

Transcript of Dr. Neal Barnard presentation in Omaha, July 24, 2024

Welcome by Ken Beckman, President of Lifestyle Health Alliance

Welcome, everyone. Good evening. Thank you for being here tonight. My name is Ken Beckman. I am the President of the nonprofit Lifestyle Health Alliance, who is organizing this event tonight. Really want to thank each of you for taking that time out of your busy schedule to be here tonight.

Now, many of you were at our event in April at the Omaha Community Playhouse. I am very excited to announce that our speaker tonight, Doctor Neal Barnard is here in person and will be and he'll take the stage in just a minute. So thank you Doctor Barnard for being here.

I want to give a special thanks to our many volunteers who helped out tonight to make this event go so smoothly. And I also want to thank each of you who made a generous financial contribution to help also make this event possible. We really appreciate that. And then we have two major sponsors tonight, Cafe Botanica; they had a table out in the lobby tonight that I hope you will visit. And we also have Enliven Foods, so please join me in thanking them for their support.

So just one housekeeping item. After Doctor Barnard's presentation, we will have a period for questions. So please fill out this question form that's on your table either now or during the presentation, and we will come around right after the presentation and, and collect those. We won't be able to get to all of them course, but we'll try to have Doctor Barnard address as many as we can. So now at this time, to introduce our speaker, I'd like to bring on my colleague and our Director of Nutrition Education for Lifestyle Health Alliance. Please welcome Melissa Sherlock.

Introduction of Dr. Barnard by Melissa Sherlock, Director of Nutrition Education for Lifestyle Health Alliance

Hello, everyone. Thank you for being here. Can everybody hear me? OK, Well, thank you so much. I am very excited to have the honor to introduce our special guest tonight. Now I know you can read a lot about him in your program. He's got a fabulous bio. He's done so much, he's written so many books, authored so many studies. But I want to talk a little bit of personally about what he has meant to my life. Doctor Barnard is the reason I do what I do, which is helping people to overcome or prevent chronic health issues and other issues with a plant based diet. He's actually maybe directly or indirectly responsible for all of you being here tonight as well, because several years ago I applied for and was accepted to be trained as a Food for Life instructor. I traveled to Washington, DC to receive that training. And when I came back home, in my first class that I ever taught was my nonprofit partner, Laura Beckman. The Beckman's were already plant based and they were just so excited to see a class being taught on whole food, plant based nutrition that Laura joined the class. And then after that, Ken and Laura have supported everything that I have done as a food for life instructor. They came to every talk, big or small, every class, big or small. And then eventually we formed this small nonprofit to get the message of food as medicine basically out to our community. And that's Lifestyle Health Alliance, which as Ken said, is bringing you this program tonight.

So I want to tell you a little bit more about Food for Life because it's such a fabulous program. It's by the Physicians Committee, which is under the direction of Doctor Barnard and it trains people like me to teach plant based cooking and nutrition classes in our communities. And it started 23 years ago with a single class that related to how food helps fight cancer. And now the program has 18 full classes. I want to give you just a few stats from 2023. Last year we have 403 instructors and they taught classes in 23 countries around the world. Teaching materials are being translated into different languages all the time. We taught just under 1700 classes to over well over 17,000 participants and that was a 36% increase over 2022. So the program is just keeps getting bigger and better. And I'm so very proud to be a part of it.

So Doctor Barnard has worked tirelessly throughout his career helping people through his studies and through his many books. And he's also gone to Capitol Hill and gotten the dietary guidelines changed. He has fought for higher ethics in medical research and he has pushed for healthier meals in hospitals. But I think another brilliant thing that he did was to expand his work exponentially through this army of passionate Food for Life instructors who go out every day and help people learn how to live a healthier life through diet. And in doing what we do, we Food for Life instructors have been able to bring together all of our core values, which are taking care of sentient beings that we share the planet with, preserving the environment, and also helping people to live a long, vibrant and healthy life.

So I wondered if you knew that Doctor Barnard is also a musician? He plays guitar and keyboard for a group that he formed called Carbon Works. He writes all the music and the lyrics and he gets these amazing vocalists and musicians from all over the world to record music that has a message. And so if you have children or grandchildren, I would invite you to go check out one of his songs that he wrote during COVID for children. It's a lullaby called *Everything's All Right*. It's very beautiful. Music is just one more way that Doctor Barnard makes an impact in the world.

So I I in in approaching this evening's event, somebody wrote to me and this is what she said, "Dr. Barnard's writing and speaking style is so clear and easy to understand for everyone, regardless of their nutritional education. Plus, he has such a genuine and likable approach." I really couldn't say it much better than that. He's such a gentleman. He takes everybody where they are. He does encourage you to follow this very healthy way of eating.

So if you had, say, the opportunity to have Doctor Barnard for dinner or have dinner with him, you would you would leave wanting more, more time with him, more time to get to know him, and more time to experience his warmth and goodness and kindness. So I'd like to ask you all, ladies and gentlemen, to help me give a big, warm, gracious Heartland welcome to my hero, Doctor Neal Barnard.

Dr. Neal Barnard, Author of The Power Foods Diet

Thank you so much. That was the nicest introduction I ever had. Thank you so much. I want to say a big thank you to Melissa and to Kevin and to Ken and Laura and, and also to all the volunteers. Can we give a hand to the volunteers who have really helped tonight?

Tonight I'd like to talk about what's unfortunately become a real big issue in the United States, which is not just the fact that we're dealing with obesity and overweight and all the problems that come with it, but also sometimes the solutions to it get complicated and cause problems of their own.

You know what I'm talking about, where people go on a diet that ends up doing more harm than good, and then they're told, well, your problem is genetic, you need to get in line at CVS and get injections that you'll be on for the rest of your life. No, no, no, no, no. You don't mind. I'd like to take a different approach.

So the old fashioned idea was if you've got extra weight, you need to get out your calorie chart, get out your food scale and eat tiny little portions and by Wednesday you're ready to eat the sofa. You just know these approaches really don't work very well. So they've kind of fallen by the wayside and what has replaced them over the last, I'm going to say 15 years or so, was a new approach on dietary fads that it's not so much how many calories and this, it's the quality of the food, the types of food that make up our routine. True. We've learned that people who split from a more animal based diet to a more plant based diet and to be slimmer, healthier, live longer, have lots of benefit. That's true.

But tonight what I want to focus on is this, that there are certain foods that are actually much better than others for weight. And this is turned out to be kind of a surprise to me and it may be to you. I want to give a lot of credit to our friends at Harvard. Back in 2015, Harvard researchers looked at more than 100,000 people and they discovered that the more they ate of certain specific food, the more weight they lost. And that's the opposite of what you think, right? You think if I eat more, whether it's healthy

or not so healthy, if I even eating more, I've got to gain weight. Now what they found is that the more people ate of certain specific foods, they tended to lose weight partly because the foods could **tame your appetite** or boost your metabolism or whatever.

