To Keto or not to Keto?

Steven Bruce
We're kicking off this new year with a look at diet probably quite appropriately after the festive season. It's a topic which is always baffled me, but it's intrigued me since I qualified as an osteopath, understanding what sort of advice we should be giving to our patients making sense of the conventional wisdom that the five a day stuff and all that. And I was therefore very intrigued recently to read a review of a forthcoming book review bit one of my written by one of my previous guests, in fact, Malcolm Kendrick, he's been on the show a number of times talking about the bad science around the cholesterol hypothesis. But he was talking about a new book called The Case for keto. And my guest this evening is Gary talked, Gary is the author of the case for keto, and he's joining us from California. Gary, welcome to the show. We've lost your microphone for some reason.

Gary Taubes
Thank you for having me. How's that?

Steven Bruce
I was looking at your bio on on on Wikipedia. And you're a fascinating history because you're actually a physicist by training from Harvard University on you. And then aeronautics at Stanford. And then you went on to Columbia to study journalism, what prompted the switch from sort of physics and so on to your current role, which is largely investigative journalism journalism into healthcare issues.

Gary Taubes
My might my advisor, my junior year at Harvard, I got a C minus in quantum physics. And he suggested that I might consider an alternative career. And I had always been fascinated with journalism and investigative reporting. And it took me a while to wind down my science career and get into that. And then it turned out that once I became a science reporter, there was plenty to investigate, plenty to be sceptical of let's put it that way

Steven Bruce
of investigating your base subjects didn't do investigating physics and things like that. But now it's more healthcare related issues. And you've run it You won three awards from the National Association of science writers, what you've done. And you've been featured in The New York Times Magazine, as I said earlier on the the observer was writing about during this country. So it's deleted that seems to concentrate your effort at the moment.

Yes, since about 1999, I've been focusing almost exclusively on nutrition and chronic disease, my obsession. So when I started in physics, I spent 10 months what we would call today, we would say, was embedded with physicists at the European Centre for nuclear research and outside of Geneva. And I had gone there because I thought I was going to be covering a great discovery in particle physics. And it ended up that the physicists involved the collaboration of 150, very smart men and women had screwed up to use a non technical term discovered non existent fundamental particles until I chronicle the how they had learned that they had made a mistake. And I became obsessed with this question of how difficult that is to do science, right? And how easy it is to get the wrong answer. And my second book was on a more famous scientific fiasco known as cold fusion, in which I was, again, obsessed with the same issues, how could something so obviously wrong have gotten so much play. And after doing that book, my friends in the physics community, of which I had many said, If I was interested in bad science, what they call pathological science, or the science of things that aren't so I should look at the research in public health because they found it completely unacceptable by their standards. And I began that in the mid 90s, with some articles on on prospective epidemiological research, which is hypothesis generating, but there's no you know, if you think of science simply as hypothesis and test, you have a whole field of research that all it does is generate hypotheses, which is a problem. And then that led me into a series of investigative articles for the journal Science on nutrition. And then turn to what may have been among the most controversial articles in New York Times Magazine ever ran on diet and obesity and then my books.

Steven Bruce
Reason for saying what I just did is to establish your credentials as a scientific mind because when someone writes a book about the diet, it's often easy to assume that They are just promoting some sort of fad diet. And you recognise that in your latest book, which I thoroughly enjoyed reading. And you, you, presumably yourself are a fan of the keto diet, and something must have taken you down that route originally.

I did I did. I want to say though that recognising the issue doesn't stop it from happening. As we were going on the air, I mentioned that there were two major reviews in my book in the British journalism. So the London Sunday Times, panned it, and called my arguments scary and treated it as the arguments I'm making this book is a, you know, promoting a fad diet that's a little different than the celery juice diet promoted by someone known as the magical medium. The Guardian gave it a rave review and said anyone who struggles with their weight has to read this book. And so the question is, how do you I would argue that the London Sunday Times reviewer was a closed mind that had little understanding of the subject and took the conventional viewpoint, which is anyone who argues for fad diets does not have to be taken seriously. Because they are by definition, fad diets are dangerous and they're unsafe. And how do you get somebody like that to open their mind to the possibility that mistakes have been made over the past 120 years of addressing or 100? And actually 200 years of addressing this question of how, why what causes obesity? And how do you reverse it by dietary means, if it is possible to reverse it by dietary means? And yeah, everything in writing the book and your introduction, everything is about

establishing the credibility to get people to read on to the next sentence, and ideally open their mind to the possibility that mistakes have been made and tragic mistakes in this case.

Steven Bruce
So would you say then that you find it fairly straightforward to pick up a piece of medical research and analyse that research and stop the obvious flaws in it if there are obvious flaws? Because most things off your path myself, if I look at a medical piece of medical research, as you know, barely get beyond the abstract, which very often doesn't even accurately reflect the author's own findings.

Well, that was one of my revelations in doing that. So as an investigative journal, journalist writing for science in the 90s, I mentioned that I'd done two major investigative pieces on nutrition and, and diet. So the first one was on sodium and blood pressure. And I had stumbled into this purely by accident purely serendipitously, I had no idea that there was an even a controversy that about the benefits of a low salt diet. And I spent nine months on a single magazine article I interviewed I think it was 80 or 85, researchers and investigators. And I collected all of the relevant literature, which back then meant, you know, going to the library and paying a student to go to the library and Xerox so I could then give that literature and I printed out stacks as a journalist there were about a foot and a half high. And I sent them off to three of the best epidemiologists I knew epidemiologist whose critical thinking respected and who had never written on this subject because I had established that if they had written on the subject, they were probably biassed already. All three of these epidemiologists, one was a biostatistician at UC Berkeley, one was at UCLA who had co authored co edited the major epidemiology texts in the US and one was at Harvard. And they all agreed on the multiple multiple issues in the literature. And in the studies and how the studies are interpreted and the the methodology of the studies and whether or not they actually report off. And for my own take I just the process of going through the references to you know, you, you read the articles and as a journalist, I'm going back in time from this article to the to what was established in the past. So you follow the reference train back in time, which is why they're there and as a journalist, to learn that the references often were didn't make the point that they were referenced to make, or occasionally made the opposite point or occasionally were just random references. And so you'd have these articles arguing and restriction and blood pressure and none of the references or virtue effectively none of the references supported the arguments being made in the paper. So in the field I grew up in in physics, had people done such slipshod scholarship, they'd have been thrown out of the field they'd be. This was part of the problem with nutrition research in general. So it got to the point that, for the most part, I don't trust anything I read, which I admit is a problem.

