

Ivor: [00:00](#) So great to see you again Amy.

Amy Berger: [00:31](#) Yeah you too Ivor, we've, we've been fortunate to meet a couple of times the last few years.

Ivor: [00:36](#) Yeah. The last time was at Houston, Texas, where you gave that fantastic talk on Alzheimer's and it was so energetic and so powerful from the stage, I really enjoyed it. And I just saw, the other day on the Twittersphere that Jordan Peterson, no less, has retweeted your talk.

Amy Berger: [00:56](#) Yeah. you know, he's a pretty controversial guy, but certainly that's a way to get a few thousand more eyes on the presentation. And I, I don't know how many views it had before that, but it's got like, I don't know, I forget how many thousands of views, but a shocking number and that's probably largely due to his publicity.

Ivor: [01:13](#) Oh, absolutely. I noticed at a glance there were well over a thousand likes within a day or so for that tweet alone. So great stuff. No, Jordan is controversial, but I must say I really like what he's putting out there, controversial but much needed I believe. So we'll get right into it now, the Alzheimer's Antidote, a fantastic book with a huge amount of depth, but also approachable for the ordinary person. So maybe just give us an idea of how you came to get into Alzheimer's particularly, nevermind actually writing and authoritative book on the topic.

Amy Berger: [01:47](#) Yeah. I, um, I have no family history of Alzheimer's whatsoever. I do have a family history of type two diabetes, obesity, stroke, and cancer. So we're all stocked up in the family. We don't need Alzheimer's. But, um, I the first, so I had no real personal interest in it, but I read Gary Taubes, his book, good calories, bad calories, and he has a chapter in that book called something like cancer, dementia and aging. And it's the first place I ever read about a possible connection between insulin, glucose and Alzheimer's disease. And it was really interesting because it was brand new to me, but not having any personal connection to the disease of Alzheimer's. It really wasn't that fascinating at the time. But I filed it away as something like, oh, maybe I'll look into that sometime later. And it was about three or four years after reading that book that I was in graduate school for nutrition and I had to pick a thesis topic and I wanted to do something that hadn't already been written about a million times and would be something that I would actually enjoy learning about and researching and something that there would be enough information on, to even write a thesis.

- Amy Berger: [02:57](#) And I said, you know, let me go back to that Alzheimer's thing and see if there's even any research on this. And when I just started, like the initial search on pub med on some of the other databases, I was shocked at what I found, It's everywhere. Um, it's, I'd say it's hiding in plain sight, but it's not hiding. It's out there. It's everywhere. And if you're a doctor or you're a medical researcher, you have to be willfully ignoring it to miss it because it's every, you can't miss it. You have to like purposely close your eyes to it to miss all the literature on the connection between Glucose and insulin and Alzheimer's. So, um, once I, once I graduated, I couldn't imagine keeping this information to myself because I really believed and I still believe now that this is potentially life saving information. And I said, if I just keep this as my graduate thesis, it's going to sit on my laptop.
- Amy Berger: [03:50](#) It's going to sit on my professor's desk. No one's ever going to know about this. So I felt like I needed to, to share it with people and I turned it into a little pdf ebook that I sold on my website. And I was fortunate enough that a publishing company found it and they offered me a book deal. I mean, it's never going to be so easy for me. It's never going to land on my lap like that again. But that was a way to bring this to, um, to the people that need it. You know, it's all well and good for this to be in the medical journals, but the, the loved ones and caregivers, the everyday people dealing with this disease in their homes and their lives are not, they don't have time to read those journals. And if they do, can they understand it? It's not in plain English. So I wrote my book to be the plain English translation of all that really fascinating research.
- Ivor: [04:39](#) Excellent, Amy, and you certainly achieved it. By the way, they say one in a thousand people, uh, actually writes a book, or, or actually gets to write a book and one in a thousand then gets any sales above a few hundred. So, it's so hard to actually do that and get a publisher.
- Amy Berger: [04:56](#) It's kind of a miracle. And my, my undergraduate degree is in creative writing. I've, I've always wanted it to be a novelist and so now at least I get to combine the nutrition education with the writing and it's not fiction, it's nonfiction, but it's, it's nice to have a book out there
- Ivor: [05:10](#) Super, and of course you had your whole degree basically that give you the raw materials, so you're on a good starting point to actually go and write a book. So on the Alzheimer's, yeah, it's an absolute disaster and I've, I've seen it all over and I agree with you that to miss the insulin glucose connection for Medical Professionals seems absurd. But that said, I know several really

good doctors, including a top level person, genuinely, who when I broached this topic of insulin and glucose in chronic disease, they were literally just confused because they saw insulin only as a medication for diabetes. They, they couldn't even really see, well, how has the medication for diabetes got something to do with giving you diseases. And then of course they were researched and like you say, within a few minutes they were horrified just by going on the Internet. It's crazy. But, uh, my own father had vascular dementia and vascular dementia has sometimes been confused with Alzheimer's, and sometimes people say Alzheimer's has not risen so massively. It just wasn't diagnosed before. But I think you would agree, it really is rising at an epidemic rate in the last, what, 40, 50 years primarily.

Amy Berger:

[06:25](#)

It's definitely rising. I mean it's possible that there were more cases that were not recognized or they were, you know, they used to call it senility or senile, oh grandpa's senile, grandpas losing his mind. But um, it's definitely rising and it's rising in parallel with all the other chronic, noncommunicable modern diseases like type two diabetes and cardiovascular disease and PCOS and all this stuff. Um, and it's, it is, I, I've said in my talks, it's reasonable to expect that a disease that generally strikes people in older age is going to rise. The global population is getting older, especially in the modern world. We have the baby boomer generation, we have a population that's aging, but we're no longer with with Alzheimer's disease. We're no longer talking about elderly people, we're not talking about people in their eighties and nineties anymore. People in their fifties and sixties are starting to develop what they call early onset Alzheimer's or mild cognitive impairment, which is the precursor. So something is definitely changing in somewhere. Our environment, our lifestyle, our diet, something is changing because more people are getting this disease and they're getting it younger and younger. And um, with regard to the vascular dementia, I think there are a lot of other kinds of cognitive impairment that are misdiagnosed as Alzheimer's. I think Alzheimer's has become this catch all thing. Dementia is the overall thing, Alzheimer's is one form of it. And um, I think, and there's different causes to those different kinds of dementia and memory loss.

