Ivor Cummins	00:39	I'm here with Ted Naiman, the Wonder doc as I call you sometimes, for flattery - doesn't go amiss. And we're here in Low Carb, not San Diego this time, we're in Low Carb Seattle, which is right near your business in [Inaudible 00:00:53]
Ted Naiman	00:54	Right down the street.
Ivor	00:55	Yeah. And you gave a great talk this morning, really enjoyed it, talked about protein, importance of protein, personal fat threshold, stuff I'm really interested in. But I'm going to start off with calcification scanning, because we had a great discussion in the lobby yesterday with a lot of people around and you were asked about it and you said you're doing a ton of calcium scans. So I'd love to hear you talk a bit about that.
Ted	01:16	Right? Yes, I'm doing a lot of CT coronary calcium scores. This is more and more popular and more and more people asking for these. And I love this scan for people with sky high cholesterol. And this is something I'm seeing almost daily now. People come in, their total cholesterol could be 300, 400 and they're absolutely panicked about it. Because you know, we've been told that this is just going to clog your arteries and kill you. So my favorite thing to do is CT coronary calcium score. And if you give back a really low number, like a zero, it's a lot of reassurance for people who've had this lean mass hyper responder effect where you go on a low carb diet and your cholesterol total and LDL go up. And so I think it's a really great strategy.
Ivor	02:05	Right. And that's to reassure people. Now, of course, you could get a person from prior life on the side diet who actually has the highest score that's historical but tends to breaks, I guess. You got a high score, you're going to have check again in a year or two, while continuing to be really careful with what you're doing.
Ted	02:21	Absolutely. And I warned some people, I'm like, "You know, what your calcium score is just going to suck. It's going to be terrible. You've been overweight for decades, you've had high insulin and blood sugar and blood pressure and triglycerides for years." And I know that they might pull down a sub optimal score. And then it's more a matter of tracking it and seeing which way it's headed. Typically they don't get much better. But they could plateau instead of getting worse over time. So it's useful to get at least get a data point and track it over time.

Ivor	02:52	Yeah. And do you have many, I know in America, there are so many people who are overweight now that myself and the charity I work for, ihda.ie, we're really concerned about the TOFIs, the people who are not kind of really overweight and smoking, who in fairness, they get treatment, they get attention, because they know they're high risk. We're really worried about the millions of people who don't appear overweight, problematic, but they've actually got massive disease. Do you tend to come across many of those in the West Coast?
Ted	03:22	Oh, yeah, absolutely. And I have to say, there's big genetic differences there. And there are certain demographics that are so much more likely to have that. Any indigenous people, anybody from Southeast Asia, you know, someone comes into my office, they're from India, and they might only gain 10 pounds and it's just abdominal fat, and they're horrifically diabetic. And they've hit their personal fat threshold, and they're definitely thin on the outside fat on the inside. This is something I see all the time. It's tricky, because you wouldn't really know by looking at them.
Ivor	03:57	Yeah. So I mean, with expert reading of the blood markers, I guess you can infer it, the calcium scan, of course, will tell you what the actual stage of disease is and how much a risk they are. But you have brought us on to personal fat threshold. So that's quite a popular topic out there the last couple of years and growing and maybe run through in your own words, your conceptual idea of that.
Ted	04:19	Right, right, right. So some people and this is completely genetic, but some people can undergo adipocyte hyperplasia, where they basically sprout a whole bunch of new fat cells and just get fatter and fatter and fatter. But all their fat cells are very small and have plenty of room for more fat, and they could just get fatter pretty much forever.
	04:41	I have a patient who's almost 500 pounds, completely insulin sensitive. I think they could get a whole lot fatter from there, you know what I mean? And they haven't yet hit their personal fat threshold. So they're maybe not even that insulin resistant. And on the flip side, I have patients with lipodystrophy which is this genetic condition where you don't have any subcutaneous fat. So every bit of fat gets stored is just visceral fat and ectopic