Steven Bruce
Yeah, I think that we are now in a kingdom where, you know, the importance of evidence based medicine has grown. And almost at the same time, a growing distrust of the evidence has emerged as well. So there are now people are saying, well, it's all very well being evidence based, but when you contrast the evidence, what do you actually do have you base your your advice to patients,

when this is one of the fascinating aspects of what I've gotten to do as a journalist, and I become a historian of science by virtue of having to do this, but, um, I wrote some of the first articles in the US, I wrote the first articles in the in the journalistic articles in the US on the Cochrane Collaboration. And the founders became, you know, I got to know them, I was I went to the evidence based medicine movements in the US in the 90s, the conferences, and I became friends with the the clinical investigators pushing for rigorous clinical trial evidence for any medical interventions. on it, in the course of doing my research, I'm now right working on a book, specifically on diabetes. And it's given me a new opportunity to go back into literature to the 19th century. And now because of Google Books, and effectively, any article ever written can or book ever published can be found and downloaded on the internet. So you can do this safely while sheltering at home. On what medicine used to be prior to evidence based medicine, right was physicians, clinical experience, I did this to my patient, they seem to get better. So I did the same thing to another patient, they seem to get better. And I'm, I'm going to recommend that other physicians do the same thing. And if there are professional societies, and we all get together and enough of us believe this is possible, this is going to be part of our standard of care recommendations. And in search for syrup ease, and some of the questions you're asking, that's a valid way to do medicine. Because if you're asking if you're saying I have an intractable medical condition, for instance, obesity, or type two diabetes, that's a degenerative condition that's guaranteed to get worse and worse. And I tell my patients to abstain from carbohydrates. And the obesity reverses itself. So say they go from 300 pounds, something they've never been able to do before. And that turns out to be a reproducible phenomenon with many patients. Um, that has to be taken serious. And you could be patient. If you've established that it's safe, so you haven't killed anyone yet. And now you recommend it to your patient, say, look, I think I'm going to put you on this ketogenic diet, which is abstaining from carbohydrates and replacing those carbs with fat. And I expect that you'll lose weight relatively effortlessly, and you won't be hungry, and your risk factors for heart disease will improve. And if you're diabetic, we may be able to get you off all your drugs. If you're type two diabetic, however, it's risky. And there's a slim chance you may kill yourself. And if so, I apologise, you're gonna have to accept that risk if you do it, because we don't have the clinical trials to tell us the long term risks and benefits. So there are ways in which you know, if that patient gets healthier, if he goes on the diet and loses the excess weight and gets off his diabetes medication, then you can be pretty confident that it was beneficial to that patient, when you don't know is whether they're going to live longer, and whether you've increased or decrease their future risk of chronic disease. That's what you need the clinical trials for. So what happened with the era of evidence based medicine, there were two things that happened first, a lot of poorly designed, poorly done, clinical trials have been done. The pharmaceutical industry is better at doing clinical trials in nutrition. And the problem with nutrition is you can blind people to what they're eating. And it's very difficult to control what they're eating. It's not just a pill versus a placebo. And so two of the fundamental necessities for a scientific experiment, which are you know, blinding and careful control are virtually impossible to achieve. So if you're going to have an evidence based medicine movement, and none of this did I ever think about in the 90s if you're going to have an evidence based medicine movement, you have to Make sure that the evidence you're basing it on it is meaningful, that the clinical trials are really done, well designed, well

planned, rigorous, and that you can interpret from them what you need, and it's a mess, the end result is a mess. And when you have a conflict, like over the ketogenic diet, known as the Atkins diet is still in some places, or

Steven Bruce
what's the difference between

that a lot?

Yeah, Atkins.

Atkins had some bad reviews, because Atkins was arguing for a high fat, high saturated, saturated fat rich diet and then diet that you could he was making the claim, as I do, that weight could be lost without consciously trying to eat less. So the conventional wisdom, right is that in order for a diet to work, it has to create a negative energy balance. So the fundamental, what every diet does is it somehow gets people to eat less. And the logic that we'll talk about the behind the ketogenic diet is the Well, there's a lot of confusion here. But ultimately, you're saying eat as much as you want, just don't eat carbohydrates. And you're guaranteeing that not only will they lose weight, they won't be hungry, they might end up eating less, but that won't be why they're losing weight. Atkins versus keto, when Atkins wrote his book, The problem, often Diet book, doctors do this, they want to give a prescription, a unique individual prescription. So it's not enough to just say, look, carbohydrates are fattening, don't eat those and replace it with, you know, healthy meat, fish, fowl, dairy or green vegetables. Because that's been said, people have been saying that for 200 years. So instead, you say, here's my diet, you're going to do this for four weeks. And then you're going to do this for a month, and then you're going to measure this and depending on what that does, you're going to do that. And one of the things I point out in the book is virtually all diets restrict the highly refined grains and sugars, especially nowadays, white flour and sugar. So they're restricting some carbohydrates. And they probably work based on how well they restrict all carbohydrates in term work being how well they help people achieve and maintain a healthy weight without hunger. And, again, you know, you have to sort of see past all the Malcolm Gladwell called these the patent claims of the different Diet book doctors to see what they're all telling you to do, which is ultimately donate sugars, starchy vegetables, and grains. And don't drink beer.

Steven Bruce
Get something out in the open here straightaway. We all know, I told me my cheek that the only way to lose lose weight is to alter the bad calories you take in and the calories that you put out. So you've got to eat less and exercise more, that's got to be the way to lose weight

doesn't mean that's the conventional wisdom. It's argued that that is a direct consequence of the laws laws of thermodynamics. And a more correct way to put it would be if you're losing weight, you are taking in less calories and you're expending okay. Or you're expending more than you're taking in if you're gaining weight, then doesn't matter whether you're getting fatter, you're a 15 year old boy who's getting taller, if you're gaining weight, you're taking in more calories and you expand your body mass is increasing. You know going back to physics, mass and energy are equivalent give or take the speed of light squared. Weird. And so if your body mass is increasing, you're in positive energy balance if your body mass is decreasing your negative energy balances statements are tautological. And what happened in the nutrition community and there's a very one of the arguments I make in my book is one of the problems in nutrition obesity researches is people learn the dogma they don't learn the history of the field they don't learn on what data what evidence the dogma was based in physics, you learn the physics with not only the names attached, like Maxwell's equations and Newton's laws of gravity and Einstein's laws of relativity you learn what experiments were done to test those hypothesis. So not only what you're supposed to believe, but why you're supposed to believe in obesity and nutrition. Nutrition does a little more than obesity research. But what happened in obesity researcher is back in the days when thermodynamics was relatively new and people were the fashion of the day and science was all you could really measure that was relevant to obesity was energy intake and expenditure. Researchers can use Tom logical Association, positive energy balance is equal to is the equivalent of weight gain negative energy balance is the equivalent of weight loss with a causative function. So you the way you lose weight is you create a negative energy balance. And the way you do that is you change how much you eat and exercise. And the way you gain weight is you've obviously created a positive energy balance. And the way that happened is you ate too much, or you got slothful, and it didn't exercise enough. The people Ah, it does, you can Yeah, I mean clearly, but then even then, when people restrict calories and it gets it, they're more complicated because you can, because you can.

For instance, I could argue that if I starve a growing child or inhibit his growth or her growth, so I'll cause their growth to be stunted, right so i you could say that causing a negative creating a negative energy balance by undernutrition inhibits growth, but you would never consider that a meaningful way to do it. Even though clearly you can do it in some people, children when they're growing. Um, that's one aspect is it's not enough to say that that's the way it should be done. And other aspect is typically when people restrict calories or carbohydrates or 50% of your calories or 60% than a typical modern diet. So if you're restricting calories, you're restricting carbohydrates. And even in the clinical trials, when you look at the data when on the puts a subject on a low fat diet, for instance, at these trials done by Christopher Gardner at Stanford University, and you compare a low fat diet to a low carbohydrate diet and a low fat diet, they're eating maybe 500 calories a day less. But of those 500 calories. 300 calories are usually carbohydrates, because even on the low fat diet, they stopped drinking sugary beverages. They stop eating sweets, and pastries between meals because they think of that as cutting back on fat, but they're cutting back on carbs. So from a scientific perspective, it is true that you can reduce your weight by starving yourself or semi starving yourself. And some people might be able to keep this up for years to decades stay in

weight stability, by always eating less than they would prefer my effect always being hungry. But we also know the negative sequelae of hunger. We know the complications of long term hunger, and few people can sustain that. So one argument for why all diets ultimately turn out to be unsustainable, as if those diets require people eating less than they would like to eat and walking away from every meal hungry, and then it's going to fail. Eventually they will binge eat when food is available and the die the study I discussed in the book is the famous ancel keys University of Minnesota nutritionists in the beginning of early years of the Second World War ran a study using conscientious objectors at Miss Minnesota, excuse me, where he put them on 1600 calorie a day diets of the kind that you would expect to we expected to find people eating in Eastern Europe and Eastern Europe was liberated. So vegetables, you know root vegetables like potatoes and turnips, a little bit of lean meat. So what we today would actually consider a healthy diet. And the subjects in effect, slowly went crazy. And the books to volume book that Keith and his colleagues wrote called the biology of human starvation, documented the they call the starvation, neuroses and even psychosis two of the subjects tried to mutilate themselves to get out of the study. And they were being fed 1600 calories a day. It wasn't anything like what we tell obese people they have to eat to lose weight

Steven Bruce
in 100 pounds calories or is he cutting out specific food groups.