Ivor:

[08:07](#)

Yeah, exactly. And of course we have the other complication that vascular issues have been increasing massively in the last century also, so the, the vascular driven mini stroke driven dementia like my father had. Of course that's rising too. But all in all, it's pretty much a catastrophe. So the younger people, that's a really important point that it's happening to younger and younger people, just like sub-clinical atherosclerosis has

been identified to happen in younger and younger people. And type two diabetes, of course it used to be adult onset and now it's the youngest in the world is three years old I saw last year. So actually what's happening in Alzheimer's then, what is it really, eh, in broad terms.

Amy Berger:

[08:53](#)

So the fundamental flaw, the thing going wrong in the brain of somebody with Alzheimer's, is that neurons in specific regions lose the ability to metabolize glucose properly. So, um, they basically starve. They're atrophying because it's, it's a fuel shortage. It's an energy crisis in the brain. When these neurons don't have enough energy, they start to wither. They atrophy, they shrivel up. And you can actually see this on an MRI. You can see that the physical volume of the brain is shrinking. Um, and the thing is, like we were saying, this happens to people younger and younger, this decline in what they call the cerebral metabolic rate of glucose. Or how much, how fast your brain is using glucose. This is detectable in people as young as their thirties and forties. Those people already have a fuel shortage in the brain, they don't have any signs and symptoms of Alzheimer's because at that time they're still young enough that the brain is compensating.

Amy Berger:

[09:53](#)

So you don't have any memory loss. You don't have any personality changes, but you're all, you're already in the disease process. It's already started and it's only when this has gone on for so long and the damage is so severe, that's when you start showing signs and symptoms. But by the time that happens, the disease has been in place for a long time. And that's it. Same thing with cardiovascular disease. By the time you even know there's a problem, the disease is already really advanced. Um, it's like really scary because there's no, I want to say there's no prodrome. There's no like early warning. There might be, and we're just, you know, ignoring it because we don't realize these little brain farts what we call the senior moments and everyone has them, like they happen to everybody. But when they start happening more and more, or especially we hear in the, in the health and nutrition world, a lot of people deal with brain fog. Um, just, I don't, I don't know what else to call it besides brain fog, but these, maybe these are the early warning signs and we just sort of dismiss them like they're no big deal. Instead of taking them really seriously, like they're a big red warning light as to something else happening.

Ivor:

[11:03](#)

Yeah. And I guess people, people might not take them seriously for the reason that they simply don't think it's feasible that at a certain, at a young age it could be that. But if they did recognize that, of course, and we get in later to the fixes, they could start

implementing preventative action, and possibly with huge success and avoid a real tragedy later on. So these, these neurons, they're starved of glucose essentially. And it reminds me of something that Doctor Brookler, New York as an Otolaryngologist, he was a friend of Joseph Craft and he of course was doing insulin and glucose advanced testing. And the five-hour Insulin Assay, and he told me a lot about the inner ear, and one fact was, I never knew this. You've got your body, you've got your brain and the blood brain barrier. So the brain's a separate compartment, but the inner ear is a third separate compartment with three times the glucose utilization of any other tissue. So it's massively glucose requiring the inner ear, and surprise surprise all of his Meniere's and dizzy patients and tinnitus patients. Their condition, 95% of them linked directly to insulin glucose issues, so it sounds quite analogous, but this glucose usage, so the brain ironically to eat more and more glucose ironically gives your brain a problem with dealing with glucose. So maybe go through that pathology.

Amy Berger:

[12:37](#)

Yeah, I mean it's, the thing with Alzheimer's is we know that the problem is reduced brain glucose refueling. We don't know why. We can speculate as to why. I wish we could say, well, the Diet 100% causes this disease. We don't know. We know what the problem is. We don't know why it's happening. Um, the, the odd and, and, and to be clear, like I was saying before, there's a lot of different kinds of dementia and things that can cause cognitive impairment that probably in a lot of cases go hand in hand. So like just, I'll, I'll get back on message in a second. But things like vitamin B, 12 deficiency, iron deficiency, anemia, hypothyroidism, all of these other issues can cause dementia or memory impairment even in the absence of all this glucose, insulin stuff we're about to talk about. So there's a lot of things, but of course if you have all of those together, it's even worse because if you do have the glucose and insulin problems, and you're B12 deficient, and you're iron deficient and your Omega three deficient, it's like the perfect storm.

Amy Berger:

[13:41](#)

But with regard to the potential role of Diet, you know, I always, I give you credit every time I speak and I give Doctor Kraft credit because you're the one that really brought his work out to the forefront. I wouldn't really know any of this insulin stuff without that. You know, like you said, we think of insulin as a blood sugar hormone and the more I learn about insulin regulating blood sugar is like the least important, least impressive thing it does. I mean the body has many, many other ways to deal with glucose. So insulin is, it does so many more things and almost all, not all, but almost all Alzheimer's patients have Hyperinsulinemia, they have, you know, chronically high insulin.

And the weird thing is though, in the central nervous system in the brain, a lot of them have low insulin and insulin has a function in the brain, in healthy cognition.

Amy Berger: [14:36](#) Um, we don't, we don't know what, they're not even sure what exactly insulin is doing in the brain, but there seems to be some down regulation of insulin use in the brain when there's so much of it in what we call the periphery, in the rest of the body. Um, and one of the most damaging things, to a cell, is the constant influx of glucose, the constant, ceaseless shoving of glucose through the metabolic pathways that you know, that use it for metabolism. Um, you know, if you, if you interviewed you, you were mentioning, you talked to Gabor or Dosey, so this is like a very savvy audience, but glucose constantly flowing, you know, sending stuff through that mitochondrial electron transport chain, it like overloads the system. You've got all these free radicals leaking out. It's very damaging. And I think, and this is speculation, I think Alz-, and Dale Bredesen actually agrees with this.

