



## **Women's Hormones, Blood Sugar, Metabolic Issues, and Type 2 Diabetes**

Guest: Jolene Brighten

*The contents of this presentation are for informational purposes only and are not intended to be a substitute for professional medical advice, diagnosis, or treatment. This presentation does not provide medical advice, diagnosis, or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition.*

**Dr. Brian Mowll:** Hello, and welcome back to The Diabetes Summit 2018. This is Dr. Brian Mowll, the diabetes coach. I'm a certified and master licensed diabetes educator and IFM certified in functional medicine. And I have here with me today my good friend, Dr. Jolene Brighten, who is a naturopathic physician and a specialist in women's hormone health, among other things.

So, Dr. Jolene, welcome to The Diabetes Summit.

**Dr. Jolene Brighten:** Hi, Brian. Thanks for having me. I'm really excited to be here today.

**Dr. Mowll:** Yeah, this is an important connection that not a lot of people think about, younger women developing conditions like PCOS, which is a metabolic condition, and gestational diabetes. And how these can in turn lead to blood sugar problems, type 2 diabetes or how they're all connected. It's a big issue. And we're going to dive in and talk about some of the specific connections and details today.

But let me first introduce Dr. Brighten and then we'll jump in and get to some great questions today.

Dr. Jolene Brighten is a functional medicine naturopathic doctor and the founder of Rubus Health, a root cause women's medicine clinic, where she specializes in the treatment of hormone disorders including adrenal and thyroid conditions and autoimmune diseases.

She's the leading expert in post birth control syndrome and the side effects and long term consequences associated with the use of the birth control pill. In her patient-centered clinic, Dr. Brighten, thrives on navigating the space between conventional and alternative medicine, all while working with patients to help them achieve optimum balance, health, and happiness.

She's a bestselling author, speaker, certified yoga instructor, daily meditator, urban homesteader, and a mother of one beautiful boy. Again, welcome to The Diabetes Summit. So great to have you here.

**Dr. Brighten:** Yeah, it's excellent to be here.

**Dr. Mowll:** All right, Dr. Brighten. So let's dive in and talk about the connection between hormones, particularly in women, and blood sugar problems, metabolic issues, and of course, type 2 diabetes. So I guess first of all, let's talk a little bit about what that connection is. How do hormones and blood sugar come into play with one another? How are they related?

**Dr. Brighten:** That's a great question. I think this is a big overlooked area in women's health because in conventional medicine, they usually just sort the bucket. So you've diabetes? We're going to treat you for diabetes. And they forget about the other hormones. And the problem is, is that all your hormones are connected, which means that if you have an insulin issue you're going to have issues with your other hormones as well, namely your sex hormones and those adrenal hormones.

So that's the other, the flipside of things is you can have a hormonal imbalance and then the doctor may not even look at what's going on with your metabolic health. And we see this a lot in PCOS and other conditions where women are just freely prescribed the birth control pill to kind of mask and cover up what's going on with their hormones. Meanwhile, there are other things like diabetes that can be left to fester over the years.

So one really big area of connection between these hormones and our blood sugar—and there's something I always say in my clinic, and that is, “You can have a perfect diet. You can have great exercise routine. And you can still

develop diabetes just by stress alone.” And this is because of how the adrenal glands work and how they interplay with our blood sugar.

Not a lot of people are aware that your adrenal glands have a really crucial role in making sure that your brain and the rest of your body has adequate glucose or blood sugar. And so, if we look at how the average person goes about their day, I’m sure you see this a lot. I see this a lot. People skip meals a lot or they reach for something that’s like really sugary, and sugary, I mean like a refined carbohydrate, something that’s a good quick fix to get them energy.

A lot of this has to do with the way we live. We’re all on the go, super busy people. So I don’t want anyone to feel shamed or like I’m wagging my finger at them. I don’t want any of that. But if you stand back and you look at that kind of practice in terms of our dietary health, and we’re seeing peaks and troughs of our blood sugar. And so there are times where your blood sugar is dropping.

Well, your adrenal glands are the ones that are responsible. They come in with cortisol and adrenaline, so norepinephrine and epinephrine, which hits the liver to say, “Can you give up some of that blood sugar you’ve been storing?” The liver is where we house our blood sugar.

And in times of famine or crisis, like when there is no sugar in the environment, nothing to get our calories up and to get energy and fuel in, this is a great mechanism. Those hormones hit the liver. The liver then releases glucose. And then your pancreas says, “Okay, blood sugar is up. Time to release some insulin.” And then we take that into the cells. Now, that’s like perfect ideal.