You know, the green vegetables, potatoes, turnips and lean meadows, turnips and lean meat, that's what they were eating. And they they dreamt about food, they obsessed about food, they had an institute of body systems so that they wouldn't let him to leave the laboratory setting without a body because otherwise they would cheat. Some of them took the chewing 40 pieces of gum a day. I mean, they were also making them physically active. So they were trying to keep them and negative energy balance, which is of course impossible, because eventually they'll lose weight and their metabolism will slow down to match what they're being fed. And the other interesting thing is even at 1600 calories a day they didn't lose that much weight. I forget the details was about a pound a week for the first 12 weeks, and then it slowed to about a quarter pound of weeks for the rest. And then of course, when the study was over, and I should also say most of the subjects were lean, and this was, you know, circuit. So, BMI under 25, they didn't have that much fat to lose, but some of them were overweight. When the study was over, they had to control their feeding because the subjects all wanted to binge eat, so they had to refeed them slowly. And one point that Keyes made was that they all put on more fat than they had lost by the time they were done. refeeding. So they ended up with about 50% more fat tissue than they had originally. And

Steven Bruce
why would that happen? Why would they not just eat to fill up their natural weight?

Well, because we don't know what their natural weight water weight was. Sort of, I mean, their body is trying to replay you could the way you could think of it as your body is trying to replace the

fat loss. So interesting to do the refeeding with different levels of Mac, different macronutrient ratios to see if the macronutrient ratio played a role in this. But the Yeah, keys are the term keys and his colleagues used was, I think, post starvation, obesity to describe what happened. And I just make the point that virtually everyone who struggles with their weight, yeah, those of us who the phrase I use in the book, which I admit comes from 1950, zero diet doctors, but it seems appropriate. Some of us fat knees lay, and some don't. And those of us who fat and easily You know, this is yo yo dieting, right? You go on a diet, you starve yourself, you think about food all the time. You eat little handfuls of tuna fish on lettuce, for lunch, and small portions of food for dinner and breakfast. And you carefully weighed out the seconds until you can have 10, potato chips for your afternoon snack and you think about it all the time. And then when you fall off, you end up fatter than you started

Steven Bruce
a new site in New York, I think we set a number of examples. But one that stuck in my mind, I think was actually a physician, the doctor who had been trying to lose weight for a very long period of time eating, I think five Ritz crackers or an evening trying to lose weight and it just hadn't worked at all. And that baffles a lot of people. How could you not use weight in that way?

Well, well, and this was this wasn't a physician doctor, this was a woman whose plight was along with others, like her was described in the Huffington Post here in the US in a magazine article saying we have to rethink how we think about obesity. Because here are these people who are literally seem to be starving themselves. In this case, you know, it was a young woman who weighed around 300 pounds, I can't remember the details, and she had an issue with wake up. Basically, she would try to smoke her hunger away, and counter calories and count the number of potato chips she could have. And she could lose weight doing it. But she was, in effect torturing herself. And eventually her mother forced her to stop because she believes she had an eating disorder. And we should talk about the water issue on the show because it's it's very dependent on the same assumptions about why we get fat and and and you know, what we had to do to reverse that process. But yeah, the world is full of individuals who I would argue, probably struggle harder to eat in moderation. Or eat not too much as Michael Pollan famously put it, and lean individuals because they have to, they're struggling with their weight all the time. That's what it implies to struggle with your weight is to struggle with your eating and exercise behaviour. And, again, the argument I'm

Steven Bruce
sorry, I was gonna say you talked in the book about the psychological effects as well. And one of the individuals you mentioned was a young lad who had suffered lots of physical or psychological abuse when he was at school because he was overweight, and also couldn't participate in sports that others do because he was overweight. And then long term effect would be blamed for his own obesity must have taken a serious tone.

Well, and that's fine. This is obesity. We know this. I remember study done about 810 years ago, and it was published in JAMA here in the US it said the quality of life for children struggling with obesity. Their conclusion was that it was worse than the quality of life for children with cancer, which I find almost impossible to believe but that was what the conclusion was. It's um, you know, we know this world is full of books written by writers who struggle with obesity discussing the the vein Incredible burden of this disease psychologically as well as physically throughout their life, and the assumption that it's fixable. And this is sort of one of the fundamental article arguments that I'm making in this book, and I've made my other work. If you're no, I'm gonna give you an example, a young man that I am. Sorry, I just got a text from a friend who must be watching our congressional hearings on the election of the new president, and while we're doing this, and it included a scatter logical term, so is are you watching this blank? And I forgot that I'm not and I suspect, I'm glad I'm not. Okay, man. I have a made a friend. I've made a lot of friends doing this work. This is a young man who weighed 400 pounds when he was 18 years old. This is the young man you were talking about in the book. He later went on to

Steven Bruce
a UK audience. 14 attendance though, would be 140 pounds. So you know, he's three times that week for people to put that into context. A lot of Brits don't understand pounds in terms of body weights.

Okay, so almost 30 Stone, stone, let's say 27 Stone, he said his scale, peeked out. And when we would have said it's 380 pounds, you just knew it was above that he had been ridiculed for his weight as a child. He was a tall kid about two metres tall, a little less than two metres. And he told me he didn't need any different So just to give you a perspective of them by the time I met him, he was getting his law degree at Yale University. So very smart. Young man, he now works for the governor of California. And so 30 stone at 18 never walked in never in his life that he said that he ever finished a meal without still wanting to eat more. So he had never been satisfied. He didn't believe he ate any more than his lean friends who might have been less than half his weight. But he ate the same crap they ate they use a non technical terminology pizzas Coca Cola was on when he was 18. His father gave him a copy of this New York Times magazine article I wrote back in 2002, when he in fact, ate nothing with green vegetables and fatty ground meat that his father bought at the kind of store we call them big box stores here in the US Costco. I don't know if you have them in the UK, but his father would buy 30 pounds of ground meat a week and he that's what he would eat every day five, six pounds a day and he lost 130 pounds. So that's what are we talking nine stone in four months. And for the first time in his life was sated and would never go back he said to eating differently at the moment, he weighs about 717 Stone Six years later, and you know eating a perfect diet of meat fish and found green leafy vegetables and that's all he can maintain his weight if he doesn't diverged from that kind of eating but he's not hungry, and he's happy with it. So you know, the problem is what we do with these children the typical advice for child like him right is to eat less and exercise. So first you take a child who's 400 pounds from exercising certainly running or endurance, any kind of endurance exercises, torture, and you torture them that way. And then

you try to get them to eat less now that you've got them to build up an appetite and the end result should guarantee you know that it does fail shouldn't be a mystery. Danny.