Amy Berger: [15:31](#) He's a very well known, Alzheimer's researcher, the down regulation of the brain glucose use is a protective mechanism. When these tissues are already so damaged from all that ceaseless glucose, by not letting any more in, the brain is like shutting off the glucose bigot. It's protecting itself from even more damage. And this would actually be fine if there was some alternative fuel coming in. But in most people who are eating a high carb diet, there's not an alternative fuel. Glucose is the only game in town, but if you can't metabolize the glucose, you're, you're screwed. To be honest, you, you're, you're in a very, you're a deep metabolic trouble.

Ivor: [16:13](#) Yeah. So essentially then it sounds like excessive glucose over a lifetime for some people depending on genetic susceptibility hyperinsulinemia, eh, overpowering of Mitochondria. And as you say, I used to always call glucose, the flash fuel. So fat is, a safe, slow burning fuel when eaten in the context of a low carb diet, not when mixed with Glucose, but a high glucose refined carb or very digestible glucose diet. Like you say, it puts more strain on the Mitochondria, kicks off more radical oxygen species. It's a, it's a dodgier fuel. So the body as it's forced to deal with this over many decades, the brain actually can shift into a protective mode. Being in that body and being part of that system, it can get the signals to protect itself and then actually reduce the utilization.

Amy Berger: [17:06](#) That's, that's what I think. And um, I, I wish, I wish we knew exactly why this was happening, but that does seem to play a

huge role. And, and chronically high insulin is a risk factor for Alzheimer's regardless of anything else. It is an independent risk factor. So we know genetic things do play into this. Family history does play into it. But regardless of any of that, if you are chronically awash in insulin, you are increasing your risk for this disease. End of story.

Ivor: [17:37](#) Yeah. And, and actually that reminds me, Amy, what you actually said earlier that there's a lot of kind of Co-morbidities or there's other diseases with overlapping causes. So it's hard to say what problem is causing what entirely. Like you say it, we'd love to know, but the higher insulin tracks with so many chronic diseases that at this stage it's almost almost to joke that some doctors are not even aware of it.

Amy Berger: [18:03](#) Uh, yeah. To us it's a joke. But um, the having, so one thing I haven't said yet is that they often call Alzheimer's disease. Type three diabetes or diabetes of the brain. And I often get asked is, is type two diabetes a risk factor? Or like are you at greater risk for Alzheimer's if you have type two diabetes? Yeah, you absolutely are. The people, people who have the highest risk for Alzheimer's disease are type two diabetics treated with insulin, with exogenous insulin, um, they have the highest risk. And the thing is like, like you and I know and like we know thanks to Dr. Kraft, I'm doctor Brookler type two diabetes is, is woefully under diagnosed because we solely diagnose it looking at the glucose. So you've got millions of people with Alzheimer's disease who are not diagnosed diabetic because their blood sugar is normal but their insulin is chronically high and that is what is driving this disease. So when somebody like that goes to the doctor, oh your A1C is normal, your blood sugar's normal. So they don't, they don't connect it to insulin because nobody ever tests insulin. You know that the doctors that we know that are very savvy with this do, but many, many have no clue.

Ivor: [19:17](#) Yeah. And actually the most recent data that I'm aware of, and I've probably said it several times now on podcasts, so I'll be boring, but , em, 64% of over 45 year olds in the US adults are now pre-diabetic or diabetic. And that's CDC figures, they don't project those figures out publicly, like I said them. But when you go through their data tables and the age ranges, that's what it is. And like you say, if you measured insulin, that 64% is only based on glucose metrics. If you measured insulin, might be 75, might be 80. So it's just this enormous iceberg of hyperinsulinemia out there that they're not really overly interested in. And maybe it's because there isn't really a nice drug to deal with this problem. It's lifestyle and diet really to deal with this.

Amy Berger:

[20:12](#)

I'm not, I'm not a conspiracy theorist. I mean I don't say, oh they don't, they don't know because there's no drug or there's no money in it. I, I think it's ignorance. I think they just don't know. I think especially in the case of Alzheimer's, um, you know, in diabetes and in heart disease, it's getting harder and harder to pretend like diet. It doesn't play a role. Like of course what you eat affects diabetes. Of course it affects heart disease. We might all disagree about what the proper diet is, but we agree that diet is playing a role. In Alzheimer's, I think it's really hard even for the medical professionals to even entertain the possibility that this could be every bit a diet and lifestyle disease. Just like all that other stuff is, it's so hard for them to even imagine that this is, this is like a glucose toxicity problem in the brain, but it's so obvious to the rest of us.

Ivor:

[21:04](#)

Yeah, and I think you're right about the conspiracy. I always think of it as more of a lack of incentive to drive the system towards the answers just because there's a lack of incentive. There is no real drug available, whereas drugs that attack the symptoms of the disease directly and show a measurable change, you know, there's been a lot of effort put into those and in fact you spoke on this as well, change subject slightly. The amyloid plaque, even the man or the woman in the street will have heard of amyloid. But that whole chase after drugs for that maybe you could summarize like you did before how it pertains to Alzheimer's, but it's not necessarily a good target as a causal, you know, root.

