



THE
FATIGUE
SUPER
CONFERENCE

Balancing your blood sugar for stable energy levels

Guest: Dr. Brian Mowll

Alex: So welcome to this interview on The Fatigue Super Conference I'm joined by Dr Brian Mowll. Hi Brian, welcome to the conference.

Dr Mowll: Hey thanks. Really, really glad to be here and excited to dive into this topic with you.

Alex: Fantastic. This is going to be a really important interview for people. For people pretty much anywhere on the spectrum of fatigue blood sugar/diabetes I think are crucial pieces to understand the role that they're playing.

Just to give a bit of context on yourself. So Dr Brian Mowll is the founder and Medical Director of Sweet Life diabetes health centres and serves clients worldwide as The Diabetes Coach. He is a Master Licensed Diabetes educator and was one of the first doctors to be certified to practice functional medicine by the prestigious Institute for Functional Medicine. Since 1998 Dr Mowll has been helping people across North America to optimize their health and metabolism, to control blood sugar and reverse Type 2 Diabetes using a natural, personalised lifestyle approach.

So Dr Mowll we'll come into a lot more in a moment blood sugar, hypoglycemia and diabetes but maybe just, a bit of context for people to get of a sense of yourself, what drew you to medicine? What sort of got you interested in this area? I'm also particularly interested, you're one of the first people to be trained by the IFM, which have gone on to become a massive force let's say in the kind of evolution of medicine. So I'm also curious as to what got you interested in the new way of looking at things earlier on in that process?

Dr Mowll: Yeah great thank you for asking about that. I think you know like a lot of people doing this type of work, you know as opposed to maybe just following a conventional path in medicine, you know for me it was kind of a professional passion.

I graduated university with athletic training, kind of pre physical therapy fitness degree, and I went out to Boulder Colorado, spent a few years out there trying to figure out what direction I wanted to take and really got turned on to holistic medicine and health care. Really, you know it was, this was several years ago before it had sort of hit the mainstream if you will, and I was really just fascinated with all the different things you could do with natural methods; through lifestyle and diet modification and actually recovered from a few childhood issues that I had with allergies and other things that I didn't know there was any way to fix other than you taking drugs.

So it really was that experience that kind of opened my eyes to the natural health world and naturopathy was big at that time there and there was, it was sort of this growing movement in natural health. You know Wholefoods was just being created and spreading and so forth, so it was that experience really that opened my eyes to natural health and sort of planted that seed in me so I then went back to school, got my medical degree and was always interested in health and nutrition so just trying to figure out ways to incorporate that in practice. So I used to do used to do workshops, you know, for patients at night and have them come out to learn about things that we couldn't talk about during their visits.

Alex: (Laughs) Interesting.

Dr Mowll: (Laughs). This was before the webinar and the online space really took off so we'd have 20 people in the office lobby listening to a lecture about whatever nutrition concepts I had been studying and so we did a whole bunch of different workshops.

Alex: That's a very cool way of getting people engaged beyond just coming for traditional allopathic 'I've got this thing please fix it for me'. That's very cool that you were doing that.

Dr Mowll: Yeah because I didn't know how to do it during the visit. There was no model for that that I had seen that worked well so for me I was frustrated, you know working with people not being able to share that information because you got you know 10 other people sitting in the waiting room and you don't want to get behind and cause stress to yourself and everybody else so you've got to keep the visits moving but at the same time I wanted to share this information. So I was starting to do it in that forum and then I started taking that into local health food stores and doing workshops there and I remember one particular talk I was doing, it was about diabetes I really wasn't focused on diabetes at the time, but a woman came up to me and asked me about diabetes. She had just been recently diagnosed with diabetes and asked me what to do about it. It was just basically a nutrition talk that I was doing

and I told her to the best, you know that I could, that I would recommend that she do which was kind of cut out processed food, low carb diet, that type of thing, get moving and fortunately she didn't just stop with my advice (laughs) she kept learning everything she could, I didn't have anymore contact with her. She came back to another talk I was doing, totally different topic I don't even remember what it was on and had really nothing to do with diabetes and nutrition, again came back just to see me to show me what she had done. This was about 2 months later, her name was Janice, and she ended up losing I think like 30 or 40lbs.

Alex: Wow.

Dr Mowl: And had completely reversed her diabetes. Her doctor had prescribed metformin, which is a common medication; she never ended up taking it. She got her numbers back down to a normal range and you know set off on her life with this sort of new lease on life, this new health this new mission.

It kind of lit a fire in me because I hadn't seen that up to that moment and I got really excited about it so, so then I decided 'well I'm, going to do a workshop on diabetes'. So I started researching diabetes and learning everything I could about different dietary methods and ways to handle it and I did my first workshop all about diabetes and we had a packed house. A lot of people learned about it and I never stopped, that was sort of, I sort of found something that I loved studying, learning about and decided that I wanted to learn as much as I could about that condition. For several reasons, I think one it's just, you know sometimes you just stumble upon things that just really light that fire inside of you and that for whatever reason you really enjoy and then also I loved the results we were getting.