And at the very top of the weight loss food list was the humble blueberries. Yes, blueberries, these round little purple things. And it wasn't just blueberries. It was all their cousins. It was blueberries, it was strawberries, it was raspberries. And including blueberries in muffin, as long as you didn't put in two tablespoons of butter, it would work. And so the question is why? How is it that blueberries could be associated with weight loss and they clearly work. The more people would eat them, the more they were part of their routine, the more weight people would lose. So people realized that the answer is right in front of them. The reason they are blue is what are called anthocyanins. That's the blue pigment. And they're all different anthocyanins. There are blue ones in blueberries, there are red ones in strawberries, and in the fall when the leaves turn, those are all kind of nature's anthocyanin painting box that you see. And they happen to be powerful antioxidants as well. They seem to boost the metabolism a little bit. But at Harvard, it was just an association. People ate them, they tended to lose weight. Two years later, researchers in the UK did a really cool study. They brought in 2734 twins. Everybody was part of the twin pair and everyone got a DEXA. (Dr. Barnard realizes his slides had not been presenting). Did you hear anything that I said? Oh, my. But you can't see my presentation. It looked great from here. Do I have to start over? I should pay more attention. (Presentation is on screen) All right. OK, so there we are. People in Omaha are so patient. How long was I going to go on like that?

Anyhow, now let's go to the UK. Researchers brought in 2734 twins. Everyone had a DEXA scan. You lie down and they scan your body, and they tell you your body counts. Some of you may have had one. And what they found was that within each twin pair, the one who ate the most anthocyanins had less body fat overall, but specifically less abdominal fat compared with her genetically identical twin sister. So OK, at Harvard, it was an association. Now we're seeing we're taking genetics out of it. That's that's not it. It's something environmental and something about food. OK. So by the way, they also discovered it was not just blueberries. There are a lot of things that do it. A pear has that red blush on it. That's anthocyanins. Grapes have anthocyanins. There's lots of food that have them, and they all work. But it's not just berries, it's also in a whole bunch of spices. Ginger is one. Cinnamon is a really cool one. Cinnamon contains an aldehyde. For those of you who took high school chemistry, remember aldehyde; researchers are not very creative people. They discovered an aldehyde in cinnamon and couldn't figure out what to call it. OK, cinnamaldehyde, that's what it is. OK anyway. But the thing about it is it does stimulate your metabolism. So in your intestinal wall you have a receptor called the TRPA 1 receptor. It's just sitting in your digestive tract waiting generation after generation for you to eat cinnamon toast. And yes, I'm not making this up. And when you do, the cinnamaldehyde comes right down and it park, it attaches to that receptor and it squirts a little adrenaline into your bloodstream. And so your metabolism rises. And don't freak out. I don't have to peel you off the ceiling. It's like a little gentle increase in your metabolism from the cinnamon. So does it work? A whole bunch of people have been doing some studies. Let me share one or two with you.

This study came out in 2017. They brought in 116 people. Half of everyone got these little brown capsules. Some had cinnamon, some had something that looked like cinnamon but was a placebo. And in the ones that had cinnamon, it had kind of a heroic amount. It was about a teaspoon a day, three grams, which is, I mean, it's very doable, but it's, it's way more than most people ever eat. You know, that bottle of cinnamon, it's been like on your cabinet like for five years and eventually I'll use this up. OK, Most people don't eat that much. But what they found over 16 weeks, the average person lost 7-1/2 lbs. So when I read this study, I thought, OK, in the fine print was this funded by the American Cinnamon Council? You know, something like that, because there is a lot of nonsense in the world of science and the world of food. So, this will not be on the test, but the way we sort out if something's true, is you look at every study ever done and you look for consistency and findings. And this is what we call a forced plot. You look at every study that looked at cinnamon and are you familiar with body mass index? It's your weight adjusted for how tall you are. And that middle vertical line, that zero line, if the study result is right there, nothing happens. If it's to the right, people gained weight. If it's to the

left, they lost weight. And as you could see in pretty much every study, people lost weight. So we've decided it's real and we think we know why it is so good enough for me.

OK, hot Peppers. Did you ever go to a Mexican restaurant and the chef was just a little overzealous with, with a jalapeno slices and your tongue is sort of like on fire and you're trying to pretend you're OK? They have what are called capsaicinoids in in them. And capsaicinoids do two things. They have a slight ability to reduce appetite, but they also stimulate metabolism. And you should see the research. The volunteers come in and they give them these like amazingly hot peppers and the, the volunteers are like sweating. And then they stick a thermal probe in their ear. These things you use on kids, you know, to measure, you're measuring their tympanic membrane temperature. And it goes, it goes right up. And for about an hour there, what what's happening is the capsaicinoids trigger thermogenesis. So you're burning calories up instead of storing. So it's a cool thing. By the way, they can be fresh, they can be pickled. It doesn't matter. What they cannot be is a bell pepper. Bell Peppers are great. They're tasty, they have crunch, they've got vitamin C, but they are not hot, so they are going to leave your metabolism totally untouched. The hotter it is, the more the affect your metabolism. Check your life insurance policy. OK, you know, be careful. Anyhow, so I got all excited about this. I know this is really cool.

You know, all the time I've been saying don't eat this, don't eat that. But now suddenly we found that food that caused weight loss happen to be really fun, foods that work really well in recipes that people like. So I don't know if any of you know Dustin Harder or Lindsay Nixon--They are, in my view, the world's greatest recipe developers. And so we got together. We started thinking, all right, let's take these, what we're going to call power foods, and let's make them into appetizers and soups and main dishes and desserts and all kinds of stuff. So Dustin said, all right, I can make you very quickly and easily a blueberry syrup. And Lindsay said, well, I can make you French toast with cinnamon. So you've got two power food built into America's favorite Sunday brunch breakfast. And so that was really cool. And we made recipes. We made what we call easy ones. You're in and out of the kitchen fairly quick. And then we made some that we call convenient where you're not in the kitchen basically at all, just like open a jar or something like that. And then we made some a little elegant where it's the easy recipe that is the the French toast, but a little mint leaf put with it or some, you know, confectioners sugar or, you know, just to make things impress your friends. So that's what we did and we got all carried away. Dustin made this triple Berry sorbet, which these are all the ingredients. It's just blueberry, strawberries, raspberries, a little banana, Berry or cranberry juice, Maple syrup. You put it in a bowl and you know, those immersion blender things go like that and you just blend it up, stick it in the freezer. That's the whole deal. Put some Saran wrap on top so it doesn't get little ice crystals on it and it comes out just delicate and light. If you have relatively few ingredients in a recipe, sometimes they come out a little bit better than the ingredients can speak to you. And it's not this chemical sugary, hit you in the head pudding kind of stuff. It's really light and nice.

So then for kids, Dustin said, all right, this is it. Blueberries, bananas, pears, almond milk, lemon juice. That's the whole deal. Blend it down and you know that part of the store where they sell can openers and baking sheets in the grocery store they've got popsicle forms in the bigger store and they've got popsicle sticks. So you make this mixture, put it in the popsicle forms with sticks, or you can put it in ice cube trays and put it in the freezer. And when the 10 year old kids come by expecting junk, you're giving them healthy food disguised as junk, it's purple, it looks crazy, but everything in it is something you're really proud of. And they could carry it home and, and it's anyway, it's really great.

So anyhow, so Dustin did all the food photography and when he sent it to me, I said nothing. This is 2 inches away from food porn, I mean, because it is. And he said, yeah, that's the whole idea. So the, the reason we wanted to make this was to take all the punishment out of adopting a healthy diet and just have it be fun.