Amy Berger:

[21:50](#)

Yeah. So, um, so many people, doctors and researchers included think that this amyloid stuff causes Alzheimer's. You can't read a journal article or especially a mainstream conventional press article on Alzheimer's without hearing about amyloid or amyloid plaques. And this stuff is, is a protein fragment that accumulates in the brain and it accumulates and it builds up outside the cell and it actually blocks the neurons from communicating with each other. So it makes total sense that if, if that's blocking neuronal communication, well of course this stuff is causing Alzheimer's or if not causing it, it's having some contribution to it. But, not everybody with Alzheimer's disease has a lot of plaque buildup in the brain. And there's a lot of people that have a lot of plaque buildup that don't have Alzheimer's. So either amyloid is not causing the disease or it's not the main cause because you can have the disease without a lot of amyloid and you can have a lot of amyloid and not have the disease, so everybody's brain secretes amyloid. This is not specific to Alzheimer's. The problem in the Alzheimer's brain is that it's building up, it's not being cleared away properly and so it is a problem and that it does build up and get in the way of

cellular communication. I'm not saying that doesn't happen. What the question is, why is it building up, right? We always, like you talk about this all the time. We want to get to the root cause. We don't want to just shoot things in the sky like why is this happening and address that, address the fundamental driver, and um in, in Alzheimer's, Alzheimer's disease, so amyloid does many, many different things. It doesn't, it's not secreted to kill us. It's like cholesterol, in that sense. We've, we've identified this one substance that the body itself produces healthy bodies produce it, sick bodies produce it, all bodies produce it, and we've demonized this substance as the cause of a disease, right? And cholesterol, it's the cause of cardiovascular disease and clogs your arteries in Alzheimer's. It's the amyloid. Like we're going to point the finger at amyloid. This is the thing, it's accumulating, it's building up. It's causing the disease. But why is it being secreted? Um, it could be secreted for numerous reasons, but at least in, in Alzheimer's, oddly enough, amyloid actually reduces glucose metabolism in the brain. So we would think, oh my God, this is a slam dunk against amyloid. If the whole problem in Alzheimer's is that the brain is not metabolizing glucose properly and the amyloid is contributing to that, well of course we want to get rid of the amyloid. But again, why? Why is the amyloid reducing the glucose metabolism? We were saying this is a protective thing. The brain, the amyloid is helping those neurons shut off that glucose spigot. There's already so much damage from all that glucose coming in previously that the amyloid is like, nope, I'm not going to let this go on anymore. I'm, I'm, I'm gonna. My Neuron is going to secrete the amyloid to, to stop that process. So and so that is a protective mechanism and I always say it's like a fever. A fever is a defensive thing in your body. It's, it's a helpful thing. It's raising your core temperature to fight off some kind of invading pathogen. But if the fever goes too high, then the fever itself becomes a problem. So even though it's a protective mechanism, it can become dangerous. And it's the same thing with the amyloid, it is initially protective, but if it builds up and that forms these infamous plaques, these solid plaques, a block, the synopsis, it is a problem. The thing that is supposed to clear it away, remember I said people with Alzheimer's don't produce more amyloid than anybody else. The problem is that it sits there, it doesn't get removed. The thing that's supposed to remove the amyloid is called insulin degrading enzyme. It's an enzyme that has multiple different targets. Obviously including insulin and Beta amyloid and a couple of other things that don't really pertain to this discussion, but if you are chronically awash in insulin, this insulin degrading enzyme is so busy dealing with all the insulin that it leaves all its other targets to to build up and accumulate,

including the amyloid and they know this. Again, this is one of those things that's all over the medical literature. You will never ever hear this in any article on Alzheimer's. I, I sent out a tweet awhile back because every now and then like my followers will send me a link to some new breakthrough discovery on Alzheimer's groundbreaking research and I'm like stunned that never ever, ever not a single one of these articles ever says anything about the brain glucose metabolism. How can you write a whole article about this disease? How can you refer to this groundbreaking research, which is always in mice to start off with and never even mention the actual, fundamental problem in the disease. I just, I just dismiss those out of hand. They're not even worth my time to read.

Ivor:

[26:51](#)

Yeah, it's like the primary root cause that dare not speak its name. It's like it's an embarrassment in the family. But yeah, and there's so many parallels here. I can't help but thinking in the Alzheimer's scenario you've so well described because, yeah, you've got a similarity with cholesterol and heart disease. Certainly it's part of the process more particles in a system that has an issue, may lead to more disease and lowering them may help, but it's kind of missing the big thing. And the other analogy is or the parallel, is that your whole vasculature oxidized LDL can come into the arterial wall and be dealt with in the normal way. But if you overpower that process, you then lead to atherosclerosis on vulnerable plaque and you've got problems. But like you say, the amyloid is not an unnatural invader. It's part of a process that if you, if it was allowed to be managed properly, you know with ebb and flow, there would be no real issue, but we're over driving it. Right. I guess.

Amy Berger:

[28:00](#)

Yeah. And something I forgot to mention is that um, there are so many parallels between the amyloid and Alzheimer's and the cholesterol and cardiovascular disease there. You know, we were talking about the drugs before. They're always trying to go after this amyloid with a drug, always trying to target it like under the paradigm that all that amyloid is causing Alzheimer's. Well, if we could just get rid of the amyloid, then we've cured this disease or we at least made a huge dent in it. There has been multiple anti-amyloid drugs developed. Every one of them has been a failure and they have been successful in that, they do reduce the formation of these amyloid plaques that has never, ever had any beneficial impact on the disease. You get rid of the amyloid, people still get worse and worse and worse and die. It's like the same thing with the statin drugs. Statin drugs absolutely do lower your cholesterol, but having lower cholesterol does not protect you from heart disease or heart attack in the same way that having lower amyloid doesn't

protect you against Alzheimer's. And in fact, I love to point out there was a drug, I'll, I'll refrain from mentioning the name of the drug and the company that made it, but one of these anti amyloid drugs, they did a clinical trial and they had to stop the trial early because the people taking the drug, were doing so much worse than the people taking the placebo that they deemed it unethical to continue. That's how bad it was. We get rid of the amyloid and the people actually got worse.