For me, and I sort of moved my practice at that point to what now would be called functional medicine orientated, I didn't call it that at the time but it was great. We had a lot of great results but it was also very frustrating because you know there was people with chronic thyroid conditions and gut issues and you know Irritable bowel and autoimmune diseases that we were making an impact on but I never really felt like we were completely resolving. And, you know, part of that was I was in my infancy stage of functional medicine and probably didn't know s much as I would come to learn but also I think these conditions can be very complex. Not that diabetes isn't but I loved the results we were getting with diabetes, you know it was 'follow these steps, do this and we're going to see results', and we did. People were very excited about that and they weren't getting them anywhere else.

Alex: That's very cool and it's one of those pieces of the jigsaw where I guess that, that impacts pretty much everything else and it's, in the context of fatigue, be that people which have got, you know are functioning reasonably well in their life but they don't really have as much energy as they feel they could have or people which, the other extreme where there, you know we've had patients that have been bedbound for many years, completely light and sound sensitive. That there's often a key piece for hypoglycemia or low blood sugar in that and I should say just briefly, you may not know this, but I had Chronic Fatigue/ME for 7 years as a teenager and I tried going, I thought being a vegetarian would be the best thing that I could do to support recovery. I spent 3 years as a vegetarian and had all kinds of issues around blood sugar and the day that I finally understood the role of nutrition in maintaining blood sugar, having regular meals, having enough protein at meals, it was one of the most significant turning points in that recovery process.

So for me this is a subject quite close to my heart of realising how important it could be, but maybe say a little bit around as what you see as the role of managing blood sugar or people dealing with hypoglycemia and also diabetes as a kind of related but perhaps separate piece as well, in people in that whole range of experience of fatigue conditions.

Dr Mowl: Yeah good point and I'm glad you brought up, so there's hypoglycemia low blood sugar/ hypoglycemia high blood sugar and then there's this whole continuum of metabolic dysfunction that ultimately can lead to Type 2 diabetes, it doesn't have to, in many people it doesn't, but it still can really ravage your health. So I look at this as sort of this metabolic dysfunction continuum and along that spectrum we have things again like blood sugar dis-regulation and basically what that means is you have a hard time keeping your blood sugar in the tight normal range that it should be. So if you think of body temperature we know that the body temperature should be you know somewhere around 98.6 degrees and some people it runs a little lower and some people it runs a little higher but you know within a few tenths of a point essentially and the body works really hard to keep your body temperature within that range because if it's not it can cause all sorts of problems.

And blood sugar is similar, there's a little bit of a wider range but it's similar and the body wants to keep your blood sugar stable because we use glucose, which is synonymous with blood sugar, when we talk about blood sugar we are really talking about blood glucose, and the body uses glucose for fuel metabolism and to power what ultimately becomes our energy. So you know there's, we'll get into this later, but there's glucose and there's fat, fatty acids, free fatty acids. Those are really the only things we can burn, that's our bodies

gasoline. You know we've got two sources of fuel and those are it so all the energy that we have has got to come from one of those two.

So the body has to keep our blood glucose levels in a pretty good range and there's only about four grams of glucose in the blood stream at any given time so that's like a teaspoon of sugar. That's all that's floating around in your blood stream so the body has this delicate balance of utilizing that and refilling it out of our stored, you know out of our storage sites, or making some if it needs to. So that's called glucose metabolism and the idea of keeping our blood glucose in this tight range is called blood sugar/blood glucose regulation. And so that's at one end of the spectrum because sometimes that doesn't work right and there's a lot involved with regulating our blood glucose including hormones, the liver function, the pancreas function, and the adrenals are a big part of that, and we'll get into that again in just a little bit.

So if the blood sugar is not regulated well it can drop too low and we can feel lethargic, we can feel 'hangry', you know where we're really hungry and irritable and eventually if it drops low enough we can go into a coma, it can become very dangerous. Most people aren't necessarily at risk for that but it certainly effects your mood and attitude and the way you feel, it can cause lightheadedness and all sorts of other problems.

Then there's hyperglycemia, which is where the blood sugar goes up to high, and when your blood sugar runs too high that sugar essentially thickens the blood and it almost in a way caramelizes our proteins that are in our cells, organs and tissues. So I always, if you've ever seen like a chef caramelize the top of a crême brulee, a dessert, they take that little blow torch and melt the sugar on the top to create that little crispy surface and that's basically what happens when our blood sugar is too high. When our blood sugar is too high our brain cells get caramelized, our kidneys cells get caramelized, the lining of our blood vessels around the heart and in our extremities get caramelized, that's called glycation by the way, and when that glycation happens it leads to problems. It effects circulation, it effects healing, it causes oxidative stress which leads to those cells basically malfunctioning and dying and that's what ultimately leads to a lot of the so-called complications of diabetes. Things like blindness, poor wound healing, infections that can lead to amputations of toes and feet, and sexual dysfunction because the sex organs don't get their blood supply properly. Dementia and Alzheimer's disease, which can come from diabetes and high blood sugar, kidney dysfunction or kidney failure. So all of these things are tied to diabetes and high blood sugar because of the effect, that caramelization effect.

