groups. But you have others who say, well, I really love a big bowl of oatmeal.

Well that's a whole grain. So they might have that with some blueberries on top. So it's a little fruit light, grain heavy. When I'm down in Mexico visiting my friends down there they say, "Don't you have black beans for breakfast?" Which is for them a more normal thing, which they might have either with a corn tortilla, or in some cases, a wheat tortilla. So that's the legumes group. So my feeling is that a person can do it any way they wish to. If you're a sausage person, have the veggie sausage. If you're a bacon person, have the veggie bacon. I wouldn't have the meat version of it.

Dr. Hyman: Aren't you worried about the isolated soy protein, and the way they process it, and the hydrolyzed soy protein being linked to cancer in animals versus whole soy proteins. I mean that's another processed food right?

Dr. Barnard: Well, removing the muscle tissue from a pig and putting that in your mouth is going to be the worst choice...

Dr. Hyman: Oh no I'm not talking about a comparison diet. I'm not talking about having bacon. I'm not talking compared to regular sausage. I'm just saying should we be eating that if we're a vegan?

Dr. Barnard: Yeah, I think it's a fair point Mark. I use those foods as transition foods really. So the sausage eater who instead of Jimmy Dean has Gimme Lean. That's a good move for that person. But I think you're right, that ultimately you'd want to transition that person to maybe just the beans and salsa and skip the processed things. Although having said that, I got to say, I don't know of any literature that shows that there's any problem with processed soy products in humans. If anything...

Dr. Hyman: Dr. Hiblam's work from the NIH, where he looked very carefully at isolated soy protein. It's extracted as a byproduct for creating soybean oil. Compared to whole soy foods and found dramatic differences in cancer rates in animal studies. So that got my attention.

Dr. Barnard: That kind of thing will get your attention but hopefully it won't get your vote. Because when you look at individuals who consume soy. We don't have a lot of good data on heavily processed soy.

But we do have data on tofu and soy milk and things like that, and there it's really quite striking. Despite the paranoia that you'll see about soy products on some websites, women who consume the most soy have a dramatic preventive affect with regard to breast cancer. And also women who have been diagnosed with breast cancer, and this is really important. We have oh, experience of maybe 10,000 or more women published on this. A woman who has had breast cancer in the past and eats a high soy diet now, cuts her risk of recurrence by about a third, roughly 30%. Which is great, because they all get the opposite message. Somebody, their doctor just went online...

Dr. Hyman: The doctors say don't eat soy because it's got estrogen-like properties, well it's...

Dr. Barnard: Which is a mistake.

Dr. Hyman: Right. Well, it's a modulator, so it actually protects and blocks the estrogen receptors.

Dr. Barnard: Yeah, so my assumption is that we're probably okay with the soy based sausage and things like that. But I'm with you. I think the more it looks like a soybean, edamame, tempeh. I think those are the healthier choices.

Dr. Hyman: Well, this has been an awesome conversation, Neal. Tell us about how people can find out more about your work and about some of your books, where you'd like them to find out more about you.

Dr. Barnard: Well, thank you, Mark. Our website is PCRM.org, that stands for the Physicians Committee for Responsible Medicine, PCRM.org. My most recent book is "Power Foods for the Brain", which is all about eating to prevent Alzheimer's disease.

If you've got diabetes, please take a look at my diabetes book, and I hope that you'll find it useful. And our medical center that we are just setting up here in

Washington is called the Barnard Medical Center. And we are going to see patients who have no insurance or people who have any kind of insurance. Medical students are coming through here, and we're just really excited to put nutrition front and center of the medical practice.

Dr. Hyman: That's so exciting, and I hope we can continue to work together on things like the ENRICH Act which I hope gets passed. Because it's going to change the way doctors are trained. To think about nutrition as medicine, not just as calories. So thank you so much for your work, Neal, and advancing ideas about plant-based diets. Thank you so much.