Ivor:

[29:28](#)

Yeah, and again, just it's parallel city here because I'm just thinking the HDL increasing drugs, we know the reasons why higher HDL means lower risk. It's because it correlates with higher HDL functionality and efflux capacity. But when they racked up HDL using drugs or a 'chemical cattle prod,' as I sometimes say, they actually had worse outcomes than some of those drugs and trials, but, but yeah, it's because they're not dealing exactly as you say with the root causes and something that effectively ameliorates or helps reduce the root causes, in some manner. Mhm. That's it. You know there's another thing, Amy, on this and it's kind of close to my heart, and I work on behalf of Irish Heart Disease Awareness, IHDA, and the founder of that, David Bobbett, very passionate about saving the world from heart disease, but he's also ApoE4, and his massive heart disease many years ago, which he discovered by the calcification scan, otherwise he probably would have had a heart attack within a few years. So that was a big deal. But he then discovered all about E4 and how he was much more exposed to diabetic dysfunction. And it actually turned out he was an undiagnosed diabetic, whose blood glucose was going up to, I think American units going up to 250 after each meal. But it was undiagnosed, because his fasting was okay. Yeah. But E4 he's really focused on, I'm E4 and my Wife is E4, my fifth child is double E4! Which is a pretty big deal. And that's the only child we've tested. So we've got E4 all over us. So talk a little about E4 in Alzheimer's.

Amy Berger:

[31:11](#)

Well, I'll start off by saying, if you have children that are E4, they are lucky to have you for a dad because you know how this all works. Um, so the ApoE4 gene is the strongest known genetic risk factor for Alzheimer's. But, just like we said about the amyloid, you can have E4, you can be heterozygous or homozygous, meaning you have one or two copies of this gene and not get Alzheimer's. Um, and you can obviously get Alzheimer's if you don't have any of these genes, right? There's millions of people who have Alzheimer's that don't have even one copy of E4. Um, the thing that's interesting about the E4 gene is that, um, so okay, to be clear, E4 definitely increases risk dramatically. Um, you have, if you are homozygous for E4, you

have between a 50% and 90% chance of getting Alzheimer's. Like this is huge. It's terrifying. But I always say if you have a 50% chance of getting it, what does that mean? You have a 50% chance of not getting it. So what is it that triggers that increased susceptibility? What is it, that flips the switch, um, E4, so ApoE4 doesn't cause Alzheimer's because like I said, you can have it and not get the disease and you can get the disease without it. The ApoE4 gene is believed to be the oldest form of the ApoE, family in, in, in the human race. And so it was forged. It's, it's simply not a match for the modern diet and lifestyle. It is. Um, it was forged or at least believed to have been forged during our hunter gatherer times, if not way, way, way before long before we had, you know, processed grains, long before we had liquid drinkable sugar.

Amy Berger:

[33:03](#)

Um, and this gene was selected against in populations with a long history of grain based agriculture. So populations across the globe that had what would be a higher carb diet if they had grain based agriculture, like rice, corn or wheat. This gene was selected against meaning this gene is not suited for a high carb intake. And I think it's probably not just the high carb, it could be the overabundance of Omega six fats, just the shortage in general of critical vitamins and minerals that we have in the modern diet. So this gene doesn't cause Alzheimer's. It dramatically increases the susceptibility in the context of the modern diet and lifestyle. And there's a lot of debate about what the appropriate diet is for E4. And I get so many of these questions specifically as it relates to Alzheimer's because in my book I do recommend a low carb, high fat or ketogenic style diet. There's a lot of debate about whether E4 should eat saturated fat. Um, because again, if it is a very, very old variant of this gene, they probably don't do so well with dairy. And you know, everyone is always talking about like red meat and pork as being artery clogging saturated fat when actually those are kind of almost equal in mono unsaturated, unsaturated, and it's really the dairy fat and coconut oil. Of course, that's very high in saturated. But I think the reason everybody gets so scared about saturated fat for E4's is because when they eat it, what happens? Their cholesterol goes really high, but you know, is that, and and that, that's very scary for E4's because E4's have such huge also increased risk for cardiovascular disease and stroke and all that stuff. Not just Alzheimer's, but again, that's in the context of the modern American Diet. We don't really have any data whatsoever on the effect of high cholesterol or saturated fat intake on E4 people in the context of a low insulin, low glucose, low inflammation. Um, Low oxidative stress. We only have studies on like modern people. And there are tribes just as an example, tribes in Nigeria that have some of the

world's highest incidents of the ApoE4 gene, but they don't have Alzheimer's disease because they don't drink soda and they don't eat the garbage that we eat in the modern industrialized world. So I think there's a lot we don't know, but one of the medical doctors that you and I know that's, that's a, a Keto doctor has said that we really need to establish a new 'normal,' we need new reference ranges, new just new paradigms for people on very low carb, high fat diets, where some of the current reference ranges might not be appropriate. So to me, whether or not someone with E4 whether or not their cholesterol skyrockets when they eat saturated fat, I don't know that that's a problem at all. When all the other markers look good. I don't know that it's not a problem, but I don't know that it is. If I, I don't have E4 I'm Two3, but if I was E4 I would still eat a low carb diet. And you can do that without a lot of saturated fat. If you want to focus on other food sources you can. But I don't know if those E4's need to worry about that anyway.

Ivor:

[36:32](#)

Yeah, I agree. And I think my boss, David, this is his cut on it and I think it's a very, a very good way of viewing it, is that if you've got a zero calcification score in middle age and you're an E4 who's got all good markers, you can kind of ride the tables and say, I'll take a chance in the high cholesterol cause I'm looking at my insulin and my c peptide. And everything else. And that's probably fine. But then again, for the percentage of E4's who already have major heart disease or a high score at high risk, well obviously they might play the safe side of the table. Uh, and take those different diets like you described. You just replace some of the saturated fat and the protein with Avocado and fish and maybe just play safe if you're one of the small percentage who are, whose greatly affected. And I think that's a very logical approach. And the people with no disease who's metabolic machinery is still working really well, can continue to eat and monitor markers, you know, cause they're relatively safe. Yeah. So it's a big question E4, yeah. And I know that Gundry, Dr Gundry has done a lot of work with people and the good thing about Gundry and fairness to him is he's not so much looking at the classic LDL or even the LDL particle number. He's looking at all his patients for insulin, inflammatory markers and small dense. So he's actually looking at what they eat on saturated fat or not but, but in through the prism of real inflammatory markers that are really telling. So, so that's uh, that's a fair approach as well. But yeah, so double E4 then I guess would be the real risk and I suppose people can go to 23 and me, I think it's only a hundred dollars to get this result, you know, that 23 and me.com I think it costs a lot more if you go to a official genetic test.