However, what happens over time is that we’re missing these meals or maybe we have an inflammatory condition or maybe we’re just like banana stressed out in our life. I’m a mom, so I definitely know that you can fall into that. You’re a parent, so you know how that can go as well.

But what can happen is that these stress hormones from the adrenal glands, they’re over firing. They’re hitting the liver. The liver is putting out glucose. Now we’ve got these elevations, this hyperglycemia that your insulin has to deal with.

Now, that’s a big problem in itself because what not a lot of people realize is as insulin goes high, so can androgen. So what we call male sex hormones.

Women, we need testosterone. It's really important. But this is something that is most constantly defined in PCOS but really can happen in any woman's body, which can put her at risk for having higher testosterone which can lead to acne and hair loss and unwanted hair growth on the body.

And this entire mechanism, a kind of hormonal meets blood sugar chaos, yes, it can put you at risk for diabetes. But it also can be compromising your fertility. Does that all make sense?

**Dr. Mowll:** Absolutely, yeah. So there are a number of connections there. You talked about the adrenals and how they're a regulatory gland for blood sugar. And we teach that as well. That really type 2 diabetes is even more about the liver and the adrenals than it is even about the pancreas oftentimes as far as a root-cause issue.

And many times, people are walking around with dysregulated adrenal glands. So they're making too much cortisol, not enough cortisol, making it at inappropriate times, inappropriate amounts, and adrenaline as you mentioned. And that can just create imbalances or dysregulation in the blood sugar, which then puts more stress on the body. And it creates a vicious cycle.

You also mentioned that as insulin levels rise, which we see in people who are insulin-resistant, we oftentimes see elevated androgen levels. And in women, that can lead to a number of problems like PCOS and fertility issues. So huge connections there.

How does this change over the course of a woman's life? So in other words, she is in childbearing years. How does the birth control pill maybe contribute to this or affect this, whether they're on it for birth control or as a treatment for something like PCOS? And then as they age into menopause and so forth, how does all this change and in turn affect sugar and diabetes?

**Dr. Brighten:** Yeah, okay, so that's a big question. I think this is a really great question because the first thing I'll say is that I can call it losing your invisibility cloak basically. In that, there are a lot of things that myself included, that we ladies do in our twenties that we get a lot of forgiveness for. Our body can handle that. And it's really in our thirties that we start to see some of these symptoms manifest.

And then when we start thinking about things like heart disease, diabetes, dementia. Diabetes can happen at any time. But really we're setting our stage, as early as childhood, but definitely as we get into those reproductive years.

And so what I like to frame in my practice with women is that your symptoms that you're experiencing in your 30s and 40s, they've been brewing much earlier on, since your 20s or maybe around your teenage years. And when we see the manifestation of things like heart disease or dementia, which is like in our fifties, sixties, and older, that's really things that are showing up in our thirties.

So I love that you ask this question because there is so much that we all can be doing now to really keep that invincibility cloak, so to speak. To back it up and to say, in our 20s I think a lot of us commit what I call metabolic obscenities.

And that is when you're maybe eating a package of donuts for lunch. Or you're drinking Mountain Dew in the morning for breakfast. Or it could be coffee, but I know a lot of 20-something's who have been on the Mountain Dew bandwagon. But there are these different ways. I know when I was a teenager that I ate a little bit too much fast food before I knew better.

And it's these kinds of things that can really set the stage for the metabolic mayhem, and causing what we see in type 2 diabetes, the insulin resistance. So what's happening is that we're basically burdening the body, creating hormonal imbalances, and increasing our inflammation.

And inflammation is really the crux of so much of this. When we get inflamed, our cells get really rigid and so you can't dock hormones. So this is one way you can have insulin resistance, is there can be the glucose so high that you're putting out all this insulin and your cells just don't even care anymore. Or it also can be that you have a really rigid cell.

And in that state, we're also seeing things like hypothyroidism. Yeah, all your thyroid labs are normal. Or we'll also see that you can start to get resistant to your cortisol as well. And so any time there is inflammation, we have trouble using our hormones.

Now, when you talk about pregnancy and childbirth, this is important when we talk about this inflammation piece because when we go through childbirth, and that's an abrupt change in our hormones and our immune system, we can have transient inflammation.

And prior to that, we were already a little bit insulin resistant, just a little bit because we want the baby to have that glucose. We want to make sure that

that glucose is available. And that mechanism, it's transient. And that's important to understand.