Steven Bruce
We just lost your audio for a second there. Gary. Are you back with me? I

see. I don't know why.

Steven Bruce
You're fine. We've got you back now. Since we got a break. A couple of observations sent in. Michael was talking about the review of your book in The Times asking whether it was the review by David Aaronovitch he says that he didn't really pan the book he said it was more of a lightweight, not really adding anything type review. So hopefully that makes you feel a bit better about what

you think what he might have said what he might have said about the book. It was really kind of a lightweight, not adding anything kind of book, which to the author is

a lightweight, not

Steven Bruce
really adding anything type of review, not

Yeah, no I'm just saying that what made it a lightweight not adding anything review was that he then said then said that the book was a lightweight not adding anything kind of book. I did notice that he referred to my arguments as scary. The authors never forget critical negative reviews like this say they walk around with them in their heads for the I will be spending the next 30 years of my life should I live that long on my diet? Or off my diet for that fact, you know, hoping to run into David Iran, but someday, it's just the way authors are programmed.

Steven Bruce
That's a very interesting point, isn't it? Because I would like to think that a responsible journalist who says your article your your arguments are scary would have ever known they're scary.

Well, he knows that he's lost weight on any diet on any diet. So and the arguments always are, because obesity is such an intractable disorder. And because there's such a huge psychological burden, the idea is that the obese are prey to snake oil salesmen, they always have no as with any individuals with intractable disorders, you could come along and sell them hope in the form of a

diet or a, you know, some kind of phoney diet. And I understand that and it's a dangerous it's a difficult it's, it's one of the things that makes what I do so difficult is again, how do you build up credibility so people are understand that it's it's more than that when I read a view like Iran of it says, I feel that the failure ultimately is on me because I whatever I did, I didn't manage to open his mind which the book is called the case for keto, for reason. I would like anyone who reads it to wonder why anyone would do a diet that restricts you know, all of our favourite things. Why this is possibly something not only viable, but I'm arguing perhaps that should be the standard of care for obese and diabetic patients. You know, I'd hope they read the book with an open mind so they could see why why do people like me who do reasonably critical sceptical science journalists find this so compelling? And it's not just that I control my own weight on the diet? If I didn't, I wouldn't write about it clearly. But because and this is something we should talk about, which is the conversion experience concept.

Steven Bruce
But again, no one is still on the subject of risk. Steve has sent in a question saying we're putting the obesity aside for people of a healthy weight. Is there any data on the risk of bowel cancer with the ketogenic?

Not that I've ever seen? There there is. So remember, ultimately, ketogenic diet is a diet that restricts sugars, grains and starches. So you're not adding anything to the diet, unless you well do you can do it with a significant amount of red meat and bacon and a lot of people do, but you don't have to. So a priori, I would not no reason other than the absence of fibre that you might expect this diode to have negative sequela in the bow or the, you know, the GI tract. There are populations human populations that evolved with effectively with fibre free diets and did not have high levels of cancer. So the the hunter gatherer or the pastoralists like the Messiah in Africa are the usual example the Maasai warrior class which lived on milk, meat and blood from the cattle they heard in the interview with Native Americans, Plains Indians in the US most of the year did not eat, did not have fibre rich diets by any stretch of the imagination and had, at least when people tried to assess these numbers back in the early 20th century had surprisingly low levels of cancer. So I'm I. On the other hand, I'm not that interested in the lean healthy individuals at the moment when I write this book, and I say that in the first sentence, those lean and healthy people because of their diets might eventually become overweight and then obese and struggle with their weight but as long as they're lean and healthy now then they're tolerating the carbohydrates in their diet relatively well. What's question is what do you do with these people have been fighting a weight problem, their whole life, a weight problem their whole lives? And they need to think about this differently to solve. Okay.

Steven Bruce
Elizabeth has sent in a question from the other the other perspective as you like she wants to know whether there's any information about whether a keto diet would help a person with lip edoema which is something she suffers from

Ah, I just saw paper published in the past month on ketogenic diets and lymphedema. So the issue with lymphedema is it may or may not, it may not be diet related. So because of the the localization of fat tissue, it could be related. It's an argument against the caloric balance hypothesis because it does appear to be resistant to, certainly to semi starvation diets. But one of the arguments I'm making you could Google, you know, ketogenic diet and deema, you'll pull up the paper I'm thinking of and the it's worth to try the argument that I'm making in this book we now have Well, when I first started with this, things that made me take this seriously as the first five clinical trials really ever done comparing a ketogenic diet with the Atkins diet versus the kind of low fat American Heart Association diet we'd been told to eat. And there were five of these trials, they hadn't been published, yet. They had been discussed in conferences so I could discuss them. And they all have the same thing. People on the ad libitum Atkins diet lost more weight, and had better heart disease risk factors and people eating the calorie restricted low fat American Heart Association diet. The so since then, we now have if you go to clinical trials.gov, and put in ketogenic as a keyword, you'll pull up about 100 trials that have been completed, I'm going to assume half of them are on paediatric epilepsy and aren't particularly relevant, but the other half are not. And then there's another 160 or so that are now in progress. When the American Diabetes Association, a couple years ago, reviewed the published their review of the nutritional therapy for diabetes, they said the very low carb diet low which is keto, and the low carb diet had more evidence for and more consistent evidence in any other trial, any other diet being prescribed for diabetes. So the argument is, we know what's safe, you can do it as an experiment. And again, part of the reason I'm writing this book is if we're going to do an experiment, I want you to know how to think about your experiment how to do it, right. And if it helps you. And if it does, you don't need a clinical trial to tell you, you efficacy, you only have to worry again, about safety. And we now have those we have more than we have for any other diet.

Steven Bruce
We are getting there. So ah.

Okay, at what point did we lose me? Can you hear me?

Steven Bruce
You said there is now the evidence that it's safe when there's more evidence for this than there is for any other dyers?

Yeah. And that's, that's what you need to know to do an experiment you have to know is this, can I if I'm not gonna die if I'm gonna, if I did, if the evidence strongly suggests that this is at the very least safe, I can test whether it's effective on myself. Okay, now I just have to do it. Again. And again, the reason I wrote this book is so that people would know how to think about it. So when they did decide to try it themselves, they wouldn't undermine their own attempt by doing it

incorrectly or not an understanding the basis of you know, why they were doing this and what they hope to achieve. That's one

Steven Bruce
of the concerns. And I think in your book, you say that the mainstream medical profession will often make this allegation is that we don't have any evidence, any clinical trials, which show what the lungs of the diet is. So if someone wants to reach a pure keto diet for the rest of their life, starting at the age of 20, where they live longer, would they be healthier? Or would something dreadful happens under the age of 50? That wouldn't otherwise have happened?