So OK, all right, so let's go back to Harvard and let's go through the list. Berries were the top of the Harvard list. Number 2 was cruciferous vegetables. And you already know these foods because broccoli and cauliflower and Brussels sprouts, they're cancer fighters. They're famous for that. But they were #2

for weight loss, meaning when people really eat these, they tend to lose weight. Number 3 was green leafy vegetables in general. So that could include spinach or asparagus. They're not cruciferous, but they're healthy. And even lettuce, you know, people badmouth lettuce, but it's good, it's fine. Number 4 was melon, cantaloupe, watermelon. Oh, by the way, really important melon fact; You buy a melon, buy a cantaloupe, it's on your kitchen counter. The next day, it's still on your kitchen counter. And on day three, it's still there and it's starting to get little dents. And then on day four, you're thinking, I wonder if this is still good. And day five, you throw it away. So there is something about the human spirit that doesn't allow us to just take out a sharp knife and cut the damn thing up. But if you do, and here's what you do, you cut it into these little bits like that and you put it into the cold museum. And then when people come by and they're kind of like looking for like, what do you got in here? They're going to eat that. And they're not going to eat the junk food that they had in mind because you cut it up for them. OK, am I wrong? OK, All right. So same thing with watermelon. Oh, by the way, extra credit--that orange color is beta carotene. The red color is lycopene; those are cousins. They're both carotenoids and they are cancer fighters. And they also are part of why we see weight loss. All right, citrus fruits were #5 and the big surprise here was it wasn't just oranges and grapefruits, but it was also juice. And people will say don't have the juice, have the whole fruit. And they're right that that's good advice. I got to tell you at Harvard, the juice worked. So I'm not saying anything bad about orange juice. Group number 6, our parents knew what a bean was. Kids today may have to look it up on Wikipedia, but beans are good stuff. The whole legume group: Beans, peas, lentils, they're all great, whether you have them in black bean soup or a burrito or as a soy. The entire soy family was associated with weight loss. And by the way, soy has gotten a bad rap in some corners. Have any of you heard the idea that soy will give you cancer? Let me see hands for people who heard this urban myth. OK, All right. By the way, in case you're still subscribing to that, let me just really quickly deal with this. Soy contains what are called isoflavones and they do attach to estrogen receptor in your body. And that freaked everybody out. They thought, OK, it'll attach to the estrogen receptors in a woman's breast, she'll get breast cancer. And that wasn't a stupid idea because estradiol, the estrogen a woman makes especially vigorously during her reproductive years, attaches to estrogen receptors on her breast cells. And if you have a little bit too much, you're going to get breast cancer or your risk is much higher. Well, when people found that isoflavones do this, people would say, well, don't have it because it'll give you breast cancer. And if you've got breast cancer, don't have soy milk. And that has kind of lived on despite the fact that people have put it to the test. And we now have about a dozen studies or more showing really clearly that women consuming the most soy have about 30% less risk of breast cancer compared to everybody else. It has exactly the opposite effect that we thought. And women previously diagnosed with breast cancer have about 25 percent, 30% reduction in mortality. So soy is protective and it does the same for men with regard to prostate cancer. Your risk is reduced so it doesn't cause cancer, it helps prevent it. So what made all this finally make sense is that researchers discovered there are two different classes of estrogen receptor. There's estrogen receptor alpha, which is where estradiol attack, and that's the gas pedal for cancer. Estrogen receptor beta is where isoflavones attach and that is the brake on cancer. So we now encourage women to have lots of soy. Now it's optional. You don't have to have it. But all forms of soy, not just edamame and soy milk and tofu, but even the ones that where you can't really see a soybean anymore, I'm talking about like soy bacon. You know, one day they'll make snow tires out of soy. It's amazing. You, you can, you can turn it into anything. Anyway, they all seem to reduce cancer risk. OK, enough said.

So the power foods have three possible effects. Some of them tame the appetite, others of them trap calories so you can't absorb them, and some will boost your metabolism. And let me just quickly walk you through how this works so you can put it to work. Appetite taming. Your digestive tract keeps track of the food you eat, and after a meal, your digestive tract triggers the release of something called Glucagon-like peptide #1 (GLP1) The GLP one is made in your intestinal cells. It goes through the bloodstream, goes to the brain and says to your brain, hey, you ate food. I'm dealing with the food, I'm digesting it. Stop eating that. It turns down your appetite. That's what it's got. So Novo Nordisk, the pharmaceutical company, said what a great hump. It turns down your appetite, it'll make you lose

weight. I'd love to patent that. You can't patent it! It's natural, it's in your body. Mother Nature has the patent on GLP 1, so they make a synthetic DLP 1, and DLP 1 receptor agonist called Wegovy, and it's also branded as Ozempic, the same drug under two different names. And it's a synthetic. It's very concentrated and it does reduce your appetite. And so it's all over the news that you can inject this drug and now there's all kinds of issues with it. It costs \$15,600 per year for one person. It's got various side effects, and when you stop using it, all the weight comes back. So it's very much a mixed thing. But anyway, my research director, Doctor Hana Kahleova, who some of you may know, wanted to do a study to see if different food triggered DLP1 in different ways. She brought in volunteers and gave them a meat sandwich, a fast food burger basically, and what she found was nothing. It doesn't cause GLP1. But then she said, OK, wait a minute, let's try a different meal, have a plant based sandwich and bang, the GLP1 went right up. In other words, your intestinal tract is not so easily fooled. It's looking for certain kinds of things in order to tell the brain I've got the nutrition I need. It's looking for fiber, it's looking for complex carbohydrates. Neither of which are in a burger. So don't get me wrong, you will eventually stop eating if you eat burgers because stomach stretch tells you I'm hurting. And for many people that's their signal to stop eating is because they're having enough stomach stretch. They will continue to eat until a little bit of pain kicks in. You know what I mean? For many people, a meal's not done until I hurt a little bit. But you have an appetite turn-off switch that kicks in about 200 or 300 calories sooner than that if you eat the right food that say I'm done. So that's the appetite taming effect.

And the other thing is just how many calories there are in certain food. You know the answer to this, how many calories there are in a gram of fat? Nine. This is the PhD audience. OK, All right, OK, all right. So you know this. OK, so carbohydrate has 4. Very good. So anyway fiber has almost none and the reason this is important is if I fill up on a lot of fatty foods I will fill up but when I do I got a lot of calories. If I filled up on carbohydrates I will fill up with less than half the calories. OK so my team of killjoys decided to put this to the test where we tested a Mediterranean diet. And a Mediterranean diet, as you know, it does have vegetables, it has fruits, but it has some chicken, chicken fat, some fish, fish fat, some olive oil, olive fat, each of which has 9 calories per gram. OK, so you know where this is going. Anyway, what we did, we brought in 62 people. We split half of them to eat the Mediterranean diet. The other have to do a completely low fat vegan diet. After 16 weeks, everybody switched to the opposite diet. OK, so here's what happened. Everybody came in and the Mediterranean group started its diet, and they thought, this is great, this is so indulgent. I'm eating all these wonderful foods, it's like I'm driving down the coast of Tuscany. Wow, this is great. Except I'm not really losing weight especially well. And the vegan group discovered, OK, a vegan diet doesn't mean that I have to acquire a taste for folk music, actually. And I'm losing weight like crazy. This is really cool. OK, 16 weeks go by. Stop. Take four weeks off, now adopt the opposite diet and the Mediterranean group now went vegan and the weights started to finally come off. The vegan group went Mediterranean and they just about rebel because they said wait a minute, I have completely lost my taste for chicken wings. I don't want oil glopping up everything. My tastes have changed. I like how I feel. This is the way. And those of you have done this, you know what I'm talking about. You adapt and you think this is OK, but we said no, for science you've got to eat fish and chicken, a little bit of cheese and whatever. And seriously, they gained, they started regaining the weight they'd lost. So the Mediterranean diet is in many ways better than the diet that people were on before. But it does not cause significant weight loss, it does not lower your cholesterol level. It will lower blood pressure, we found probably because of the polyphenols in oil. And by the way, did any of you see of the study just came out today?