So that blood sugar regulation is really important and bringing it back to energy and fatigue you know glucose again is one of the two major fuel

sources for our bioenergy system and we need to be able to utilize glucose properly. When you don't regulate your blood sugar well or when something actually interferes with the way you use glucose, which again we can dive into here in just a minute, then it's going to effect your bodies ability to burn the gasoline in your fuel tank. If you can't burn the gasoline your cars not going to go, you're not going to feel peppy, you're not going to feel energized. And this is a very delicate mechanism, so it doesn't take much to throw it off and it doesn't take much for people to start to notice that and feel a little bit off and the problem with energy is that it sneaks up on us, energy issues, fatigue. It's almost like a dimmer switch on the wall where somebody just slowly turns it a little darker and a little darker and a little darker, you know and then a year later or 5 years later the rooms you know much darker than it should be and you wonder what happened. But often times that's the way fatigue sets in and then one day you, you know, you just feel like what is going on with my body and my health, I can't function like this anymore, and then you've got to try to figure out well what are all the things that sort of dimmed the lights in my body here, dimmed the energy, to be able to turn that back on.

Alex: And as you touched on earlier there's a lot of different facets that could be causing someone to have issues with fatigue but when it comes to blood sugar and coming down the spectrum towards Type 2 diabetes there are certain somewhat unique characteristics and I guess some of that is particularly related to if people notice that their fatigue levels are being directly impacted by what they eat or how much time between meals that could be quite a helpful clue in terms of identifying there's something to understand further here.

Is there anything else that you can say if someone's kind of watching or listening to this and their hearing kind of lots of different pieces of the jigsaw, what would help people kind of land this as an issue and go 'OK that's why this is more likely to be a factor than some other factors because of these pieces?'

Dr Mowll: Yeah, yeah. You hit on a big one there. So the underlying mechanism for this type of metabolic dysfunction is that way we use the hormone insulin and insulin is responsible for essentially taking any excess energy in the form of food, so when I say energy in this context I'm really talking about fuel, so any extra fuel that we have in our body that we're not eating at the time. It's job is to sort of put that away for later use so it helps us to put that into liver cells and muscle cells, it helps us put any extra fuel, when we hit that overload it helps us sock that away into fat cells for later use.

So insulin is a storage hormone, it's a growth hormone essentially, and what can happen is the body over time can start to become resistant to that hormone and there's a variety of reasons why, just to keep it short, toxins, inflammation, over exposure due to a diet filled with refined processed carbohydrates and other foods like that, and lack of exercise, sedentary lifestyle, are the main causes. But we become resistant to this hormone and when that happens we can no longer utilize glucose properly so what happens is there's symptoms which can effect our energy that come from that. One of them you mentioned is if you eat and then you notice an hour or two after, even less sometimes 30 minutes after, that your energy is dropping, that you feel lethargic, you feel tired or you crave sweets. You know you start looking for sugar or you looking for a piece of chocolate and one of the reasons you do that is because you feel like you need a bit of a pick me up or you really feel like I need that afternoon coffee to get me going again.

Alex: There's a kind of self-medicating kind of effect of it.

Dr Mowll: Self-medicating and again particularly related to food, so in other words this is sort of after lunch, half an hour, hour, two hours after lunch. What's happening is your bodies not able to properly utilize the fuel that you have on board and that could be your own stored fat or it could be the food that you're eating or it could be the glucose that you stored or it could be again the glucose from the food that you're eating. The reason that we're not able to use it properly is because of this insulin factor, this insulin resistance that builds up over time.

Another way is if you feel like you can't skip a meal, like if you don't eat breakfast, by 10 o'clock, I used that term 'hangry' earlier, you know by 10/11 o'clock you feel like 'I need to eat something now or I'm gonna kill somebody'. Right (laughs).

Alex: (Laughs) It's not a kind of I'm feeling a little bit peckish it's like I need food and I need it now (Dr Mowll laugh) and someone may get hurt in the process right.

Dr Mowll: (Laughing) Exactly. So again that's a sign that you're not able to properly use your fuel stores because most of us, most of the people I think listening to this, there's I'm sure some exceptions, but most people are not at 2 or 5 percent body fat, you know most people have at least 10% probably 20% body fat. So you've got plenty of fuel on board there's no reason you should ever be that hungry because you've got plenty of fuel to burn.

The reason you feel that way is because you're not able to properly use that fuel and that again comes down to insulin resistance, which is part of that move towards diabetes.

Alex: Maybe just also say a little bit the difference between Type 1 and Type 2 diabetes. I know that many people probably will be aware of that but just to briefly contextualize that piece as well.