Yeah, and we don't know. I mean, it's an interesting I mean, it's an interesting it's on one level, and I use actually an Instagram quote from a woman in Wisconsin, a real estate agent in Wisconsin and just really captured that she said, You know, I, when I went on this keto diet, she was I think she was 340 pounds and so I lost 110 pounds. And suddenly my friends are worrying about how much bacon I'm eating. Right? Is the bacon I'm eating gonna kill me. I'm 110 pounds lighter than I was, can I possibly. So our 20 year old who goes on a ketogenic diet if he's our 400 pound, 20 year old who gets down to 230 and his lipid profile is now ideal. So he's had terrible insulin resistance and all the bad risk factors that go with insulin resistance have now resolved, we can talk about LDL and we should talk about LDL. But you have a, an individual who's definitively healthier. And you can get guessed that if he adds back carbohydrates to his diet, his weight status, I see weight as the research than physicians in my world. It's just another symptom of metabolic disturbance. So and it's part of metabolic syndrome, if you think about it, it's not just low HDL and high triglycerides, and then high blood sugar and high blood pressure, it's an increased waist circumference. So if you think of the increase waist circumference is another symptom of what's ultimately insulin resistance, then you resolve all of that, it's a very, very good chance you're going to be healthier. Now, what's interesting, remember, I started my career, I told you, I did two investigative articles for the journal Science. The first was on salt and blood pressure. And while doing that article, one of the worst scientists I'd ever had the joy to interview. And my second book was called bad science. And it was about cold fusion. And I thought I interviewed the worst scientists in the world for that. But know that we're worse in nutrition and chronic disease, one of the worst I'd ever interviewed. They were they at least as bad told me took credit, not just for getting Americans to the low salt diet we'd all been eating, but the low fat diet. So I got off the phone with this fellow. And I called on my editor science, and I said, When I'm done writing about salt, I'm going to write about fat. I don't know what the story is, I had been eating a low fat diet like everyone else at the time. I just know if this guy's involved in any substantive way, there's a story there. And then I spent the next year of my life researching and interview, I interviewed 140 odd researchers and administrators and physicians for that one magazine article on we never had the evidence that the low fat diet was beneficial. And that's the thing people forget. So now we're saying, Look, you've got to forget about the low fat dogma, these clinical trials that I'm talking about in all these ketogenic diet trials, and virtually all of them they they're, they're saturated, fat rich. And in virtually every trial, these subjects eating the diet come out healthier than they do, compared to whatever the comparison diet is, which is often an American Heart Association asleep plant diet. And what I would love to

see is a comparison between a ketogenic diet or a low carb, high fat, nearly ketogenic diet and the Mediterranean diet that kind of put these discussions to rest. But we don't, the only evidence we have that eating any other diet is beneficial. Is observational epidemiology. Remember, we started off I started off talking about that these are surveys that give you an association between what people eat and their health status. And then the assumption is that if they're healthy, that's because of what they ate. And if they're unhealthy, that's because of what they ate. And that's a hypothesis. And we don't have the clinical trials to test that either. So what you're left with is, and this was phrased to me very well by a physician. So one of the things I did for this new book is I interviewed 120 odd physicians who have converted to this way of thinking and prescribe low carb, high fat ketogenic diets to their patients and think it's vitally important that they do so.

This one in Martin Andreas, who practices from South Africa and he practices outside of Vancouver and British Columbia in Canada. And he said for 50 years, we've been taught to prescribe diets by hypothesis when you put a patient and say you should eat a Mediterranean diet or a DASH diet, or any kind of low fat diet or a low salt diet, you're prescribing diet by hypothesis, there's virtually nothing you can measure that will tell you whether or not the diet is going to lengthen your patient's life or not. On if the patient lives to be at or loose to be 100 or dies at 60 have a heart attack, you will have no idea what role the diet played. You can measure beds, but that only give you probabilities. They won't give you any knowledge and the alternative is you put them on these low carb, high fat ketogenic diets and you watch them get better. There's a physician and I forget if it's England or Ireland and I apologise DAN DAN Martin who I interviewed who said you know he, a couple of his patients you have a 300 pounder on hypertensive drugs, blood sugar, diabetes, drugs, drugs. gasps you take him off carbohydrates and tell him to eat fat and eggs and bacon as much as he wants and you have a 200 pounder who's no longer on any medication, are you going to tell that person to go back to eating potatoes, because we don't have any long term clinical trials that tell us give us some probability that they're going to live longer.

Steven Bruce
It slowly baffles me though, because ancel keys and Atkins, surely they were promoting their research that their theories in the 1960s are safe, that we ought to have long term evidence financially.

But you need long term clinical trial to trial evidence, and we never got it, if you the assumption was the fundamental assumption of risk factor epidemiology, these prospective cohort studies that are done by everyone in the world because they're relatively inexpensive to do is that you can follow people and monitor how they eat and control for all other factors and come to something long term conclusions about weight and diet, the health status and diet and it's just um, I find that argument completely and compelling and it's against virtually it, it sort of flips the paradigm of what science is. So one thing we knew about sciences, I mean, you're taught in eighth grade, control your variables change one variable. And that's an experiment, then you can understand what your experiment my how to interpret it, that if I change one variable, then whatever I see,

whatever effect I see, I can assume is caused by that change on the kind of arguments that Claude Bernard made 1865 in his introduction to the study of experimental medicine, which every doctor should still read, the translation is not great, I've been told, but it's the only one there is. And Claude Bernard was a very, very smart, witty man. Um, but he's, you know, that instead, we have a whole field of research that's willing to sort of jettison the idea that hypotheses that that experiments are even necessary to test hypotheses. And we should all live by their hypotheses. And it's I always think back to Ernest Hemingway in the last line of the Sun Also Rises, I think, wouldn't it be pretty to think, you know, we just, you have to tell us these hypotheses. But when it comes to the short term risks and benefits, you can you can do those yourself when it comes to weight and diet, bt status, you don't need the long term drugs to know if you're getting healthy for a year or two.

Steven Bruce
Again, we want discussion to our members, I did say that we'd be talking about insulin. And I wonder if actually, you'd like to talk us through the mechanism by which the keto diet works.

Okay, well, okay, well, and again, I'm going to flip the question a little bit, and we're going to talk first about the mechanism by which we get fat. So the conventional thinking is we get fat because we eat too much we take in more energy than we expend. And that energy is stored in fat tissue. And the way to fix it is to eat less and exercise more create a negative energy balance. One of the arguments, I'm making the book, it's very good. And that, in fact, some of the leading endocrinologist and obesity researchers in the world in the mid from the 1920s to the 1970s made the same argument as if you think of an obesity as a disorder of excess fat accumulation. So if you go to the textbooks right now, and the articles will also say obesity is a disorder of energy balance, which is an assumption what we know is obesity, this sort of excess fat accumulation, if you have a subject in front of you weighs 300 pounds, and it's not it's fat, then what you're worried about is our excess fat. And by the 1960s, we had come to understand the metabolism, researchers, physiologists, some very brilliant research done from the mid 1930s to the mid 1960s, had established the hormonal enzymatic regulation of fat accumulation. And it's if you go to your and for your listeners, go to your biotech, their biochemistry textbooks and look up lipolysis for instance, that'll get you there or a dip aside or fuel metabolism. And that process is dominated by the hormone insulin. So virtually every hormone works to get fat out of fat cells. Because every hormone is telling your body to do something and then in doing it, they also make the fuel available which means Trying to get fatty acids into circulation so your body can burn them for fuel. In fact, the first time we had a tool that allowed to measure fatty acids in the circulation, which was 1956, or 58, three groups around the world came up with assez. And one of the first thing they realise is you give adrenaline to a subject and their fat tissue dumps fatty acids into the circulation. And the adrenaline is prompting you to free flee or fight and the fatty acids the assumption is they're there to fuel that fleeing and fighting if necessary. The one hormone that dominates works to put fat into fat cells is insulin. And again, this was textbook medicine by 1965. So insulin upregulate, an enzyme called lipoprotein lipase on the