Researchers tested in Florida. Monica Agarwal and her team brought in people, gave them a vegan diet and then they gave them a vegan diet plus a little bit of olive oil, just 4 tablespoons a day and had others do it in the opposite order, vegan diet plus olive oil and then vegan diet without. And what they showed is that little bit of olive oil would interrupt weight loss and completely mess up their lipid level, their cholesterol. You think, wait a minute, Olive oil, isn't that the good fat? Yeah, I mean, it beats lard. However, it is not as good as not having it. So sorry to be a killjoy. I mean, you know, olive oil is better than many kinds of fat, like chicken fat. But you don't need all that gloppy oil. And when Mother Nature

made the olive, he said like, isn't this good, you know? But no, we've got to build a factory and take \$10,000 and throw all the pulp and fiber away and put it in a bottle and call it, and if it's virgin, everybody buys it. And anyway, it's just funny commercial thing. OK, so that's appetite taming.

The second one is **calorie trapping**. Very wild. When you eat fiber, bean, vegetables, fruits, the fiber that's in the roughage, the roughages in them, you chew it up and it becomes a million microscopic sponges and it goes down your digestive tract. And as it does, it finds calories you haven't absorbed and it traps and the calories are stuck in the fiber and you can't absorb them. And they go down your digestive tract, and eventually they go out with the waste and you flush them down the toilet. And researchers at Tuft University quantified this. They did something my research team is never going to do. They brought in 90 people and took stool samples from everybody. Yes, they did. And so half of them, they said you get white bread and the other half gets whole grain bread. So white bread has the fiber removed. And what they found over six weeks is that you could easily get rid of about 100 calories per day just by that simple change. Now, 100 calories isn't a lot, but this is in addition to the calorie loss that you have from the appetite taming effect and the metabolism boosting effect. And the other thing is it's not just bread. I mean, there's fiber in all kinds. Animal products don't have fiber, but plants do, and all plants have it in their natural state. And so there's a lot of fun things that you can eat that give you this calorie trapping effect that people have never heard of. But it just worked. OK.

The last thing is **metabolism boosting**. And to explain this, let me address the question that was probably on your mind when you came here tonight, which is what is the difference between you and a crocodile? What do you think? Anything come to mind? I mean, look at that face. Yeah. Have you thought? OK, Well, give you a hint. When it's a cold day, he has to find a warm spot, a sunny spot to lie down. It's cold and she can't make body heat. She has to have the sun hit her back and create heat. And that's true for all the lizards need it. They're cold blooded, right? So they can't make body heat. You are not cold blooded. I do have to say when I give lectures in Washington, DC, where I live, I have to change the text a little, a little bit, but I'm here in Omaha. You are not cold blooded. So what that means is you can turn food into body heat and you make this automatically from the food that you ingest. So we quantify this in my laboratory. People come in and they sit down in, we have several rooms. They sit down in a chair and I put a mask on them. It goes over there. You're going to feel like an astronaut. We're trapping your inspired and expired gas. So I know how much oxygen you're taking in and how much carbon dioxide you're putting out. And with some really simple arithmetic, I could tell you how many calories you're burning minute by minute. And you're hardly burning any because it's 6:30 in the morning and you're still in your jammies and you haven't had breakfast. And you just came into my lab. So your metabolism is really slow, slowest it's going to be all day. Now I'm going to give you breakfast and I'll give you a specific test meal and your metabolism starts going up and it stays higher for about 3 hours. This is what we call the thermic effect of food. You're turning food into body heat. Some of it's going into the atmosphere. You're not storing it, you're burning. OK, but different foods have different effects. Butter gives you no burn. I can give you 2 sticks of butter, doesn't do anything. So if I put on the mask and I give you a whole bunch of butter, your metabolism just stays flat. The butter is absorbed into your bloodstream in the first 40 centimeters of your digestive track, goes right in. No burn. OK, So we did a research study to try to investigate this and understand what does cause the burn. We brought in 64 women. Everybody was overweight, everyone was after the age of menopause. Everyone had done Atkins, South Beach, Danny Craig, you know, Nutrisystem, cabbage soup, you name it, they'd done it. And we said no, we're not going to do any of those. We're going to do a low fat vegan diet or a comparison diet, a conventional chicken and fish kind of diet. No exercise. It's only a diet change. And it was a 14 week test, and our participants were horrified because we said you can eat all the pancakes you want. They said, wait a minute, all those carbs, all those calories and this is just low fat vegan diet. Those are the only rules. No animal products, keep oils out. I can eat linguini. I can eat chili, I can eat toast. I can eat all this stuff. Yes, you can. And about week three, one of the research participants discovered that Twizzlers are vegan. Now it's true. Now, I got to tell you, when you do research studies, you make your rules and your Institutional Review Board approves your study and you follow your rules.

And I was, you know, thinking, OK, low fat vegan. I didn't think about Twizzlers. But, it's true. I mean, it's just sugary, starchy, artificially colored junk. There's no animal products in it. So anyhow, our vegan low fat Twizzler-fueled research participants set off on their path to the unknown. But anyhow, here's what happened. Their carbohydrate intake went up because they're eating rice and they're eating vegetables and sweet potatoes and stuff. Their fat intake went down in both groups, but especially in the vegan group. And when they stood on the scale, the vegan group lost almost 13 lbs in 14 weeks, compared to about 8 for the more conventional diet. That's good. So we tracked them for two additional years. The comparison diet did just what dieters do. I mean, the weight comes back, but on the vegan diet, what you're doing is you're making a qualitative shift. You're not trying to starve it off. So there's no impulse for the weight to come back and their weight loss is permanent. So that was good without limiting carbs, without limiting portions, without counting calories, people lose weight. Great. But we measured everybody's metabolism. They sat in the chair, they put on the mask. We measured their inspired oxygen, we measured their carbon dioxide output. What we tracked was their calorie burn. Fourteen weeks later, everybody comes back in the lab, sat in the same chair, same mask, exact same test meal, and their metabolism is 15% higher. Wait a minute. Exactly the same amount of the very same foods, and you are now burning calories faster. Why? OK, give me two minutes. I want to walk you through the science. OK. You may remember from high school biology, you have mitochondria in your cells. These are little organelles. They are your burners. If they see a little bit of sugar or something like that, they burn it up and they turn it into energy. You've got a lot of mitochondria, but your mitochondria are always kind of in motion. They're changing. Your body makes more of them. It can contract that population and make less. Now I'm going to go to the pizzeria and eat a big piece pizza, and the fat from the pizza gets into my cells and the fat builds up inside the cell. This is a muscle. Now, doctors hate words like fat because it has only three letters. So we're going to call it intramyocellular lipids. But it's fat inside the muscle cell. And when the fat builds up, it stops the mitochondria from working. It slows down your metabolism. So let's say you're 50 years old and you say, oh, my metabolism is going down. When I was a kid, I could eat anything. Now I just look at food and I gain weight. You are right, your metabolism has slowed down, but it has nothing to do with your age, nothing to do with your genes, nothing to do with the calendar. It has all to do with foods getting inside your cells and slowing down your mitochondrial action. So you come into my research study and I say we're not eating any animal fat, we're not eating animal products at all. And we keep oils really low and there's not much of any kind of fat. And I can with MR spectroscopy, look inside your cells and I could see the fat going away and the mitochondria say, great, this is nice. I'm not in an oil slick anymore. I can burn calories for you again. So your metabolism speeds up and it's not huge, but it's about a 15% increase. And so we did this first in 2005. We did it again in 2020 with a large group of people. And you see it's a very predictable effect. OK, some researchers in Louisiana quantified this. This will not be on the test. But what they did is they brought in individuals, gave them a high fat diet and found that you could slow down mitochondrial Biogenesis. You're just not making the mitochondria anymore. This was a three day study in three days on a high fat diet. I can shut your metabolism right now. Yeah, I can. I can make you insulin resistant today in a matter of hours. Yeah. It's that fat. Your body is super dynamic now. Once you put all that fat into your cells, it's a slower burn to get it out again, but you can do it. OK? The AMA published this report from our group in 2020.