Dr Mowl: Yeah. Yeah it's a good point and I really wish they had a different name altogether because they really are completely different conditions, totally different problems.

So Type 1 is an autoimmune disease, it's actually a wasting disorder. In fact they used to believe that people were basically metabolising their own cells and peeing them out. That's essentially where the word diabetes comes from, it means like syphon. It's basically you're you know you're just melting away essentially and peeing your body out. And, so what happens is you, it's an autoimmune disease that attacks the pancreas and the pancreas makes this hormone insulin, which I talked about earlier, and when you can't make insulin then, remember I said a few minutes ago insulin is a storage hormone, so when you can't make insulin you don't store anything in fact. It kinda opens the gate wide for you to metabolise all your stored fat and muscle and burn through it very quickly. So people with untreated, uncontrolled Type 1 diabetes can become bone thin within days and their blood sugar goes up very high. They've got plenty of sugar they just can't use it, they can't store it. They've also got plenty of fat so their blood fat levels go way up, their blood sugar levels go way up and essentially their, you know all that fuel is just getting excreted from the body.

So Type 1 diabetes needs to be treated with insulin. So insulin was sort of discovered if you will, formulated in the 1920's and that was looked at as a cure for Type 1 diabetes. We know now that you wouldn't really call it a cure because we have to keep doing it over and over again but it does control Type 1 diabetes, right. As long as you take your insulin on a regular basis you know you're good and you can live a long healthy, normal life.

Type 2 diabetes is completely different. Type 2 diabetes is actually, believe it or not, a lot more complicated and complex because there's so many moving parts. There's a dozen different things that can effect blood sugar and lead to Type 2 diabetes including things like toxin exposure, chronic systemic inflammation, gut dysbiosis and leaky gut syndrome. Different types of autoimmune diseases can all impact blood sugar, adrenal dis-regulation is a big one, we talk more about today, that can cause blood sugar problems and

all of these things eventually lead us to not being able to properly use that hormone insulin.

We make insulin, as a Type 2 diabetic you make insulin but you can't use it properly so what tends to happen is you actually over store. You know you over store fat, you over store glucose so it starts spilling out into your blood stream and that's what causes the high blood sugar in Type 2 diabetes.

Alex: So it's interesting as you're saying that although on one hand someone might say 'Oh I just have hyper or hypo glycaemia' but actually as we start to get to the deeper reasons underneath it it's complicated and there's lots of different things that could be causing that.

We've mentioned a few times the role of the adrenals I think that would be one particularly that would be get into in a bit more detail because there will be people watching or listening to this that will say 'well my issue is that I have adrenal fatigue and may not be realising there's a very deep relationship between someone's adrenal function and what's happening with their blood sugar.

So maybe you can speak a bit more to that?

Dr Mowl: Yeah for sure and just a corollary point to that is that people with Type 2 diabetes don't always have energy problems, sometimes they feel absolutely fine and in fact have no symptoms at all and sometimes they have really low energy or feel rotten. So it can affect different people in different ways.

Speaking specifically about energy people who feel fatigue or have low energy may have completely normal blood sugar metabolism but they may not. And I think it's very common actually that they don't that there's something going on in the blood sugar regulation system. Now that might be a primary problem or it might be a secondary or tertiary issue but it's something that I learned early on in functional medicine is that blood sugar metabolism is one of those corner stones that you address early in the process.

So no matter what the person has when they're coming into your office if it's chronic fatigue or if it's a gut issue or if it's some sort of chronic blood born infection or you know thyroid problems you know whatever the presenting complain is check the blood sugar regulation because if you don't get that fixed the likelihood of them ever truly healing and getting over that is very low. So...

Alex: And also by addressing that early there's likely to be at least some improvement in the patients symptoms which means...

Dr Mowll: Absolutely.

Alex: ..which means even if there are other things that need to be gone into in more detail you can at least reduce some of the suffering and actually build a more stable foundation for which to do some of the other work that needs to happen.

Dr Mowll: Exactly right, exactly right. So I think pretty much everyone listening to this will benefit from doing some things to regulate and control their blood sugar better and you know it will create more stability, it will enable them to use their fuel in a better way, it will enable them to sort of super charge the metabolism in a way. Now, again there could be other issues at play also that need to be handled and explored but it's going to help everybody to have good blood sugar regulation.

Alex: Yes and in terms of the piece around the adrenals so when one's adrenals are not functioning properly maybe just talk a bit about, well firstly I guess how poor blood sugar effects the adrenals but also vice versa.