dip aside membrane and lipoprotein lipase works to break down triglycerides and whatever lipoproteins are passing by in the circulation breaks them down into fatty acids, the fatty acids flow across the cell membrane, and then they're re esterified or esterified in the fat cell. And then there's an enzyme, a series of enzymes called hormone sensitive lipase is inside the fat cells that break the triglycerides down at the fatty acids so they can get out again. So if what you're worried about not how much people eat and exercise, but how much fatty acids are taken up by the fat cell or mobilised by the fat cell, that process is dominated by insulin. So you elevate insulin, you increase fat accumulation and inhibit fat mobilisation insulin shuts down the policies and in fact, in the fat cell, and you lower insulin, you reverse that process. And in 1965, Salomon Burson who, with Rosalind yellow develop the radio immuno assay that allowed hormones to be measured accurately in the bloodstream for the first time. Yalla won the Nobel Prize for this work he passed away in 1965. They pointed out in the Banting Memorial Lecture at the annual meeting of the a DA that for the fat cells to mobilise fat, you need the negative stimulus of insulin deficiency. So, fat cells are so sensitive to insulin, the term used by the metabolism researchers who I interviewed when I did started this research 20 years ago, and you often see this term in the textbooks, excuse me their articles is fat tissue is exquisitely sensitive to insulin. So if there's a tiniest bit of insulin in the circulation, your fat cells are in storage mode that insulin will inhibit lipolysis inhibit the process of getting the fat out of the fat cells and having a burn for fuel. So basically, what you need to do to if you just care about what is indeed textbook medicine, and you assume it's applicable, that will be city. To get fat out of the fat cells, your fat cells have to see this negative stimulus of insulin deficiency. Another phrase I use over and over again in the book. The way you minimise insulin, is you remove the carbohydrates in the diet, replace them with fat. And now you're eating a ketogenic diet. It's a high fat low carb diet, but it minimises insulin levels. And it guarantees that you will your fat cells will spend the maximum amount of time per day seeing this negative stimulus of insulin deficiency. So, you know, in the course of my research, I never imagined when I started this, that I would ever write a book called The Case for keto. It still keeps me up at night, the fact that I did, but one of the things that's so compelling is that what metabolism researchers had worked out and biochemist and some very good mostly British biochemist I might add, Philip Randall, and his collaborators, what they had worked out by the 1960s was all the various ways that insulin sort of determined fuel partitioning in the human body. And when insulin is elevated, what it's doing is it's telling cells to burn carbohydrates and to store fat. And if you become insulin resistant, then your insulin is elevated most of the day, it's elevated for an abnormal amount of time. And if in yellow, and Burson proposed that all you had to do is elevate insulin a little bit to cause obesity. So the causality is not necessarily that obesity causes insulin resistance, but that a tiny bit of hyperinsulinemia from a tiny bit of insulin resistance begins the process of excess fat accumulation.

Steven Bruce
Okay, and you've talked about dumping fat into the bloodstream. Have you done any research on the relative merits of fats over glucose for fueling the cells?

Well, I'll I'm getting complicated. And now we're asking which cells. The argument against ketogenic diets, one of the many arguments against him historically had been that the body

requires the brain requires 100 130 grammes of glucose a day to fuel it. And it is true that your brain will run on glucose when you're eating a carb rich diet, but, and this was worked out mostly in the 1960s. It was ultimately it was common sense. And I've been reading a lot about this lately in the context of the diabetes literature. But in the 1960s, when again, when the tools were available to do these studies, researchers realised that when you're there, the question always is synthesise ketones when it's not produced when it's not being fed carbohydrates and they you're eating a high fat diet or you're fasting so after a day of fasting or even after an overnight fast your your liver starts upping its its its ketone synthesis. And the question is why and as it turns out, was discovered primarily by George Cahill and his collaborators at Harvard, the brain, the ketones field, the brain, so in the beginning of fast or carbohydrate free diets, you'll get glucose from the protein that's being broken down and you'll get glucose from the cholesterol molecule that's released from the triglycerides or lapolla sized into fatty acids. But your body is trying to conserve protein. So what it does is it synthesises the fat that's being released from the fat cells and takes the liver synthesise and the ketones and then your brain runs on ketones. About 75% of the energy comes from ketones 25% from glucose from again, the glycerol molecules mostly from the fat so he there have been arguments and evidence that the brain runs more efficiently on ketones and glucose and that's why ketosis feels so good to some people. I have no idea if my brain is running efficiently or not, because I have nothing to compare it to. The there have been arguments made for the heart as well. Usually using you know myocytes heart cells and in in vitro um, the you know, the body runs perfectly fine, your your Krebs cycle and your mitochondria and don't particularly care if it's burning fatty acids or glucose. One of the arguments against burning glucose, you get you, fewer reactive oxygen species burning fatty acids and burning glucose, so you get less oxidation and oxidative damage to cells burning fatty acid, there's a lot of arguments you can make for the benefits of burning fatty acids. The problem is if you're eating a carb rich diet, and particularly if you're drinking carrbridge beverages between meals, then you're basically burning glucose all the time. So you're never and that's why your argument would be why you're not accessing your fat why you're not losing fat is because your body is the insulin is is the that's secreted in response to these carbs is telling your lean tissue to burn carbs. So your your you know, and again, the Diet book, doctors use phrases like carb burning machine and fat burning machine and unfortunately, there are appropriate phrases catches a maybe are corny as they may be.

Steven Bruce
You mentioned ketosis earlier on. And I imagine that that might be alarm bells with people because of course with a diabetic, one of the consequences of hypoglycemia is that ketoacidosis which is a sign of a fairly dangerous development in diabetes.

Yes, and then

well, and this is one of the again, one of the things that's fascinating when you take a historical perspective to the field because um, and I've been reading a lot of literature from the pre insulin era and then the early years in the insulin era when in diabetes so the standard diet for diabetics

prior to insulin was known as the animal diet and it was effectively a ketogenic diet. It was fatty animal products and green vegetables that had been boiled three times to remove all the possible carbohydrates in them and vitamins also, the they knew back then that a carbohydrate restricted diet created ketosis added elevated ketones and this was a perfectly normal aspect of the metabolism because it also happened after a 12 hour fast or a 24 hour fast. And so there was clearly a healthy metabolic response with some kurtosis. And then there was the pathological phenomena that ended in diabetic ketoacidosis, coma and death. And the discussions in mostly the European textbooks, but even some of the US books and articles would discuss this difference. But once insulin was discovered, and coma, for the most part was eradicated by the use of insulin. Some of the clinicians led by Elliott Jocelyn in the US who by virtue of his clinic, and the number of patients he had, and his prolific writing and his textbooks became the leading diabetes influencer in the world became scared of high fat diets because they would, Jocelyn saw that as perhaps the reason why so many patients had died of coma prior to insulin coming on. So instead of the high fat diets, keeping them alive, only to eventually die of coma, this would be the type one diabetics, he thought maybe that fat had killed them. And because there were no real discussions of this, this idea that the ketosis that you get when you abstain from carbohydrates, and ketosis from fasting could somehow slip into diabetic ketoacidosis, or was somehow related to it just became one of the accepted ideas in the medical research community, I suppose a lot of diabetes researchers still do. It's one reason why a lot of diabetes researchers and diabetologists are still scared of ketogenic diets for even type two diabetics, because they fear that somehow you're on a slippery slope. And if you get a little ketones, you'll end up with diabetic ketoacidosis. And it's both physiologically and practically naive, but it is tell doctors think, to not take risks with your patients life. So I'm not belittling that.