So the thing, though, is to forget the science and then just go in the kitchen and realize that we can do this with foods that some of which require no cooking at all, really. Things that we can make that are good and that our family members like. And it's not diet food. It's fun food, it's appealing and it's colorful. All kinds of things.

There are also certain foods that are much worse than others for weight and I want to just walk you through these really quick. One is salmon. A lot of people say, well, salmon, that's got to be the one with healthy fats and it does have healthier fats compared to beef fat or chicken fat, for example. It's somewhat lower in saturated fat, but we see in our research study, if somebody is eating a fair amount of salmon, their weight loss just grinds to an absolute halt. Why? Obviously, you read the label. Atlantic

salmon is 40% fat. Chinook salmon is 52% fat. If it were any worse, it would be Vaseline. And people really have trouble. You can't, you can't lose weight with that. 9 calories in every gram of fat. That salmon fat is getting inside your cells, your mitochondria say, what is this? And it just doesn't work. Am I cheering you up? OK. All right. Olive oil, Olive oil is a better quality of fat, but it has 9 calories per gram. Coconut oil is a worse quality of fat and it has exactly the same calorie content, 9 calories every gram. But the reason that I'm singling out coconut oil is you will hear a lot of people saying it's magical. Have you heard about coconut oil? It's natural. You could use it and add it to things and it's added to a lot of stuff. And there's coconut oil, there's palm oil. They are from different plant, but they are both heavily saturated. That means they raise your cholesterol. So on the left is coconut oil, 83% saturated fat. That is terrible. Then you've got palm oil next to beef, which is about the same. And then you get to olive oil which is about 14% saturated or something like that and others are lower. What this means is that the coconut oil will not only cause you to gain weight and impair your mitochondria, it will also raise your cholesterol in the bargain and do that significantly. Will it do it? Researchers published a meta-analysis of it and they find that your LDL, your bad cholesterol goes right up and it does the same thing with palm oil. And the reason I want to single this out is it's in everything. You buy some peanut butter, you think it would had peanuts in it and it does. But to make it we have a nicer buttery mouthfeel, they decided let's throw some palm oil in there, which you do not need read the label. If it's got palm oil in it or coconut oil in it, don't buy it; skip it. Now, this doesn't mean that there aren't appropriate uses of coconut oil. You can make a candle out of it. You could shine your shoes with it. You can wax your car with it. You can do it put it in your hair. You're not eating it. All right.

Let me share with you a few people in the Power Foods Diet. There are a lot of folks who we were in touch with as we were doing this and people wanted to share their experiences. And I just want to share a couple with you really quickly. This is Shawnee, who grew up in Kansas City. And she, as she was telling me about her part of life, she said we had a lot of food at home, but it was not what you would consider the healthiest food. And her parents had a pretty serious weight issue for many, many years. And Donna did. And when she was 8-9 and ten, her mother could see that her daughter was falling on her footsteps. And when Shawnee was 12, her mother said, you're coming with me for the weight loss program. She was put on weight loss drug. You know, you're given a food scale and you're told that you're the problem. You've just got to, you know, all the things that we tell kids that are completely wrong, like if you would just exercise more, all that weight will come right off. You need less screen time. You need to do this. You need to do that. There's something wrong with you, and the kid memorizes that and they are never going to forget those words that they have heard. There's something wrong with them. There was nothing wrong with Shawnee, but there was a lot wrong with just the food environment that we have kind of inherited in this goofy society that we live in. And she eventually discovered them. If there are certain foods that kind of love you back, there are foods that are healthy. I'm telling you about simple fruit than vegetables and beans. And she acquired a taste for them more and more and more. And she started to realize that not only did she like these foods, but she liked how she felt. And she started losing weight and she ended up losing more than 100 lbs. And she not only changed physically, but she got herself confidence back. And she sat her mother down and said, I know you were really trying to help me. Let me help you. And that's what families can really do. This is Steve Loam. Some of you might know Steve Loam. Steve's a cardiologist and a really good one. And Steve was running a half marathon in Monterey, CA and had an amazing experience running along. And one of the runners who had started the race before him was down on the ground and Steve went up to him and the guy was unresponsive. He wasn't breathing, and he didn't have a pulse. He was effectively dead. Well, he's a cardiologist. He yells out, "Who's got a cell phone call, 911. I need a defibrillator. I need an ambulance." And he's doing CPR, you know-- don't die on me. And eventually, they bring in the defibrillator. They take the pads out. They put him on the guy's chest. They shock him. And eventually Steve saved his life and they put him in the ambulance. They bring him to the hospital, and Steve is basically thinking, I'm glad I was here today. So anyhow, he makes his way to the finish line, gets there. There on the ground is another guy who is unresponsive and not moving. And Steve is thinking, this can't be. He goes over, the man has no pulse, Same thing. I need a defibrillator. And he's doing CPR. Yeah, twice in one race, they bring the defibrillator, they put on the pads, they shock him. Eventually they get a pulse. He goes

to the hospital too. This was, well, by the way, note to self, if you're going to run a half marathon, have a cardiologist with you. You know, a good idea. But anyhow, this was so unusual. The Today Show heard about this amazing event and the cardiologist who saved 2 lives in one race. So the, the Today Show brought them all together and they had a reunion of all three of them. But what the Today show didn't realize is that Steve had already been talking to these guys and he said, look, I don't want to have to resuscitate you next year. You need to get on a healthy diet. And that means a plant based diet and don't eat any of that junk, which they did. And it made huge changes for them. And they were thrilled. But anyway, the reason I'm telling you this is not just that it's an amazing thing that Steve did. The reason I'm telling you this is that Steve has a story of his own. When he was in medical school, he was severely overweight, as was everybody in his family. Very smart guy goes online, looks up the dietary guidelines for Americans and says, eat less red meat, eat more white meat, take the skin off your chicken. This will help you. And this was doing nothing for him. And his weight problems continued. He did his residency, cardiology fellowship, getting into practice, writing prescriptions for lots of drugs, thinking this is not what medical practice should be. An eventually he learned what many of you have learned that if you quit the type of food you're eating to the foods that don't have animal fat, that have fiber, that have the natural nutrients that that bring back health, you not only get healthier, but instead lose whole lot of weight. So we lost more than 100 lbs and he's decided he just loved exercising and he became a real good friend of ours and has helped us to advocate for hospitals and communities to really get on the bandwagon with a healthier diet.