Dr Mowll: Right. Yeah so there's a variety of stressors that all essentially get processed through our nervous system and through our endocrine system and the endocrine part of it is largely the adrenal glands. So the adrenal glands, these very small glands on top of the kidneys, they make hormones and two of the hormones they make cortisol and, well three I guess, adrenaline and noradrenaline, are sort of these fight or flight and stress response hormones and they give us that sort of lift when we need it. And, so blood sugar and adrenals have sort of this partnership. The adrenal glands help to regulate our blood sugar, especially when it's starting to fall too low. It's a little bit like dialing in sort of on an old radio dial to get the station just right. The body has different mechanisms for dialing in the blood sugar. It has mechanisms to lower blood sugar and that's mainly through insulin, which I talked about a few minutes ago, and then there's mechanisms for raising blood sugar and that's largely through the adrenal glands. There's another hormone called glucagon made by the pancreas but adrenalin and cortisol from the adrenal are two of the major players to raise blood sugar.

So when our blood sugar is up and down all over the place it puts a lot of stress on the adrenals to regulate it better. You know it's like you're constantly trying to dial in the right radio station on one of those old dials and you know you can't focus on anything else because you know you're just trying to get that signal in right and if your blood sugar is all over the place because of again poor diet and other factors, which we can get into, then it puts a lot of stress on the adrenals. There's lots of other things that can stress the adrenal

glands as well, again chronic infections, gut dysbiosis, inflammation, you know obviously various life factors you know outside stressors can do it as well. But blood sugar is a big one.

On the other hand when the adrenals are dis-regulated, in other words the amount of cortisol they produce or when that cortisol surges and the same thing with the hormone adrenalin, it can cause the blood sugar to go up and down sporadically and widely. So when we see people who suffer with hypoglycemia, when the blood sugar tends to drop too low, and by the way just a quick aside normal blood sugar tends to be between 76 and 92mg per deciliter if you want to use standard units. And I should know in millimoles too but I'm forgetting right now (laughing). You can maybe tell us.

Alex: (Laughing) I'm not going to offer that because my brain's...

Dr Mowl: (Laughing) OK, OK. I'll circle back and let you know in minute. But that's right around 83-85mg per decimeter in standard units and that's considered normal. So if it drops down too low from that that's where we have all those symptoms that we talked about earlier.

One of the things I always look for when I see people experiencing that is adrenal dis-regulation. Because if the adrenals are working properly then as that starts to drop the bodies just going to squirt out a little bit of cortisol, it will raise the blood sugar back up and everything stays good. Again it's just like tuning that dial in.

But what happens with adrenal dis-regulation is the bodies, that responsiveness doesn't happen so the blood sugar drops too low to where you start to feel symptoms of low blood sugar or the adrenals respond too aggressively and squirt out a bunch of cortisol and then the blood sugar shoots up too high. And that happens often and as you may have talked about this already but you know high cortisol ends up blocking thyroid activity, it ends up leading to fat accumulation, it raises blood sugar as I mentioned, it interferes with insulin sensitivity. So what happens is we get, we start to accumulate fat in and around our organs, we start to, eventually it has the opposite effect so because it interferes with thyroid activity our metabolism actually starts to shut down. And it causes a lot of stress to our cardiovascular system and other parts of our body.

So we want this to be tuned just right and when it's not all sorts of problems happen including what can eventually lead to Type 2 diabetes and obesity.

Alex: Because as you say it's a kind of continuum that if over time these issues are not addressed and resolved then there tends to be a deepening of

those issues which obviously makes sense because, for example, if the adrenals are constantly working to compensate and they're constantly having to squirt out cortisol and eventually that leads to adrenal fatigue and therefore the bodies less able to be able to handle that.

It'd also be good to touch just a little bit on the relationship between blood sugar and anxiety and some of the more psycho-emotional pieces that can happen. So if somebody has low blood sugar that can often result in a feeling of anxiety or kind of jitteriness or kind of nervousness and there's kinda, what we note as a kind of perpetuating cycle that can start to happen there.

So one triggers anxiety but then that anxiety patten will then start to have it's own impact in terms of blood sugar and people can kind of get in a bit of a vicious circle there. Is that something that you would recognise and perhaps could speak to a little bit?

Dr Mowl: Yeah we absolutely see this and especially, so there's a couple of mechanisms. One is sort of a conscious mechanism and another is sort of an unconscious mechanism. The conscious mechanism is the worry and concern about the blood sugar. So people with diabetes there's a very strong correlation with anxiety and mainly it has to do with not being able to regulate the blood sugar well and fear of what all that means. You know it can become very frustrating because you know people get obsessed with it and they don't understand what's going on. So this usually comes with lack of control so if you don't have good control of your blood sugar, and this could happen in people with both Type 1 and Type 2 diabetes or really any type of blood sugar dis-regulation.

But when they don't have good control of their blood sugar it leads to anxiety and again there's a very strong correlation, it's in the literature, of people with diabetes and anxiety and this is the main driver because it's very frustrating. You know people are being told one thing by their conventional doctors, you know they're trying to medicate their number down, their eating a diet not conducive to good blood sugar control most of the time that's usually prescribed by their dieticians and it leads to this rollercoaster effect to blood sugar, which again consciously is very frustrating and anxiety producing for the person.