Steven Bruce
In the book in the book, I think you made the observation that on a on a keto diet, you might end up with something like five millimoles per litre of ketones in your bloodstream as opposed to 20. If you're a diabetic, in ketoacidosis,

yeah, those I mean, five is difficult to get to. And one of them to do is they stimulate insulin secretion is a feedback mechanism. So the one reason you're the insulin will inhibit ketogenesis and hepatocytes. And so if you lower insulin to nothing, or if you're a type one, and you don't have any insulin to secrete, then then you know and ketogenesis can run out of control. But if you have insulin, as you do, if you know as most of us do, then both of us will stimulate the ketones will stimulate some insulin secretion, which will prevent a runaway cycle from happening. So it's a natural response to ketosis to keep it and you know, the kind of negative feedback loop you see in any healthy homeostatic system, which is ultimately what we're trying to do is is restore people or people to a healthy weight by allowing the homeostatic mechanisms in their body to work the way they're supposed to work. And the way you do that is by removing the What didn't, you know, the is theorised to be the point that the cause of the problem, which is the carbohydrates

Steven Bruce

are going to get through some of the questions that have been coming in Gary and Julian sent one in a long time ago about intermittent fasting, and I thought you might touch on fasting at some point. So I've left it until now. You talked about specific, short and fasting, she's talking about intermittent fasting, is there a Is there a benefits to that unit? Ah,

I do but it's, um, first of all, I just to give you some background on this, and I, this is a little naive of me, but I am restricted eating and intermittent fasting. So for instance, I think of myself as intermittent fasting because I stopped eating at eight o'clock at night and I don't eat again until, you know, one o'clock the next day when I have lunch. So I think of myself as fasting for 16 hours or 17 hours. But the flip side is because I have lunch at one o'clock and then I have dinner at seven o'clock and I'm done by eight I'm restricting my eating to seven hours a day instead of 10. So they're kind of the same thing flip sides of the same thing. By the way. In the diabetes literature. The term intimate and fasting comes up all the time because virtually everyone acknowledge that occasional intermittent fasts of half a day. era de, for whatever reason, allowed people to control their diabetes both with insulin without insulin. Um, a couple years ago, the British Medical Journal, and the Swiss reinsurance company Swiss Re co hosted a meeting in Zurich on die in chronic disease. And on the Saturday was the BMJ aspect of the meeting. And on Sunday, Swiss Re at a meeting for people in in my world who prescribe low carb, high fat diets for obesity and diabetes. And then there were 50 of us sitting around an enormous conference table in Zurich, and it was all the major figures and in my field, and I asked them, How many of them are doing intermittent fasting, and 45 of the 50 raise their hand, so 45 of the 50 were either not eating breakfast anymore, or not eating dinner anymore, or skipping a day going to 24 hours without eating. I did it as an experiment began about four years ago, and I I've been hearing a lot about it. So I thought I might as well try it. And I did. And I felt better. So I had more energy in the morning. I didn't miss breakfast. After a few days, I found I wasn't hungry in the morning, and I lost a dozen pounds that I didn't really care about. I didn't think I needed to lose. But it was nice. And I've kept doing it because I feel better. I have more energy. I haven't eaten lunch or bread haven't eaten yet today, and it's quarter to well 1245 going on lunchtime, and I'm not hungry. So it's the kind of thing again that I advise anyone could try to Jason Fung the Toronto nephrologist who pioneered did a lot of Pioneer promotion and thinking on intermittent fasting said, you know, anyone could agree that going a day without eating, you're not telling anyone to eat too much saturated fat or too much salt or not enough carbs, you're just going a day or half today without eating that can possibly harm, harm people. Extended fast can be dangerous once you get past two or three days, but certainly the short fasts and there's a lot of evidence that they improve metabolic risk factors can lead to weight loss compared to standard American and British eating. Whether they are better or worse than can eat what we would call a sad diet a standard American diet but fast two days a week and be healthy or as healthy as you would like to be that we don't have the evidence to say that. Okay.

Steven Bruce
Rob has asked whether there is any danger of electrolyte loss on the keto diet he's thinking specifically of potassium which is

nice. Yes, and there is and you know, you people know it because they cram usually or they they sense the Atkins used to be called the Atkins flu. Now it's called the keto flu. You're losing a lot of water in this diet because your body pretty much burns through its glycogen supplies, you're not restocking glycogen and you store the glycogen each glycogen molecule stored with I forget if it's three or four water molecules. So there's a lot of water loss. Insulin also inhibits sodium retention by the kidney, which is one reason why it's possible that insulin resistance is also the cause of hypertension, an argument that I've made in previous books. So you lower insulin, you tend to flush sodium out of your body with the water. Most clinicians who recommend virtually all clinician to now prescribe these diets do it with you know, drinking a cup of broth a day to supplementing with potassium and magnesium to heavily salting foods. Again, another reason why it's hard to get established medicine to agree that these are this are reasonable treatment for Beeman for obesity and diabetes, let alone standard of care because you're telling people to up their salt intake. On the other hand, because it's virtually impossible to do these double eating any processed foods that you buy in supermarkets, you are restricting your sodium intake significantly by not buying the foods that typically have high salt content. So but yes, supplement, particularly magnesium, sodium and potassium are often recommended and certainly drinking chicken or you know, some kind of animal broth.

Steven Bruce
Not surprisingly, I've had quite a lot of questions in advancing what do you do if you're a vegetarian or a vegan

It's more difficult to do as a better vegan, certainly, but there are Facebook groups. And again, I recommend people, Google, these are vegan, ketogenic diet, Facebook groups or vegetarian ketogenic diet Facebook groups, you end up using a lot of oils for your fat stores offs. If you can eat, you know, eggs and but I advise doing it actually one of the, when I first wrote my book, good calories, bad calories, I got a letter from a physician, a graduate of the Duke University Medical School who said to me that he was a he was a vegetarian was a vegan. And he had heard me on a radio show, and he had decided that I was full of crap. And he was thought of himself as open minded to who's going to read my book, which in the UK is called the diet illusion. And he figured he'd get a couple of chapters in, and he concluded that it was fluid that it was crap, and then it could go back to his life. And he said, much to his dismay, he found my arguments compelling. And what he had done was added back eggs, and some dairy to his diet, and he lost 20 pounds. Ultimately, it's about improving the quality of the carbohydrates you're eating. So we're restricting sugars and sugary beverages and ultra processed flowers, which are, you know, when the proponents of vegan diets will talk about healthy vegan diets as their diets add on sugar and white bread in it. And then, using a lot of oils, for to add fat to the foods and trying to shy away from starchy carbohydrates like potatoes, beans, and legumes, it's harder to do, it's harder to pull off, but people find ways to do it. And if you're eating a vegan, vegetarian diet already, you're already working pretty hard to control the content of your diet. And a lot of this is arguing that, you know, those of us who put on fat easily, who can control our blood sugar, we just have to put in that

control, we have to put in that effort. But we also have to make sure that what we're doing is actually right, and not the misguided nutrition advice of the last 50 years. No

Steven Bruce
know what the long term effects are on weight loss to people on a keto diet, put it back on the way people on other diet seem to?

Well, the argument in a different way to think about diet. And the argument I make is that every diet is a theory attached. Right. So most diets a theory is you get fat because you eat too much. And so you eat less you lose the weight, and then hopefully, you'll somehow continue to eat less enough that you will maintain in that weight loss and it always fails. The theory behind this diet is a carbohydrates are fattening but not because of the calories that contain that because of the our insulin response are not fattening to everyone but those of us who get fat. It's the carbohydrate carbohydrates in the diet that trigger it. So we can't eat carbohydrates. It's unfortunate, or let me rephrase that we can eat carbohydrate rich foods. And unfortunate but that's a fact. So if we want to fix the problem, we remove those foods, if we ever go back to eating them, we can have to have the same effect they always did. Which is make us fatter.