- Amy Berger: [38:29](#) I have no idea. I got it done through, um, through a blood test. I didn't even need to request it. I was getting a whole bunch of other stuff done and my doctor threw it in, so I don't, I, well I found out by like happy accident. It was serendipity that she had it tested,
- Ivor: [38:45](#) Ah, I think what's happening over, over in Ireland and in Europe, is we probably get screwed for that test. They put a big, big price tag on it. But yeah, the double E4 probably that are the most concerned I think for isn't it for Alzheimer's you're saying, 50% plus in a lifetime, essentially. And for single E4, like E3/E4, it might be more like, double the risk for Alzheimer's or three times versus-
- Amy Berger: [39:12](#) not sure of the, of the exact numbers on that. But it is increased if you carry any for obviously the homozygous has a much greater risk. But hyperinsulinemia um, they did a study and it wasn't a very, very large study, but they looked at, um, you know, a prospective study, people that were hyperinsulinemic regardless of the Geno type. They had double the risk for Alzheimer's and, and the highest risk they even specified within people who are not diabetic. But were hyperinsulinemic so this goes back right to Dr. Kraft people whose blood sugar is normal, but they have high insulin and they had double the risk.
- Ivor: [39:50](#) Yeah. Because they're poor pancreas is pumping that stuff out desperately trying to control this fire. It's shocking. There was another study I really loved, um, it was around year or two ago I got it. And it was from the E4 group, actually a, a web based Bulletin Board E4 Group. But they found a study, and basically in this study they were looking at kind of hypertensive people with high blood pressure and they split them out into all of the genotypes. E2, E3, E4, all of them. They even had a couple of double E4's in there, and what they looked at was, they looked at whether or not they had metabolic syndrome, which is insulin resistance syndrome, which is hyperinsulinemia and they found that the E4's who had metabolic syndrome, insulin resistance had a three to four times the prospective risk of heart disease. But, They found that the E4's who specifically did not have any insulin resistance and were very insulin sensitive, actually had three times or four times lower heart disease than the average other genotypes. So in other words, for this large group, whether or not you at a higher risk as being an E4, depended completely on whether you became insulin resistant, and if you didn't, you were even lower risk than the other guys. That's just amazing.

Amy Berger:

[41:15](#)

It just goes to show that genetics are not a death sentence. I mean, any gene doesn't like nobody's program to get Alzheimer's. Nobody is programmed to die from heart disease. Nobody's programmed to die from diabetes. We have different, I think those genes conferred different susceptibility to different things. Um, but again, it's like, it's almost scary when you start to learn about all this that really all the data we have is in modern people that are sick. You know, it's very like you have to go back almost to the time of Weston A. Price to find isolated peoples eating a diet totally devoid of, I know the phrase 'processed food,' is a very loaded term, but you know, eating ancestrally, eating foods that only existed, you know, in, in certain periods of human history, not all these modern, crazy refined foods. Um, so we don't, we don't know what the normal ranges are. We don't know what, you know, these genes do in the absence of a lot of sugar and a lot of soybean oil and all that stuff. We don't know because it's very, very hard to find large groups of people who are not eating any of that stuff. Um, you know, and, and it, we almost start to sound like a broken record. Like, oh, the ins- look at the heart disease. It's the insulin, the PCOS, it's the insulin. All Alzheimer's. It's the insulin. You start to sound like a snake oil salesman. But when you look at the research, you can't ignore that it IS all insulin. Maybe not all insulin, but insulin plays a major driving role in all of that. That might be exacerbated by other stuff. Like I said, the B12 deficiency, hypothyroidism in other diseases, it may be other things, but the thing drive in that machine really at least seems to be the insulin.

Ivor:

[43:07](#)

Yeah, and you're absolutely right, Amy, that this, when you talk a lot about the biggest factors in a problem, like it's hyperinsulinemia and Insulin Glucose dysregulation, you talk a lot about them, uh, or in heart disease because that's the biggest factor. And if everyone focused on that, we get the biggest bang for the book. But you sometimes a nice sometimes get accused of saying it's all insulin, but it's not all insulin, it's just the biggest thing dummy! So why aren't we focusing on the biggest item? And, you know, it's come up, there's a paper I have on, em, 'The Metabolic Syndrome is broader than you think.' And that's the title, and it's hilarious. They went through all the papers around many different diseases, sleep apnea, pcos, heart disease, cancers, everything. And they got together all the papers, that properly measured insulin, which not many do as we agree, they don't measure it enough. So they got around 55 papers where they said 'Yep, it was measured properly,' all these diseases, and essentially all bar 3 out of 55 papers, insulin showed a clear signal as being higher in the people with the disease versus the people without, and the list

of diseases they covered was around 12 or 14 diseases and they just made the point, guys, I, we think this is huge and no one's really talking about it. Yeah.