It's also unconscious because when you're blood sugar is up and down and all over the place you don't feel very good and it can lead to feelings of jitteriness and it can lead to feelings of what would be felt and experienced as anxiety. I don't think in that case it's sort of a true mental anxiety but its feelings of anxiety because it makes mimics many of the symptoms of anxiety. And then if it effects your energy levels, which again in many people with blood sugar

regulation it does because you're not able to get the fuel into the cells properly to burn for energy, it can lead to again energy issues and fatigue which can then in turn lead to feelings of anxiety as well, hopelessness sometimes and even depression. You know we see a strong correlation with diabetes and depression as well.

And then also what's called distress. There's a term called 'diabetes distress' and one of the polls we use is a diabetes distress scale but people can, there's again a very strong correlation with feeling distressed, which essentially means worried/upset/anxious/even depressed around their blood sugar issues.

So this is a very important connection and the fix essentially, the way to solve it is to get in control of the blood sugar. So once you regain control of the blood sugar than you start to feel confident, you start to feel stable, it's like an anchor and you can start to build your health and that can start to build your energy and it kind of starts to spread in a positive way.

Alex: It's one of those things that I think can surprise patients sometimes when they come in with symptoms of kind of anxiety, irritable mood, depression and their surprised that psychology practitioners are saying you need to actually go and deal with what's happening on a physical level because otherwise it can be a little bit like rearranging the deck chairs on the titanic. You can have the best tools in the world to calm ones mind and nervous system but if you've got something that's constantly driving that in the first place it can only be so effective.

Coming into some of the, so when you are working with patients, obviously there's a lot of nuisance here and there's a lot of kind of depth that sometimes I'm sure you go into to unpick these pieces and understand what's happening but what are some of the kind of, the key things that you would recommend that kind of pretty much anyone whose identifying with what we're talking about, what would be the starting point or the kind of key pieces you'd be recommending people start to address?

Dr Mowll: Yeah good question. So I think there's a couple of things, if you're dealing, if you're sort of at the early end of the spectrum where you're dealing with blood sugar dis-regulation, you're having episodes of low blood sugar, if you are testing your blood sugar sometimes it goes high, and by the way on the millimole scale we're looking for somewhere between about 4.2 and 5 millimoles per litre. So If it's getting under that 4.2 or 4 or if it's getting above 5 before eating then these are outside of the normal range.

So if you're noticing that whether you know you're feeling symptoms of it, you don't really feel symptoms of high blood sugar until it gets really, really high but low blood sugar you can definitely experience symptoms. We talked about them earlier but sometimes clammy skin, you're gonna get, you're gonna feel lightheaded, you're dizzy, you're gonna feel irritable, hungry, craving sugar that kind of thing. So if you're getting symptoms of those then we want to take out the, what I would call the stress foods, and the biggest one is going to be processed refined sugar because sugar does stress the adrenals. It basically acts almost like a central nervous system stimulant and it forces our adrenals to respond and if that's happening, not only that it causes blood sugar to fluctuate widely because it gets absorbed directly into your small intestine and immediately raises your blood sugar so you know you've got to deal with that.

So that's a big one, you know we've got to take out those, that, those stress foods. Another one to consider would be caffeine. Now I'm a fan of coffee I like coffee there's actually a lot of benefits to good quality organic coffee but if you're dealing with low blood sugar episodes and you're dealing with adrenal fatigue you don't need to throw in you know a major central nervous system stimulant like that into the mix. So in those cases it might be a good idea to take a little bit of time off of caffeine or at least high doses of caffeine. Maybe do some green tea or something instead.

So we want to get rid of the stress foods if we're that end of the spectrum. Most of the clients I see are a little further along so we need to start looking at limiting their intake of glucose in their diet. So if you think of someone with celiac disease, which is basically gluten intolerance, gluten is a protein found in grains like wheat and others, and people who have celiac disease are intolerant to gluten so they have to go on a gluten free diet and that essentially is not necessarily the cure but it helps them control their symptoms and control the mechanism of the disease. Someone with diabetes or even pre-diabetes or metabolic syndrome or anywhere along that continuum has what's called 'glucose intolerance'. So they're not able to properly utilize glucose, a fuel that is important to us and should be able to be utilized easily.

So what we need to do in the short term therapeutically is we need to essentially minimize the amount of glucose coming into the diet. So glucose is found in two major food groups. One is foods with sugar, so sugar, glucose is a sugar, but when I say sugar I'm referring more to table sugar. So table sugar is 50% glucose and 50% fructose, which are two simple sugars, and that glucose in the table sugar immediately raises your blood sugar. The fructose goes to the liver and can cause other problems that we may or may not want to get into here but for the glucose component that's problematic enough because it immediately gets absorbed into your blood stream, raises the blood

sugar. So table sugar, whether we spoon it in ourselves or whether it's added as corn syrup or other additives into sodas and drinks and pastries and you know breads and peanut butter and all kinds of other things, we really need to get rid of that.