Steven Bruce
One of the surprising things I saw in your book was, I'm sure I remember this correctly, you're saying that actually eating carbohydrates makes you hungry as

well. Um, yeah, it's funny. And that's a very well known phenomenon actually, because if you think about it that the role of an appetiser and a meal which is used which meal is to make you hungry, that's why it's called an appetiser. The French have a phrase and I'm not going to Mangle the French by saying in French but the appetite begins with the meal and as you start eating, you actually get hungry or and I recommend anyone when they sit down they said very well known if you pay attention to how your body works, and if you have children This is very clear just sit him down call them down to the dinner table at the say two hours before dinner and put a plate of french fries in front of them or chips as you'd call them and then see whether or not kids who weren't hungry suddenly become hungry. um the the argument is that insulin remember insulin is on one level it's it's it's increasing the grade signalling your your lean tissue and your organs to take up the glucose that should be available. If insulin is being secreted and to burn that carbs for fuel and then to on it inhibits fatty acid mobilisation oxidation. So in effect Empty is your fuel your fuel, your your circulation of available fuel as soon as you start to creating it and you will see there's something called the cephalic phase of insulin secretion, which is a phallic that means, you know, from the head neck up. And it's a Pavlovian response is how you could think of it. So we start thinking about eating, if I mentioned, for instance, you know, hot cinnamon buns, many of us so start salivating, just I'm hearing those words, but we also start to creating insulin. And the insulin prepares as circulation for the field of communism in the process makes us hungry. So the argument is, when your insulin is elevated, you're lacking, you're inhibiting the use of fat for fuel or

you're inhibiting the use of protein from the prime fuel. So not only will you be hungry, but you'll crave carbohydrates particularly. And when your fat cells are perfectly happy little policy's fat to get the fatty acids into the circulation. And so you shouldn't be hungry. And and, again, this when I said one of the reasons I bought into this was they're all you've kept finding the same hypothesis coming up in multiple fields of science. So for instance, the idea that Carpathia that carbohydrates are inherent, the inherent cause of chronic disease, heart disease, diabetes, obesity was while it's it's refined carbs and white flour and sugar were a common theme in the British nutrition literature going back a century and then a Naval Research Scientist named Peter clean writes a book in the mid 60s called the saccharine dizzy and cleave makes that argument that carbs are the cause of obesity, diabetes, and heart disease. And then you can make the argument and other British nutritionist and oh, I'm gonna forget the fibre guy basically, takes that argument that refined carbs cause disease, and flips it to set to say the absence of fibre is the problem and we embrace the fibre hypothesis. But then there's a field of science called Phil psychology, or psychological physiology, which is the idea that our fundamental behaviours are caused by underlying physiological states that dates back to Claude Bernard and Pavlov and Walter cannon who coined the term homeostasis. And this field of science came to the conclusion in effect that insulin is, you know, going to determine hunger levels, and fuel availability in the periphery. It's whether or not whether your brain is well fed because your brain is well protected against food shortages. But whether your cells are well fed that will then particularly your liver cells will determine your hunger status. And again, you elevate insulin, you will get hungry or liver cells will burn through the carbs, and you will crave more. So a whole slew of disciplines sort of coming to the same conclusions, all of which are ignored by the mainstream researchers who believe that we get fat because we eat too much. It's a psychological eating disorder and, and we get the heart disease because of the fat content of our diet. Gary,

Steven Bruce
we got Gary, we got five minutes left just about a chance we could just run through some questions really quickly, because I hate to see people disappointed when not getting the answers that they were looking for. Jane has asked whether the diet might address obesity and someone with familial hypercholesterolemia.

It's worth a try, I would expect it to for all the reasons we've said I would expect it to be worth literally lying on the obesity and then monitor the lip of love. And again, I'm not a doctor, I'm a journalist, I'm not allowed to give medical advice and I certainly wouldn't be allowed to do what I have to do with it different to a different nation, but I would monitor their lipids. And you know, I'm verse to stat and use when necessary. But if the goal is to reduce fat accumulation, then the argument is you're gonna have to lower in some levels and the ketogenic diet, we'll do that we'll do that better than anything.

Steven Bruce
I also say to Jane that I mentioned Malcolm Kendrick at the beginning of this discussion. Jane, if you read his books, he's got some very interesting views on hypercholesterolemia, which we won't

go into here. Someone who hasn't given the name asks whether you would change anything about a keto diet for menopausal women and whether you think it might change some of the issues that come with the metaphors.

Answer as again, I would, you know, the ultimate aspect of the ketogenic diet is the idea that carbohydrates are fattening. In fact, an article I quote, in all of my books, first sentence of 1963 British Journal of Nutrition Article a co authored by one of the two leading British dieticians in the 1960s, whose name I'm going to forget, every woman knows that carbohydrates are fattening. And this is what every woman knows. So going through menopause if you want to know there are weight is gained during menopause fat is gained during menopause because of the change in hormonal status. The way to affect that through diets, if it can be affected is to lower the carb content of the diet. And if a woman wants to try keto, I would advise that this is a safe and could be a very beneficial way to do it.

Steven Bruce
Jamie would like to know about how the don't lose affect mood and psychological pathologies.

There are a lot if you look at clinical trials.gov clinical trials going on now our diet and the ketogenic diet for depression and mood in the short term. Again, it's just hard to say people respond differently. Some people report feeling, you know, wonderful. in ketosis removing the carb Atkins used to get in trouble because he said ketosis feels better than sex. Other people clearly had movement, mood issues. So it's the kind of thing with patients i would i would prescribe it, I would have them do some research on their own, so they know what to expect. And then I would monitor right, but if it's if they do have mood issues, I would experiment with the idea that can I keep the carb content of the diet low and address the mood issues? Or maybe they can ride it out? You know, but it is the kind of thing if you know I I've struggled with mood issues my whole life, I don't want to belittle those for a second.

Steven Bruce
Love. Last one, then go the last one we have time for I'm afraid. Somebody unknown asked whether the keto diet makes the body too acidic. And that acidic environment might be a precursor to the disease?

Well, again, if it is then you would see in the clinical trials and you don't. So you know, that's why you want to do i do only the long term clinical trials. And if you know if you have any exceedingly wealthy listeners, and they want to donate to clinical trials, just look me up in the internet, and I'll get them done for you. But at the moment, there is no sign of any increased disease risk from these diets. LDL cholesterol will go off for some people, but every other risk factor will get better for most people. So

Steven Bruce
I guess I'm on the subject of LDL cholesterol. I can only recommend Malcolm Kendricks work again, because I think a lot of the science around that is biassed, possibly because of the pharmacological, marketing and so called research behind standard error, then we will probably have to leave it Gary and it's been fantastic talking to you. It really has I apologise to live and David and elvina bobbin. Jamie others. I haven't had time to ask your questions. And I'm really sorry about that. But

if they want to email me through my website, I will respond to virtually every email at least once.

Steven Bruce
Fantastic. Clear on our website as well. As I say it's been great talking to you. earlier on in this discussion. Gary did so he wasn't sure whether the diet was making his brain work more effectively than it might I needed to hear the viewers to judge that he knows more about homeostasis and the mechanical, the violent biochemical prophecies, what goes on nobody even knows about the Krebs cycle and I gave that during my osteopathic study. I think he's his book is very revealing. There's a lot more science in the book. I can only recommend that so to hear the case for keto. Gary is the hardback copy available in the UK. Yes, I know the UK only

has paperback and Kindle and probably audible book but the UK edition is paperback.

Steven Bruce
I seriously recommend it. As Gary said earlier on. And the whole business about science is read somebody's opinion read their research and question it by all means, but there's some really hard science in the book and it makes very good reading