So the last thing I want to talk about just really quickly is if you were brought to this lecture by somebody and you weren't quite sure what you were getting into and you're thinking, well, maybe this would be good for me, but I can't quite imagine how I would actually do this, let me share with you how we do this in our research studies, how we begin a healthy diet. And at our Medical Center called Barnard Medical Center in Washington, we work with thousands of people. I have never seen anyone unable to; here's how we do it. A person says I want to get rid of my diabetes or I want to lose some weight. I want to lose serious weight or I'd like to reverse my heart disease. Is this possible? And we discuss how we're going to do it and we're going to go on a plan, do a plant based diet, 2 steps the first week. For seven days we're going to do step one, which is just check out the possibilities. We give them a piece of paper and say, think about the foods you would eat for breakfast if you were following a plant based diet. What would you eat? And we asked them to fill out ideas, put them on the paper, and they're going to say, well, you know, I eat cereal, you know, not very imaginative. I put in a bowl. I splash milk on. OK, if it's almond milk, it's soy milk or rice milk or whatever. OK, that's all right. Fair enough. I guess I could switch the cereal to oatmeal. I could try berries on top, maybe some cinnamon. OK, I'm building the power food into a plant based diet. But wait, I love sausage. There's plant based sausage. Try it if you don't like it, it doesn't go on the list. If you like it, I'm going to add it to the list. And then you discover there's plant based bacon, which is kind of a liberal interpretation of the original, but if it's your thing, fair enough. And then there are all kinds of mixes that you can make pancakes and waffles of. And there's just lots of things. So you got one week, you're filling out your list. Your whole job is to find plant based foods that you actually want to eat. And then you go on to lunch and dinner and then you go out. You think about where you're going to go when you eat at a restaurant and you know every Italian place will make you pizza without the cheese or Angel hair pasta instead of ground beef sauce, I'll put the marinara on or the arrabbiata sauce or whatever. Latin American cuisine: beans, rice, bean burritos, veggie fajitas, lots and lots of choices. Chinese rice dishes, vegetable dishes, tofu dishes. Extra points for Japanese because it's naturally modest in oil in most cases, as well as being plant based. And then now Taco Bell, it's not the pinnacle of culinary art. Nonetheless, if that's where you are, what do they got? OK, I'm not going to have the meat Taco, have the bean burrito. If I hold the cheese, add jalapeno. All right, all right, that'll work. Anyway, you discover works for you. And after a week, everyone comes back and they always have a huge list of stuff. And then Step 2 is 3 weeks. Just eat those foods. That's it. Eat those foods. We're not going to have any animal products. We're going to keep oils really low, and after three weeks, two things happen. Physically, people are changing, and they're changing dramatically. If they have type 2 diabetes, I may have already had to ratchet back your insulin. You're starting to lose weight. It can be gradual, but it's steady. Cholesterol levels, blood pressure's all coming down. People

feel more energy, but it's not just physical pain. Their tastes have changed because they haven't had animal products and 21 days is a magic number for a taste reset. Your taste buds just sort of don't want things they haven't had in that period of time. The desire for greasy stuff has kind of melted away. And so it's really very simple. That's what we do and we never ask a person to believe in it. You can be as skeptical as you want. You don't have to believe in penicillin. You just take it and it works. So if you do a vegan diet, it's going to do its thing for you. We have an app called the 21 Day Vegan Kickstart. It's in English, it's in Spanish. It has menus, recipes, videos free. We made it for our doctors, but our patients use it. And this is our team. We've had lots of fun with this approach. And I hope that if you get a chance to pick it up, let me ask you to share what you've learned with other people, because that's really the most important thing. There are so many people now who are making diet change of their own and they're discovering things. And whether it's us doing a research study, hearing information at a medical conference, or maybe you're sharing things to with a friend or your family, or you're putting something on Instagram, you're taking a little pebble and you're throwing it in a pond. And then the ripples are going out and reaching people that you never met. And social media allows us to spread a life-saving message so far that you never know who you're going to intrigue. You made a little extra carrot cake. You gave it to somebody at work. They want to know the recipe. They put it online-- really, really great. And it can go anywhere in the world. The people who ultimately see this and thought, gee, I want to go plant based, They're not going to know it was you who did this. They're not going to thank you, but you saved their life. And the thing about it is to the extent that we really make noise and share what works, not with any kind of guilt thing about where people have been before because we've all been, we've all done goofy things, but we take the power of food in. We can change this. So I want to thank you so much for letting me share this time with you.

Thanks so much. We have some questions that I can see. OK, no hard questions please.

Question on Brain Health

Q. Thank you very much, Doctor Barnard. We really appreciate it. Doctor Barnard for the first question, one thing we get a lot is on brain health. And a few years ago you wrote *Power Foods for the Brain*. And at that time we had the Chicago Health and Aging study. And just recently we've had the Dr. Dean Ornish Alzheimer's study come out. So if you could address the latest on power foods for brain health specifically.

A. Well, what an important topic. I mean, if you make a list of all the diseases you don't want to get, you know, Alzheimer's disease is number one. Because when you get that, you lose absolutely everything and you lose everybody. The page turned in 2003, which was when the Chicago Health and Aging Study came up with some really important findings. People who tended to avoid saturated fat had much less risk of Alzheimer's. People who ate vitamin E rich foods had much less risk. People who exercised could cut their risk. There was a whole bunch of things. And so anyway, I got all excited. I wrote this book called *Power Food for the Brain*. But Dean Ornish, who is a great medical genius and showed that you could reverse heart disease and then he did a brilliant study on prostate cancer, came out what about two months ago with a study where he brought in 51 people. Everybody had early Alzheimer's or they were the beginnings of dementia and half of them did a plant based diet, but also they also exercised, they got stress management. He gave them various supplements. He was just throwing the bazooka at them. And what he found is that in the control group that did not make any changes, people were getting worse. 68% of people within the stability of 20 week study were continuing to degenerate and the others were just kind of holding steady. But in the intervention group, 70% of people either held steady or getting better than which we had never seen before. By getting better, I mean on cognitive tests, they were scoring better than before. Now when I talked to Dean about it, he reminded me of a really important thing, which is 70% were either holding steady or getting better. But if you if you run the number, the truth is 40% of them were actually getting better, 30% were staying the same, and the other 30% were getting worse in the intervention. So the question is why? And the answer was the

people who actually followed the program exactly for the people in that 40% that were getting better and the people who thought, well, it's my birthday or, you know, I'll kind of do this once in a while. They were in the 30% think I work. So you see what I mean? And when he did his heart study, 80 or 2% of people had their arteries opening up, but 18% did not. And he did the same analysis. The 18% who did not get better were the people who were kind of really LAX about the diet. And so the moral of the story is the fragile human body and have a lot going wrong with and you need to treat it like your favorite sports car. You want to just fade. Anyway, there you have, I like this question.

Question on Keto Diet

Q. When I have shared my plant based journey, a few folks have made this comment. My friend does keto and they've lost weight and have good numbers.

A. How do I respond in a thoughtful way? OK, well a ketogenic diet is well first of all, it used to be called Atkins and then it was called South Beach and then people called it low carb. But somebody discovered if you have a name that has only four letters, it'll sell. So they called it keto for short for ketogenic and it will cause weight loss not for everybody, but for many people. And the theory is that carbohydrates made you gain weight and so don't eat carbohydrates. And the thing about it is that carbohydrates means grains means fruit, means pasta, means rice, means sweet potatoes. It's 50% to 60% of what people eat. So if you take out half of what you eat, you will definitely lose weight. The problem is that what is left behind is often the worst food, meat and so forth. So when people lose weight too often, their cholesterol levels do fall just because a thinner body has less cholesterol, that's good. But for about one in three ketogenic dieters, their cholesterol levels go up, sometimes very high. And it's exactly the foods that we would be that would we would expect to leave this colorectal cancer and other. So we don't recommend the ketogenic diet at all. So simply because there are other ways of doing it that are more effective and have more robust.