But the other is starch. So starch is essentially long chains of glucose. Starch is found in carbohydrate rich foods like rice and other grain based foods as well as starchy vegetables like white potatoes and parsnips and these types of foods. So they don't have a lot of sugar but they have a lot of starch and what happens when you eat starch is as soon as it goes into your mouth we start to break that starch down, those long chains of glucose, into smaller chains and eventually into free glucose. We have an enzyme that's in our saliva that's called salivary amylase that starts to break down those chains of glucose and then when it gets into the small intestine we release similar enzymes from the pancreas that break down that starch and it gets absorbed into the gut a sugar does. So essentially when you're eating a potato or you're eating white rice you might as well be eating a giant bowl of sugar, it has a very similar effect on the body. It's a little slower but essentially the same net effect and again if you can't metabolise glucose properly this can cause a problem.

Now if you are, like I have 17 year old son whose highly active, he's very thin, he's got a nice muscular build on him, and he can eat as many potatoes as he wants and he's not gonna have any problem metabolising the glucose because he's burning it constantly because he's wrestling and he's studying all day long and running around and doing all the things that he does, plus he's building a body. So you know it's a little different when you're in that phase of life than when you've already moved into metabolic syndrome or diabetes or pre-diabetes and have major issues metabolizing sugar. That's why I talk about glucose intolerance; my son is not glucose intolerant so he can eat glucose. Now I still don't recommend he eats a lot of sugar because that causes other problems but the starch he can do.

So that's sort of the first step and maybe that's not you know all that surprising all revealing to people but I just want you to understand the mechanism of why that's so important and then if we want to we can get into some other changes.

Alex: Yeah I think putting that in context is really helpful and making these changes of course can be, sometimes people will immediately cut everything out and they may notice that things can actually feel worse before they feel better because the bodies been used to kind of having it's fuel in that way.

So maybe just touch a little bit around how to make those transitions and yeah if you're also happy just to outline some of the other key pieces briefly that would be really helpful as well.

Dr Mowll: Yeah so right now there's a big trend towards Ketogenic diet or low carb, high fat diet for all sorts of things including diabetes, weight loss and so forth. And I think there's some value there but I think we do have to be careful, I don't think it's the perfect diet for everyone and I do think that we have to listen to our body, especially again if you're dealing with some adrenal fatigue or Chronic Fatigue Syndrome or you're dealing with thyroid issues which is not uncommon, a lot of people have these problems. Then we've got to be a little bit careful severely limiting the intake of a major fuel source in the form of carbohydrate. So I am saying that it's a good idea to cut our refined processed sugars and other forms of carbohydrates, I think it's a good idea to cut out if you have glucose intolerance really starchy vegetables, starchy grains. That doesn't mean we cut out all carbohydrates though you know there are low glycemic fruits, there are plenty of leafy green and other vegetables that contain carbohydrates, there's nuts and seeds which have carbohydrates, there's beans and legumes which contain carbohydrates and fibre that can be an important part of a diet. So there's lots of other way to get carbohydrates in that are gonna break down much more slowly and not spike the blood sugar and cause problems. So I think that's important.

We also really need to pay attention to protein. One of the things that's gotten lost in the low carb high fat craze is protein consumption and I think we really need to make sure we're getting an adequate amount of protein to maintain and even build our lean body mass. Especially as we age because as we age we lose lean body mass because our growth hormone levels drop and sort of we start to lose some of the anabolic factors that lead to us storing a lot of lean body mass. So we've gotta drive that through protein consumption. So I think it's important to get enough protein, generally that's you know somewhere between maybe .7 and 1g per kilogram of body weight. That's a starting point but we look at people's activity levels, we look at people's you know, basically phenotype, you know their amount of muscle mass that they carry, we look at again their blood sugar regulation and we look at their energy requirements. So all those things are important but you don't want to skimp on protein that's really important.

And then we can fill in the fat and what I always encourage people to do is get your fat naturally if possible. There's no reason to add a bunch of extra fat just to add fat. To me that doesn't really make a lot of sense especially if you have adequate amounts of body fat. So if you've got, again, greater than 10% body fat you've got plenty of fuel to burn on your frame so you don't need to

pour, you know, tablespoons of oil into your coffee or your smoothies or your meals.

Now again nothing wrong with using fat, you know if you want to throw an avocado on your salad fantastic, if you want to throw an avocado in your smoothie great, you wanna eat some coconut for some good healthy saturated fats that's great I have no problem with that and I think used strategically fat's really important. Monounsaturated fats from things like nuts and seeds and olive oil and avocados are really healthy for the body but we want to get them in their natural state. So, you know, if you want olive oil eat olives, if you want avocado oil eat avocados, if you want coconut oil eat coconuts. Not that you can't use a little bit of the processed, refined oils here and there but try to get it in it's wholefood natural form.