		fat and your insulin resistance goes through the roof instantly. These people gain one pound, and they're just horrifically insulin resistant or diabetic, because they have no place to put fat. That's the personal fat threshold, it's totally genetic. You can genetically inherit lipodystrophy, you can genetically inherit a low personal fat threshold where you just can't get very fat. Or you could be somebody who could end up on my 600 pound life and still have normal blood sugar and insulin.
Ivor	05:36	Yeah. There's some great papers and one of my favorites of all time is just titled “Insulin sensitive obesity.” And it compares 45 BMI guys, the ones who are insulin sensitive versus the insulin resistant. And I mean, they even have a visual difference. The insulin sensitive guys have folds of fat subcutaneous, and the insulin resistant (same BMI) have more protruding bulbous belly, a much higher visceral fat.
	06:02	But again, that's a genetic thing, a predisposition, but like all or most of these genetics, it's your environment and what you do with diet and lifestyle that decide whether you go down with the disease or not. So in the lipodystrophy cases, if they eat perfectly ideally for their condition, can they largely steer clear?
Ted	06:21	Absolutely! Basically, you have no wiggle room on fat storage. You have to stay under your ability to store fat at all times so you have to be religious with your diet. I mean, you just cannot eat any extra calories, because you don't have any place to put fat. And so if these people are really, really tight with their diet, they can absolutely reverse all that. And I've seen that, but it's extremely difficult because you don't have... you know, you're flying your plane 10 feet off the ground, because you have nowhere to put fat.
Ivor	06:52	They have no margin, basically.
Ted	06:54	They have no margin, exactly.
Ivor	06:57	I actually had a podcast with Gabor Erdosi recently. And we were chatting about personal fat threshold. And he has another angle on the visceral fat. It doesn't contradict with personal fat threshold. But this idea that the visceral fat is an organ of the immune system. And then a lot of the negative connotations of having high visceral fat is not just the overflow because of personal fat threshold, but it's an indicator that the visceral fat has been grown due to leaky gut and other issues that activate

		the immune system, and the visceral fat is actually part of fighting these infections. Do you ever come across that one? Or is that a...?
Ted	07:35	Well, I definitely see a ton of inflammation from people who've over filled their fat stores. The reality is, your fat cells that are overfilled are literally sick and dying. You'll literally have dead adipocytes from overflowing your fat storage. You'll also have mechanical problems with blood supply to fat cells. If you sprout a bunch of fat cells and they get massively huge really fast, you don't have enough time to get circulation to them. So they're literally ischemic, you'll literally get not enough blood supply to your fat and it'll start dying. In fact, we'll see fat necrosis occasionally as extreme consequence of people getting super obese. And literally, part of the fat in your body has died because you've overfilled it and didn't have enough blood supply. And this is one of the most inflammatory things you could possibly have.
	08:27	I've seen patients with CRP, cysts inflammatory marker, that are just through the roof. And if they lose weight that immediately comes down. So visceral fat is very inflammatory.
Ivor	08:39	Yeah. In and the insulin sensitive obesity paper actually, they found up to 50% of the visceral fat had macrophage by weight. It's stuffed with immune components. And I think if I remember correctly, if you just looked at the biopsies and the number of macrophage in the visceral fat, and the serum adiponectin, which is an indication of what you said, the fat health, those two metrics, 98% predicted the level of insulin resistance of any person in the whole study.
Ted	09:10	Oh, right! And this really supports the personal fat threshold. I mean, basically, you overfill your fat cells, they're super unhappy, maybe sick and dying in your insulin resistant.
Ivor	09:21	Right. So if you take, just moving on to protein now, which was a large part of your talk this morning, the protein is really important for health, as you well described, and you tend towards a higher protein. And even low carb is a prerequisite for people who have insulin resistance, or many metabolic issues, that's low carb, but you would also go further in difficult cases and go low carb and low fat, kind of start pulling the fat out of the system, essentially. And that usually will tend to be