Question on Arthritis

Q. Next question is please tell me what you can do about combating arthritis. And this person has been plant based for more than 20 years.

A. OK, there are different kinds of arthritis, but there is rheumatoid arthritis is when your joints are inflamed. You could look inside the joint. It's ugly and it's inflammation has taken off and inflammation means your white blood cell are reacting to something in your body. Your white blood cells are looking for virus. They're looking for bacteria. They're looking for things that don't belong in your body. And when they find them, they make antibodies, which are little protein torpedoes designed to kill that virus. Somehow your white blood cells are making antibodies not against the virus, but they're making them somehow. And they're attacking you. They're attacking your joint. And they can attack a lot of other things. They can attack your thyroid and give you what's called Hashimoto's thyroid diet. They can cause all kinds of issues. So the question is, what triggers those antibodies? Would it be a protein, not in a virus, but in a food? And for some people, that does appear to be the case. So the way to investigate this, Researchers have done what we call an elimination diet. And so you bring in people, you take all the animal products out of their diet. And some people get better just from that alone. Because the most common trigger food trigger for arthritis is dairy, dairy protein particular. So skim milk is just as bad, but there could be other things. It could be wheat or it could be citrus, or it could be a nut, or it could be eggs or all kinds of stuff. So there are certain foods that we know never trigger pain, rice, cooked vegetables. So you have the patient eat a lot of the, the things that we call pain safe and avoid all the potential trigger. And then when their joints settle down after a few weeks and you reintroduce the foods that may cause pain one at a time, eating a lot of them for about two days. And you, you identify your trigger. And if you do, it's the greatest gift because all you do now is you avoid that food and it could be something like a potato or which is not unhealthy, but it's your body is for some reason reacting to it. So anyway, I wrote a book *called Foods that Fight Pain* years ago that talked about this

approach. And I have a newer book called *The Cheese Trap* because cheese is one of the big offenders here. I put the same elimination side so you can try it if you like.

Question on Hypothyroidism

Q. Next question is, what are the causes of hypothyroidism and will your thyroid go back to normal? Is there anything food can deal with that?

A. OK, Well, we just described the main cause in the United States. The main cause is what I just described. It's an autoimmune reactor worldwide. It's a lack of iodine where people just aren't getting. You need a little bit of iodine in your diet to make thyroid hormone. If you don't have it, you can't make. In Japan, nobody's ever low in iodine because sea vegetables have a huge amount. But here in Omaha you are nowhere near the coast. So there are people who live their whole lives never having had a sea vegetable. So if you don't get iodine, you need to get iodine. Iodized salt takes care of that problem. But in the past five or ten years, people are now abandoning it in favor of Himalayan salt, sea salt, which may not be ideal. So we're starting to see some iodine deficiency. So bring iodine back in your diet. You can do it as iodized salt, you can do it as sea vegetables. You can, you can get an iodine cell at the store if you want, very easy to do. And then if it's autoimmune, then we put people on completely vegan diets. We do the same thing that we do for arthritis. And not everybody gets better, but a surprising number of people do get better. But there's never been a double-blind trial of it or there's never been a randomized controlled of that said, at the Adventist Health Study two in California, researchers noticed that the vegan had the lowest risk of any group of both hypothyroidism and hyperthyroid. And the meat eaters and dairy eaters had much higher risk of both. So science is kind of circling the drain on this one.

Question on DHA and EPA.

Q. This question asks about plant based sources of DHA and EPA. And do you recommend supplementation for those? OK, what a good crowd. Amazing these questions. OK, DHA and EPA, this is for extra credit. Those are omega-3 fatty acids. Your body will make them. They're not essential fatty acids because your body can construct them from the tiny traces of oils that are naturally implanted. And you don't even have to add oils to your diet. Send a sprig of broccoli to a lab. They'll say it's about 8% fat. And that fat is there's an omega-3 in there. And if you eat lots of broccoli, your body can turn it into EPA and DHA. However, that may be slow. In your case, it may be a slow conversion. And if you eat other oils, it interferes with the conversion because it occupies the enzymes to do that. So people will sell you fish oil which has pre made EPA and DHA in it. You think, well, I don't want that. And so right next to it at the health food store is vegan algae derived EPA and DHA. It's exactly the same. Doesn't smell. You can buy it online and if you wanted it, it's there. Is it a good idea to take? I don't know Dean Ornish would say it's going to reduce your risk of Alzheimer. It may well be. And if you if you do it, get the vegan DHA and EPA. But others will say, we found we can't explain in research studies, people who supplement men who supplement EPA and DHA have a higher risk of prostate. And at first we saw this, we thought complete fluke, you know, just an accident. But we've seen it over and over and over again. So I believe it. And that's where we are now. So stay tuned.

Question on Eggs

Q. One question we see a lot, and this person wrote this here, it's simply what about eggs?

A. What about eggs? There's really only two parts of the egg that are a problem. The yolk of the egg. The yolk of the egg is the single greatest concentrated source of cholesterol in any plant, in any food. Sorry, there's no cholesterol in plants. There's a lot of it in animal products. And the egg is the single greatest source. And that is because room service does not deliver to an egg. When a chicken lays an egg, a little while later a chick is going to pop out of it with a spleen and a liver and skin and eyes and all this stuff. And to construct that the chicken who laid that egg packed a lot of cholesterol in there because nothing is going to go through that shell and all that cholesterol and proteins and all that stuff

rearranges and makes a chick. It's amazing. And so it's this huge amount of cholesterol in there. That's astounding amount. The white is just a big glob of animal protein. You don't need it. Harvard researchers in I think it was 2016, put out a cool study where they looked at if instead of eggs you eat plants, your mortality goes down. And that's true if you substitute, if you take away any animal protein and have plant protein and it's like dairy, fish, beef, any kind, including egg. If you have plant protein in its place, your mortality in any upcoming time interval is reduced. And by the way, if you want to win a bet, ask a friend which has more protein, an egg or potato, and they're going to bet any money that the egg has more protein and you are going to win that bet. Yes, there is more protein in a potato. Medium potato, medium egg. Potato has more protein. Large potato, large egg. Yes, it does. Look it up. I'm right. This is kind of a hot topic.

Question on Intermittent Fasting.

Q. We've got a couple questions on this. How do you feel about intermittent fasting?

A. I fasted today between 9:30 and 11:00. Does that count? You know, you can do intermittent fasting if you want to. I think it's OK. It's fine. You know, I think giving your intestinal tract a rest is a good idea. But I have a couple caveats. One is if you're doing like five on, two off, sometimes people will take two days and eat relatively little. That's OK. But as time goes on, people start to anticipate the two days. So Thursday and tomorrow's to be my fast day, and people find themselves kind of packing more in on Thursday and then Friday, Saturday, then Sunday we're going out to Denny's. And so that's where people run into trouble. But now fasting can be good and some people will do all a complete water fast and have had remarkable results with it, but it's very dangerous to do on your own. If you want to do that, go to True North or a place like that in California and be supervised by somebody who will do it very good.