And then the seed oil's, the so called vegetable oils that come from soy beans and corn and canola, which is really rapeseed, we want to try to minimize those as much as possible. They're highly refined, chemically refined, very toxic, oxidized and highly inflammatory so we want to avoid those types of oils as much as possible.

Alex: Fantastic. Before we wrap up Dr Mowll is there anything else that you feel is important to add in? You've talked quite a bit around the dietary changes which can be really important and make a significant difference and is there anything you want to just touch on particularly perhaps for practitioners when you have kind of, we've touched this as we've gone through, in terms of. I guess really, let me ask you as a question.

My question really is that there's the pieces to manage the symptoms, there's also getting to the deeper underlying causes of what's happening. And I know this is a whole big area in of itself but perhaps just a few of the kind of headline points that when you're sat there with a patient and you've made the dietary changes, you've probably seen quite a bit of improvement through doing that, is there a kind of check list or particular pieces that you look to next in terms of where you go for the kind of more long term change?

Dr Mowll: You know for me we're doing a lot of testing too, so you know we want to look at, for example, blood insulin levels and make sure we're metabolizing blood sugar properly and that we're using insulin, we're not over releasing insulin, we're not under releasing insulin. So we want to look at inflammation markers, we want to make sure the body is acting the way it's supposed to. We can even test things like cortisol and adrenaline levels from the adrenal glands and these are sometimes important to do, not always, you know I think a good workup you know with a functional medicine practitioner or a nutritionist can be a great starting point and maybe that's enough, you

know to really get a good history, a good, you know put the puzzle together based on symptoms and experiences. But a lot of times we'll go back and look at the symptoms and make sure we really are making good long term changes based on the testing that we do.

I think that's important but one other thing I just wanted to mention is I think it's important to listen to the body, especially with fatigue. A lot of people, you know, just wanna eliminate it, you know they feel like 'I shouldn't feel this way, what's wrong with me, I need to snap out of this' and you know often times the bodies trying to tell you something. So, and it can take some time to heal, you know once you've gotten to the point of you know where you're really experiencing that deep adrenal fatigue, if we want to call it, or you know just fatigue where you just feel like, you know, somebody just took the wind out of your sails, like you know you just can't get up and get gong, that didn't happen overnight, usually. I mean there are cases where a major trauma can do it quickly but for most people that happened over many, many years, like I talked about earlier, slowly dimming that light. So you're not going to be able to just walk over to the wall and flip the light switch back on. This is going to take some time and we want to listen to our body.

The body when you're dealing with this type of thing, it needs a lot of rest, it needs a lot of restorative exercises, things like meditation and journaling and slow gentle yoga. Like Shivananda yoga and other restorative movement techniques like that are really helpful and you don't want to rush yourself back, you know, through stimulants like caffeine or sugar and those types of things. Sometimes you just have to unplug and give yourself a break. Now don't ignore it, I'm not saying that 'oh I feel tired so I'm just gong to lay in bed all day and do nothing', we want to make sure we're addressing what's underlying that. That you, who knows maybe you have a chronic yeast infection or maybe there's massive leaky gut or maybe your bleeding gut and you have anemia.

So we need to find out what's causing it but if it really is adrenal fatigue, your bodies just sort of worn out, which is very common today because of the lives we lead, you just may need to go on like a year or two period of really slowly rebuilding and turning that dimmer switch back up over time through a lot of really good nutrition, stabilizing your diet, stabilizing your exercise programme so you're not over stressing yourself, and really focus on restoration. And doing that over a period of time can bring that life back to your body and it can, you know, if you're slowly, just like you dimmed it, you can slowly turn that dimmer switch right back up and whether it be several months or several years down the line you can turn this around and get back to the life that you really dream of.

Alex: I'm really glad you made that point I think that it's a crucial, crucial piece of the jigsaw and I think its easy for people to think, as you say, 'I've got this thing I've got to get it fixed' and to kind of be in a rush in that process and the body has an amazing capacity to heal given half the chance to do that. So I'm really glad that, that's a really great point to end on.

Just as a final question Dr Mowll for people that want to find out more about you and find out more about your work, for people perhaps want to either train with you or work with you how can they find out more?

Dr Mowll: Yeah that's great. The simple answer is my website it's drmowll.com and we have a variety of programmes, I've been doing this for a long time so we have a programme on how to reset the metabolism to jump start fat burning, we have programmes for people who were just diagnosed with diabetes who want to learn everything they can and kind of get it handled quickly, we have longer term programmes where we do private one-on-one coaching so they can find out more about that, just go to drmowll.com

And I have a really nice resource on the website called 'The Blood sugar Manifesto' and they can learn everything about blood sugar an I walk them through a variety of self help strategies to enable them to get their blood sugar moving in the right direction again. So if you just go to drmowll.com you can grab a copy of that.

Alex: Fantastic. Dr Mowll it's been a real fascinating interview, thank you so much for your time and for sharing your wisdom and yeah, I've really enjoyed it. Thank you so much.

Dr Mowll: Thanks Alex it's been great.