		100 protein diet. So maybe talk around some of the core of your talk this morning.
Ted	09:58	Okay, great. Sure. First of all, I like to look at diet through an evolutionary lens. It makes a lot of sense to me. Hunter gatherers, worldwide, hunter gatherer estimates are 19 to 35% protein in the diet. And right now worldwide, we're at about a 14% and it's dropped to maybe 12 and a half percent in the US over the past 60 years of the obesity epidemic. So we're at this extremely low protein percentage. And we know in animal models that you can drive obesity by just raising carbs and fats and dropping protein. And that's pretty much what we've done with the American diet. So I really like upping protein for satiety, so then you don't have to eat as much energy. The protein leverage hypothesis is basically that you're going to eat and eat and eat until you get enough protein, and only then are you going to stop eating. And we've basically proven this in both human and animal models.
	10:54	Imagine you eat 10 pounds of butter every day with one tiny square of chicken on top, you're eating a 1% protein diet, you're basically going to have to eat more of that diet to get enough protein to function. And you're going to end up overeating energy. My favorite researchers on the protein leverage hypothesis, Raubenheimer and Simpson, they did this huge meta analysis where they looked at over 100 studies where humans ate, add live amount of calories, they ate as much as they wanted, but somebody was tracking their macros. And what you find is that the amount of energy you eat tracks linearly with the protein percentage of your body. It's perfectly linear. If you want to eat way more energy, you just eat a low 10% protein diet. If you want to eat way less energy, you eat a super incredibly high, they measure up to 50% protein diets.
	11:47	So the amount of energy humans eat scales linearly with protein percent of their diet. So I definitely want people to be higher than the standard American diet of 12.5% protein. I mean, that's really, really, really bad. And if you look at people who have long term successful weight Loss, usually they've dragged their protein percent up to at least 19%, which is kind of approaching this hunter gatherer range that humans should probably be in. I mean, personally, I like around 30% protein.
Ivor	12:18	Yeah, and I'm actually just thinking myself, and our book, “Eat Rich, Live Long, we kind of went 20, 25%, kind of in line with

		Mike Eades parable from 20 plus years ago. But as you say, the leverage of protein to go a little higher can get you even more results, if needed or depends on your personal situation.
	12:38	If you take then protein, so people can try and count protein. But it occurred to me looking at your fantastic diagrams that if you just focus on eating real nutrient dense foods and lower carb by nature, which just above ground leafy vegetables, you kind of find yourself moving towards that 25 or 30% protein, just by the choice of foods. Would that be fair to say it?
Ted	13:03	That would be fair to say. I mean, just by ditching the refined carbs and sugars, the grains and starches, you're pretty much going to be in the ballpark. The only exception I see would be people who are also in refined concentrated fats. If you're getting your ball calories from oil or butter, heavy cream or mayonnaise or something, then that's not going to work as well. So for me, it would be basically a standard low carb diet and then maybe trim out some of the refined added fats like oil and heavy cream, which maybe didn't make a lot of sense from an evolutionary perspective to begin with.
Ivor	13:39	Yeah, I agree. I mean, they're kind of empty calories, what you described there. Now obviously, it's much much worse, canola oil or sunflower oils, because they've got their own further complications. But really, I would only use the oils just to facilitate cooking. So the only thing now, where I think I would add is around the tablespoon maybe of heavy cream and coffee, and that's a couple of coffees a day. But outside of that, just for cooking really or what goes into sauces which is probably fair enough.
Ted	14:12	I think it's fair enough. Yeah, I really just have a problem with tons of added refined fat. You know, if you're drinking Bulletproof coffee it’s probably just slowing down. So that's really where I have a problem.
Ivor	14:24	Yeah, and there is a tendency in the low carb movement, even though it's getting a lot of things right and fixing a lot of the crap from the last 50 years, there is this tendency towards fat bombs and, you know, these kind of special coffees. So I agree that's not going to help particularly for weight loss. And I'm not sure it’ll help for anything, to be quite honest.
Ted	14:41	Right.