- Amy Berger: [44:26](#) And even that, even that is probably just the fasting insulin where just like glucose, somebody fasting insulin could be normal, but when they eat a meal, especially a meal that's high in carbohydrate, insulin, sky rockets, and it stays elevated for most of the day. So like I'm not gonna say it probably was 100% of the papers or 100% of the subjects, but it's probably even a lot more than we think if they would test like postprandial insulin.
- Ivor: [44:52](#) Exactly. Amy. So those guys were shocked at how big it was. But as you say, if they measured postprandial two hour patterns, they'd probably be beyond shocked, but the world would still ignore them. It appears. Shockingly. Yeah. So the B12 you mentioned. Yeah, and that seems to be a pretty big deal. And the lab range, I think of people got to a lab range from two 50 to around nine hundreds being a 300 is not a good sign. Right? Generally.
- Amy Berger: [45:21](#) that's this B12 specifically that reference rangers. Way Too generous. Um, the experts that I know, and B12, want to see you above 400. And if you have a specific neurological problem, not just Alzheimer's, any neurodegenerative disorder, any neurological problems, they want you above 500. So, um, to be told that you're B12 is normal, don't, don't go by that. Look at the number and see where you are. And it's very, very common, you know, and it's not just, it's not just a factor of the Diet. Some people can eat plenty of B12, but they have absorptive problems. So it's not just a matter of eating more red meat or more shellfish. Um, there's other problems involved. But um, I I would love to talk about the Diet a little more if you want to like with, with regard to Alzheimer's and-
- Ivor: [46:10](#) I was, I was thinking that exactly as you were speaking Amy, of course, the Diet for people who are afraid of Alzheimer's or have an Alzheimer's issue in their family, there's so many families affected. So broadly, what would constitute a good diet to target improving, mitigating, or helping with Alzheimer's?
- Amy Berger: [46:30](#) Yeah, I think it's a slightly different story, If you already have it and you're trying to slow it down or possibly even reverse it, versus, you're healthy and you want to stay healthy and possibly prevent it. And I say possibly, I'm like super careful with my language because we don't know for sure that we can prevent it. I think we can, I want to believe we can. Um, if you

all, you know, drastic times call for drastic measures, if you, if you've already got two feet in the disease process, you need something very drastic to get you out of it. You might not need as dramatic an intervention to potentially prevent it from happening in the first place. So if the main problem is that the neurons have lost the ability to use glucose properly, we gotta give them something else. We have to give them an alternative fuel. And the work of Doctor Steven Kinane on some other researchers on Sam Henderson has proven that even a brain that's damaged by Alzheimer's can still take off, and use ketones. So ketones are this fabulous, fabulous fuel for the brain. Um, so that's, that's the main rationale behind a low carb or ketogenic diet for Alzheimer's is to provide these starving cells with another fuel that they can use. But I often get the question, is it too late? Like, I'm 50 years old, I'm 70 years old. I've been eating a standard modern diet my whole life. Is it too late? I don't think it's ever too late. And I, I don't think you need a strict ketogenic diet to potentially prevent this. Um, even like within the Keto world, everybody's so afraid of food at this point and they're afraid of certain carbohydrates. And I, I fear that we're going too far in demonizing all carbs across the board. Like it would be dumb for me to say that strawberries cause Alzheimer's disease or lentil beans are causing Alzheimer's disease. Like that's not the problem here. Um, so I don't, you don't need a strict ketogenic diet to potentially prevent this. What I think you do need is to eat in such a way that keeps your blood sugar and insulin within a healthy range. And the amount of carbohydrate that any of us is going to be able to eat and still accomplish that is going to be different. Some of us are going to need 20 or 30 grams or less of carbs a day. Some people can eat a hundred or 200 grams of carbs and be fine. So at, that's an individual thing I you, you have to eat and live to keep yourself metabolically healthy and that's just going to look different from person to person. So I think, um, you in whatever you do eat, you do want to get your critical micronutrients. You want to get that B12 get the Omega 3, zinc, iron. And I mean any of the, I don't think there's any nutrient that's any more or less important than another, but I think it's really the insulinogenic affects and the glycemic impact of the Diet. That's the main factor.

Ivor:

[49:26](#)

Yeah. And I broadly agree, it is the biggest factor. There's always going to be myriad factors. As you say, synergistic coming together. But if the big one is the one and it's an easy one to target because if you eliminate refined food and ultra processed foods and vegetable oils and simple sugars and you ate real food, you know you don't have to be hardcore low carb you might just be generally low carb type of diet with healthy fats,

healthy grass fed meats, fish, eggs, you know, good wholesome ancestral foods and not go crazy. And I would guess, Oh one thing occurs to me this phrase eat to your meter came up in a podcast a week or two ago and yeah, people who are a little worried that they might be sensitive, they can get a little glucose meter and I know it's not as good as insulin measurement of course, but still for a lot of people, making sure every meal you eat, or in general what you eat doesn't raise your glucose much at all. Pretty good ready reckoner I think. What do you reckon?

Amy Berger:

[50:29](#)

Oh, that's a, that's a huge way to go because, you know, even if we can't measure insulin, the glucose is going to be the next best thing, especially after a meal. Um, I don't, I don't like for people to get obsessed though and get neurotic. I think, um, if they want to do that and track all the data, it's fine. But, you know, it's not just, it's not just the food. I mean, there is all the other lifestyle things that we know play into this. And especially with regards to Alzheimer's. It's sleep. It's stress. Um, there's, you know, exercise plays into it. Like, just keeping yourself healthy overall. I do think I'd be lying if I said I didn't think diet was the most important thing, but if your diet is already dialed in and you're still having issues, then there's those other lifestyle factors. But, um, you know, having a, having a glucose meter, it's, it can be helpful. But I just, as a nutritionist, I do get, you know, I work with clients that I have to tell them, listen, stop measuring so much. They just, they're, they're measuring a million times a day. They don't have diabetes and the amount of anxiety that that generates. But if you're, if you're genuinely dealing with the metabolic illness, yeah, you probably should check.

Ivor:

[51:42](#)

Yeah, I think it's a great point, Amy, because again and I myself, who am I to say, I have a glucose meter, I used to check it a couple of years ago, semi-regularly, but I haven't done those in a long time now because I'm just focusing on eating the right things and like that I never chased ketones either. Um, but if people, you know, maybe have the problem like Alzheimer's, like you say, that requires more severe interventions. So maybe they would take the MCT oil and get their B12 way up and, and do all those things that are in your book. I mean, just push all of the solution's much harder to try and actually get something improved. But it's pretty tough once the machine has been broken, I'm guessing.