Question on Raw Foods

Q. Is eating raw fruit and vegetables a better way to absorb the nutrient than than cooked foods?

A. Well, in general, there are benefits to having more raw food. We see in many people it accelerates weight loss and that's a good idea. Now for some foods, cooking them kind of paradoxically actually makes some of the nutrients more absorbable. We see this with tomatoes. The lycopene is less absorbable from just a raw tomato than it is with cooked. And beans. I mean, don't eat them raw, please. So the, the other thing, well, I'm all in favor of raw food. I think it's good. And, and we as a species did not evolve with sterno. I mean, we were not cooking until somebody figured out fire, which is an amazing thing. So before that we were eating a lot of raw things. The problem is that now we don't know what those raw foods were because there are certain foods that don't work out very well for us. Raw cauliflower and others, they just don't work out very well. They're not as digestible as when they're cooked. And human beings began our sojourn in Eastern Africa before we had the bad judgment to move up to Europe and end up in places like Fargo and Trenton. You know, I mean, why? What were you thinking of? We had a good we were right near the equator and everything is great. The foods that were being consumed there a million years ago are probably the food that we were really designed for. But it's hard to know.

Question on Alcohol.

Q. Can you speak to alcohol and how it affects health?

A. Alcohol and health, yeah. Up until recently, people would say that alcohol is sort of has kind of a

double edged sword, that it reduces the risk of Alzheimer's, reduces the risk of heart disease, but will increase the risk of cancer. Over the last six or seven years, the double edged sword is starting to look a lot less double edged. The benefits for the brain and heart are not really holding up very well and the risk of cancer is much clearer and for a much wider range of organs, colorectal cancer, breast cancer, pancreatic cancer, stomach cancer and many other. Now my suggestion is that if a person does drink alcohol that they keep it modest and intermittent. If it's your way of relaxing at the end of the day and it's every single day, your risk of cancer is significantly higher than a person who has one at a wedding or on the weekend. And when people get away from it, they often kind of forget about it. You know, you hate to, like, say everything is terrible for you, but that's the way the science is shaking. And by the way, if a woman is pregnant, do not give her any alcohol at all. You got a developing baby inside you. That baby does not need a drink.

Question about Need for Weight Gain

Q. We've been talking a lot about weight loss, but we've actually had a few questions on people that are on a plant based diet and need to gain weight. What would you suggest for that?

A. I would suggest that you're the envy of everybody else. OK, first of all, before you decide to gain weight, check your BMI. You know, go online, you'll put in you know what I'm talking about you, you can get a BMI calculator. You go onto Google, you put in BMI, body mass in BMI calculator, it'll say how tall are you, how much do you weigh? And if your body mass index is between 18 1/2 and 25, you are in a good range. Just leave it alone. And frankly, if you're on the lower end of that, you're better off by that. I mean, that's not the maximal fertility, for example, in women is not at 25, it's right around 19 or 20, something like that. So don't let your parents say, oh, you're too skinny, you know, you're fine. As our population gets heavier, this, the people who are normal start looking skinny to their friends, but that's perfectly fine. Now, on the other hand, if a person really does for whatever reason want to gain weight, there's two ways to do it. One is to build your musculature. And that's all about weight bearing exercise. And if you eat that, there's everything I've been getting us away from, you will gain weight. So the healthiest forms would be things like not be, you may not like where the weight goes, but that's time for maybe a couple more.

Question on Supplements

Q. Can you talk about as people move animal products off their plate, what supplements they may definitely need, such as B12, and then maybe some optional ones they may think about?

A. Oh, thank you, thank you, Thank you. That's really such an important question. I should have put that in my presentation. You do need vitamin B12, but vitamin B12 is something that you need for healthy nerves. You need it for healthy blood. And it's not made by animal. It's not made by plant. It's made by bacteria and some people would say prior to the advent of modern hygiene, people would pull a plant out of the ground. We weren't washing our hands. There were bacteria in our mouths, on our fingers, in the soil, and you get a little bit of B12 and you only need 2.4 micrograms a day. I don't know if that's was really our source of B12. It's possible our gut bacteria were making it. But in any case, modern hygiene has eliminated, so you should take B12. That's important for a vegan at any age, including children, pregnant, anytime. But frankly, it's good advice for everybody else because we see a lot of omnivores who are B12 deficient as well, particularly if they're over 50 or on metformin for diabetes. So we recommended for everyone. So B12 is number one. Number two, I'm going to say vitamin D optional because vitamin D is not really a vitamin. It's a hormone that's made in your body in response to the sun. So the UVB rays hit your skin and it makes your skin makes vitamin D and that helps you absorb calcium and it does a lot of other good things. And as long as we were in Equatorial species, we were fine. But if you are not getting regular sunlight, your body is not going to make as much vitamin D. And so a supplement is good. Most people would say about 2000 IUs a day, this is more than the RDA, but it's a safe amount and will help with bone health. That's a good idea. Those are really kind of the main

ones. There's a million other supplements that you can use for medicinal purposes. Most of it are nothing.

Question on Avoiding Cravings

Q. All right, this will be the last question of the evening. Doctor Barnard, any tips to avoid cravings? And the person specifically mentioned cheese, but you can address other things.

A. Oh, my God. Yeah, we have done so many research studies and people do great on a plant based side. They really do. I mean, they love it. They lose weight, their health rejuvenates. We've seen diabetes go away. But at the end of a study, I hear so many people say, there's one food that I just haven't been able to get over and it's not chicken, it's not bacon, it's cheese. And I kept hearing this over and over and over again. When the study is over, I'm going to have some cheese, at least a little bit of cheese. Or I could be vegan except for cheese. I thought, why? It smells like old socks. Why do people have to have it? What is the thing about cheese? Anyway, we finally figured it out. Here's the deal. It's partly because it's very salty. I don't know if you knew that there's more salt in cheese than there is in potato hashbrowns. There is a lot more. It's also greasy and a greasy, salty food is instantly addictive. But cheese contains opiate. They came from the casein protein in the milk. It's suggested in a calves stomach or your stomach to release these little narcotic chemicals that attach to the MU receptor of the brain, which is exactly the receptor that morphine attached to. It's not as strong as morphine. The most potent casomorphin has about 110th the receptor binding power compared to pharmacy grade morphine. So it's significant. You will not get arrested. You'll still be able to drive, but you will be hooked on and that's the deal. So the best thing to do is to not have any cheese and you will eventually forget about it and use nutritional yeast on your pizza, which you know, it's kind of like vegan methadone and you'll, you'll discover that eventually event. And the other thing I wrote, I wrote a book called *The Cheese Trap*, because there's a whole story about how bad cheese is for you. And I also included one chapter called What the Animals Go Through. It's the only chapter in any book I've ever written about ethics and food. And I mean, there's a whole lot of issues about ethics and food. And I finally decided that when people understand what it takes to get to make tea, they are going to never eat it again. I think since it's after dinner, I won't tell you about it now, but you can. You will. If you look into this a little bit, you will discover that there is no crueller food then the dairy products and the things that are made from you see the cows have to take away from them endure. The beauty of it is, and when you get away from cheese, you are exempt from all that. You are no longer contributing to the close to 100 million belching cows that are in this country, belching methane into the atmosphere. And your coronary arteries are singing your praise, as are your adolescent children. Let me stop at that point. Thanks to all of you for allowing me to share this time.