Ivor	14:42	I'm going to switch subject now because I know we're tight on time, we have to get back down for the next presentation. But this topic of thyroid comes up quite often I find and hyperthyroid or, you know, problems relating to thyroid and even interact with cholesterol, as in poor ratios and cholesterol markers can link to thyroid problems. And I don't mean to go on. But there's another thing that you know, low carb diets can lower your thyroid and leave you with challenges there, such as a whole lot around that area. So it'd be great for you to give your overview of thyroid issues and thyroid function as it relates to low carb.
Ted	15:19	Oh, right, right, right. Honestly, I don't see huge differences between low carb and regular diets in terms of thyroid function,. I see a little bit increasing Reverse T3, which is basically pointless on low carb diet. So I never measured, I never worry about it. It's not a big deal.
	15:38	I would say hypothyroidism is a massive epidemic. I mean, one in 10 women in this country will have it during their lifetime. Most of its autoimmune Hashimoto's disease, you're making anti thyroid antibodies and attacking your thyroid. I'm sure there's something in the diet that's driving this autoimmune phenomenon. I don't know what exactly, but it's something we see all the time. My advice to everyone, there's a million thyroid tests, and there's a lot of quackery on both sides of the aisle when it comes to thyroid. You've got your standard doctors who are just only ordering TSH, and only giving you levothyroxine if your TSH is in the double digits. And that's it, that's all they ever do. And then you've got a lot of functional medicine people who are constantly tracking anti thyroid antibody levels and all these you know, Reverse T3. You can have a full thyroid panel over and over and over again. It's really not that value added.
	16:39	And honestly 99% of people out there just need maybe a TSH, Free T4, and a thyroid peroxidase autoantibody, this one antibody test. If the antibodies positive, you know you've got an autoimmune disease. It's not helpful to track it over and over with time because these antibodies are almost always positive for the rest of your life, the same way your chicken pox antibodies positive for life or your measles and mumps and rubella antibodies are positive for life. So you check if thyroid peroxidase autoantibody (TPO). If it's positive, you know you're going to probably have problems with low thyroid maybe for the rest of your life. And then you track TSH and Free T4. I like

		TSH around 1.0. That's what your brain emits if it wants more thyroid hormone.
	17:32	And then if you just have a sluggish thyroid gland, you can take levothyroxine and lower your TSH and normalize it. Some people have central hypothyroidism, it's a lot more rare, but they have a pituitary problem, and that's why you might want to check a Free T4 in addition to a TSH. But for 99% of cases out there, you really just need a TSH Free T4 and a thyroid peroxidase autoantibody, really just wants and then it's mostly tracking the TSH and normalizing it with either levothyroxine or a little bit of liothyronine, which is T3.
Ivor	18:09	Gotcha. That's a great summary, Ted. And for people with autoimmune as they say the antibody or the problem , a bit like type one diabetes, it stays with you even if you take away any injurious agent,. So what can you do to alleviate those that's beyond drugs and other things?
Ted	18:26	There's very little you can do for the autoimmune component. And there's a lot of naturopaths out there who are, you know, “Take selenium, take iodine, don't eat gluten.” None of this stuff, unfortunately, none of it is evidence based. So the reality is, once you've made antibodies against your thyroid gland, your immune system is probably going to keep making them because it's doing its job. It's supposed to make this for life, just like it's supposed to make chicken pox antibodies for the rest of your life. So your immune system is actually doing its job. Something happened to make your immune system sensitized to your thyroid, you can't undo that. Once you have anti thyroid antibodies, you're probably going to have them forever. And then it's just a matter of taking enough thyroid supplement to keep you in the normal range mostly by tracking TSH. The vast majority of the time, that's the only thing you have to track. Occasionally Free T4.
Ivor	19:18	Right. And the genesis of it, if you go back further as to why it occurred in the first place, we're getting a lot more autoimmune. There’s an interesting paper recently. And I know this is controversial, and it's the scientific team published this paper. It's not me who's saying it. But they did a paper on type 1 diabetes. And usually they look at the mechanisms. But this paper was specifically around what triggers it. And they looked at type 1 diabetics in the incidence of celiac disease and found a very high insulins. Now they went through a lot more