Amy Berger:

[52:27](#)

Yeah. That's um, Thanks for mentioning the MCT because I forgot that, um, you know, the, the ketogenic diet or a low carb diet means different things to different people and it needs to

be implemented differently depending on the situation. I am not a big fan of MCT oil or exogenous ketones for healthy people that are already fit and, and don't need the extra calories or the, um, the extra ketones, frankly. Um, but for somebody that is in a severe enough state where they are unable or unwilling to do a dramatic dietary team, you know, when you're talking about dementia, if they're belligerent, they're uncooperative, they might even be in a facility like in a home where you, you can't change their diet if they're old enough and they're institutionalized, you can't do anything about that. In those cases, I do think exogenous ketones have a role there because that will elevate their ketones and they might have better cognition in, in someone that can't make a big dietary change. Um, I think the real bang for the buck would be both. Like if you have an elderly parent or something living with you and you can cook for them, change their diet and give them exogenous ketones, give them some MCT oil. Um, like you said, hit it from every angle you can. But I think for people that are already healthy and young and fit, doing a ketogenic diet, that stuff is largely unnecessary. It's not harmful. I think you can take it if you want to, but you don't. You don't need it really.

Ivor:

[53:57](#)

Yeah, they absolutely, I'd agree. Yeah. I'm not just agreeing to be nice either, you know, me, but, eh, genuinely, it's a good point because getting too obsessed, and I, and I meet a lot of people as well, who, who really want to prevent future illness, but they're as healthy as a horse and they're just following so many different things and getting so fixated. I'm just thinking, ah, come on. Like you're not going to live forever, if you do most of the right stuff. You're probability of achieving a long healthy life is going to be really high, if you become obsessed with it and annoy everyone around you, the probability is only going up a little more. Ted Naimon, a good friend of ours, Dr Ted Naimon, and I think he called exogenous ketones just today's empty calories aren't the new empty calories because if you don't need them, yeah,

Amy Berger:

[54:47](#)

yeah, you don't. Most people don't need them. They are extra energy. They can be beneficial in certain certain contexts. But you know what you were saying about these people that are there like in the 99th percentile of health and wellness and they want to be in the hundred and 12th percentile and they'll drive themselves nuts, chasing all those little things, you know, cold showers, sauna, fasting for 20 days, like all of this stuff that maybe it's helpful. Maybe it's not, but chasing those extra little bits at some point, it reduces your quality of life. It takes away from the very thing you're trying to achieve, which is calm, happiness, joy, enjoying your life. And then you're like a slave to

the meter. You're a slave to the numbers. You're a slave to your, your watch and your sleeping and your tracking software. And I'm not saying there's not a place for that.

- Amy Berger: [55:37](#) I have friends that manufacture that stuff, but you know, don't let it rule your life. We call in America, we call those people the worried. Well I think that's such a great phrase because they're already well, but they know too much for their own good. So instead of saying, Oh my God, I'm healthier than every single person I know. It's like I need to be healthier. And like you can feel the anxiety coming out of their emails. We want to be healthy, but you keep it in perspective. You know, don't forget to enjoy your life.
- Ivor: [56:08](#) Yeah. Kind of get a grip on the, yeah, a bit of perspective I think is the perfect way to Polish. And if these people want to go way overboard, even though they're already really healthy, they can do so. But they can just shut about it and not force us to listen.
- Amy Berger: [56:26](#) Did that guy or that girl going on or not? Like the best way to turn somebody off to a ketogenic diet is to talk about how great your Keto Diet is. Like just keep around shot and live by example. And when they see how great you feel and how great you look, they'll ask you like, don't, don't preach. They'll come to you.
- Ivor: [56:45](#) Yeah. There nothing to piss people off like zealotry you know, and make it look like a fad and that just turns people off. Well, listen to Amy. That was a great discussion and I think you really captured at a level that, that ordinary people can understand, but still with the depths so they can really grasp what's going on in Alzheimer's and the primary solutions. Uh, is there anything else you'd add on that topic or, I know you've got run off shortly at any case,
- Amy Berger: [57:12](#) I just, I just want to leave people with the message that we know a lot more about Alzheimer's than. Then you might think we do. Um, we're not clueless. We're not powerless. I don't claim that this is be magical solution, but it is certainly worth trying a low carb or ketogenic diet if you're concerned about this because you have no other options. I don't mean to scare you all out there and watching or listening, but there are zero effective drugs. There's nothing else to help you with this disease. What do you have to lose by changing our food? We know for a fact, from published literature that you can change pcls, obesity, type two diabetes, cardiovascular disease, gout, hypertension, all this stuff just by changing your diet. Why shouldn't we give the possibility that the same could be true for

Alzheimer's? So, um, there's hope. Don't, don't feel hopeless. Don't feel scared. Um, feel, feel empowered. Feel that this gives you something to do about it.

- Ivor: [58:09](#) excellent. Amy. And of course, to get more detailed, more comprehensive kind of summary of all of what we talked about, the Alzheimer's anti dollars, right? And it's on kindle and Amazon and...
- Amy Berger: [58:20](#) there's Kindle and there's paperback. There's no audio version. I've had to request for that, but that doesn't exist just yet.
- Ivor: [58:27](#) Oh yeah. Well, same at our book. Eat Rich, Live Long. The audio. I think the publisher wants to wait until it's out a year or something before doing those projects. But uh, maybe I'll get round to it. Just the same. Okay. Thanks a lot Amy. And - just the next conferences, your raft. There's quite a few coming up. What's your next big stuff?
- Amy Berger: [58:45](#) Um, I'll be attending Low Carb Denver. I'm not presenting, but if anyone wants to meet me, I'll be there. I am speaking, I might be speaking at Keto fest this year. I'm not sure yet. I have to submit my idea. Um, where else am I speaking? I'll be speaking in low carb Salt Lake. There's something going on in Salt Lake City and the end of April.
- Ivor: [59:06](#) Hey, I'm at that, ok, I'll see you there!
- Amy Berger: [59:08](#) Oh, see you there then!
- Ivor: [59:09](#) Okay, well let's catch up there then and we might even do another little chat on camera. Listen, you've been great, Amy. Thanks so much and really enjoyed the conversation.
- Amy Berger: [59:19](#) I know - thanks.