		mechanistic stuff. But their conclusion was that a major driver of Type 1 diabetes actually happening in the first place, whenever the treatment, is possible gluten related and leaky gut that triggers the immune system that then goes on a rampage. That's probably a pretty controversial thing to say. There may be a cause for type 1 usually accepted. It's something that just happens. Only I reckon because type 1 has gone up kind of like type 2 over the last two decades.
Ted	20:18	Right. There has to be something environmental that's triggering this. And in certain situations, it might be just a viral illness. You know, we do see some autoimmune disasters after just a simple virus. But there could also be some dietary immune sensitizers like gluten. There's probably something that we're not really designed to eat that we're eating a lot of that's driving it. Gluten seems like a pretty thing to blame. I mean, I'm not a huge gluten fan so I don't feel too bad, suggesting that maybe it has some sort of role there.
Ivor	20:53	Yeah. They think in fairness, gluten gets a lot of attention because of celiac. If 1% of your population will actually die from eating something, it's a pretty a poor reflection on that so called food. But there's also gliadin and there's there's lots of other things in wheat and other proteins are discovering. So kind of wheat in general is just a mess, I think it'd be fair to say.
Ted	21:12	I would totally agree with that. Absolutely!
Ivor	21:15	Yeah. So what can we wrap up with then? We've gone through the CAC, actually on the 2018 guidelines. They now sanctioned CAC, much more strongly with 2a evidence. Do you expect in the next few years as the low carb community certainly and you're hearing about it more and more and being asked for it, do you expect it to really turn around the next couple of years and become used, leverage like it should be to catch those people?
Ted	21:40	Oh, yeah. I think this is a snowballing. I think CAC is snowballing. And I think that you'll see more and more people asking for it. I certainly have, just outside of the low carb realm. So it's going to be a much bigger deal in the future.
Ivor	21:56	Yeah, and for medications too. One striking I know it's associational study, but the people below 100 CAC saw zero benefit associated with statin use versus high CAC people over

		12 years. And the high CAC people with high disease, a bit like the presentation we saw last, do actually get a substantial benefit in lowering of events. So it's really going to help as well, to not get medicated when all you're going to get is the side effects.
Ted	22:24	Right. It's a great way to stratified people, which is why I love reaching for that in my sky high cholesterol people who are otherwise healthy. It's very helpful.
Ivor	22:32	Yeah, particularly I know Brian Lenzkes I think it is in San Diego. I'm not sure. Yeah, he's a good guy. He's taken several middle aged athletes off drugs, because they've all come in with a string of zeros.
Ted	22:45	Oh, yeah.
Ivor	22:45	And he's listing them out. And equally, he's catching people with very high scores, who their previous doctors thought they were perfectly healthy and they are appropriately getting medication. So it's a good, double-edged sword, I guess.
	22:57	So any last thoughts on major issues that are prevalent in your patient population? I guess they're the usual stuff, but any other patient story that struck you recently as interesting?
Ted	23:08	Hmm, wow. I mean, I'm always fascinated by my lipodystrophy population. For example, I had a lipodystrophy patient who had a huge lipoma. A lipoma is like a fatty tumor, it's just like an extra bit of fat under your skin. And these lipodystrophy people will get enormous lipomas because they have no other place to put that.
Ivor	23:31	They're benign though.
Ted	23:32	Right. And one of my patients had a lipoma removed, in that almost overnight, his insulin resistance and his diabetes just dramatically worsened because that was his last fat storage depot on his whole body. And nobody... you know, I struggled to wrap my brain around that but just really highlights the importance of personal fat threshold and the association between running out of add storage and being insulin resistant diabetic. I can't think of a better example than that. It's really interesting.

Ivor	24:05	And there are more. The Animal Models had nice paper where they added fat pads to diabetic, possibly lipodystrophy... and they just added the fat pads and boom, the insulin collapse.
Ted	24:19	Yup. You just surgically implant insulin or you scan in their insulin [Inaudible 00:24:22]. Fat implant.
Ivor	24:26	Mind you, in Type 2 diabetes, they are implanting tons of insulin inappropriately.
Ted	00:24:32	Right, right. Exactly.
Ivor	00:24:34	Very good. And just one last thing, actually my sponsor, David Bobbett, interestingly, not lipodystrophy, but slim as a whippet, running four times a week, and with 1000 calcification and massive diabetes undiagnosed. So, one other thing that occurred to me and I have a few examples of this, if you're particularly athletic and doing the right thing, I think it kind of hides the metabolic blood markers that would usually show a problem. So his A1c was 5.3, his fasting glucose is 4.9, everything looked good. But I think because he was so athletic, he was keeping those markers in line, but it wasn't stopping the disease burning ahead.
Ted	25:14	Right. Yeah, I agree. And there's a slice of the population who's just undetected that way.
Ivor	25:21	Yeah, yeah. And ironic because they're particularly the ones who are doing all the exercise and try to do the right thing. So particularly tragic.
	25:28	Well, listen, thanks a lot, Ted, and we'll catch up again, maybe at the next one. But this has been a short, sharp bit of serious wisdom from Superdoc Ted Naiman.
Ted	25:38	Thank you very much.
Ivor	25:38	Thank you, Ted.