It's going to be like 10 months of being pregnant. Then you'll have that inflammatory stage that happens just as a result of going through childbirth. But in most women, that blood sugar regulation comes back. However, if you did have a diagnosis of gestational diabetes during your pregnancy, you are at a higher risk of type 2 diabetes.

It's kind of just like with anything in the body, once your body has gone there once, it's so much easier for it go right down the same pathway and do it again, which is why what we're going to be talking about even more so, and what I love that you're covering in this summit, are all of the daily health practices, the lifestyle, the dietary things that can help prevent all of this because it's really important that as I say all this you understand that you have so much power and so much control over what your body actually does and manifests with your hormones and certainly with blood sugar regulation as well.

Now, to the piece of what's going on with pregnancy, we have that little bit of insulin resistance. This is something that the birth control pill has been thought to induce as well. So we see that in pregnancy, blood sugar will be a little bit higher.

And we also see it with the birth control pill, which led a lot of researchers to conclude, "Oh, it's just because of the hormones and it's mimicking pregnancy." However, what we now see, and this is really important as we go back to those gals of like 15 to 20s and preventing things, is that the birth control pill is actually highly inflammatory.

So the birth control pill is making your cells rigid, which is making it much harder for you to utilize your insulin, which means your pancreas has to put out even more insulin. And your organs only like working overtime so much. They won't keep up with it. We see this in HPA dysregulation or what's called adrenal fatigue more commonly. And we also see this with diabetes as well.

So with the birth control pill, it's really important to understand that it causes unfavorable metabolic changes in your average woman. Blood sugar goes up. We can have insulin resistance. We also see adverse cardiovascular changes, like elevation in cholesterol.

And if you put blood sugar dysregulation, elevation of cholesterol and inflammation all together in the room, you are setting up a recipe for heart disease, for stroke, for some of these things that are a lot more serious that we don't tend to see showing up in women until their 50s or 60s.

And so that's why I really like to drive home the idea that what you do today is going to make all the difference in the world for tomorrow. And I hate this concept, I hear this so much. My patients will come back from their doctor's visit and say, "Well, my doctor said I don't have to worry about diabetes. I don't have to worry about heart disease. I don't have to worry about these things until I'm much older."

However, everything you do today is setting the stage, which includes taking that birth control pill. And this is something that I take real issue with because most doctors...now, to be fair, most doctors aren't aware of this. But really it is something we should be counseling our patients on, especially when we look at polycystic ovarian syndrome, or PCOS.

See, PCOS is a metabolic disorder that has these hormonal side effects. In fact, most of these hormonal issues that women have, they have this metabolic underpinning. So much about blood sugar dysregulation and what's going on with the adrenals that I described earlier really are at the root and at the crux of so many hormonal issues that we see.

So in PCOS, if we sit back and we think, *Okay, the average PCOS woman, yes, she's having these hormonal symptoms. Yes, we want to help her with those like her irregular period or lack of period or abnormal hair growth. But she's also at very high risk for heart disease, very high risk for diabetes, and very high risk for metabolic syndrome.*

So to me, if you give a woman with PCOS a birth control pill, without regard for advanced metabolic testing or really taking care to explain to her what can happen, you're creating a really dangerous situation for that woman because you are allowing the underlying cause, which is a metabolic disorder, to progress. And then you're adding inflammation on top of it. And in addition, you're masking the symptoms her body is conveying. We do, as doctors, see these subtle metabolic changes. We can detect those symptoms. But in the average person, they're not detecting that their blood sugar levels are off. In most women, and especially those with PCOS, that signal, that sign is going to come from what your hormones are doing.

That's why ACOG, the American Congress of Obstetrics and Gynecology, they actually classified your period as the fifth vital sign. So up there with blood pressure and your temperature, to determine, how healthy are you? Your period gives you a lot of signs.

And in that way, these imbalances in hormones and dysregulation of our periods, those can actually tell us that there are some metabolic issues brewing. So does that all make sense? I know we just covered a whole lot over the lifespan of a woman.

**Dr. Mowl:** No, a ton of information but really helpful. So what hormones are we talking about? We've talked about adrenal hormones in particular. We're talking about now childbearing and pregnancy and so forth. So obviously there are female steroid hormones involved. We've talked about androgen hormones.

Can we maybe specify some of the specific hormones that are the most related to things like blood sugar, possibly weight gain, metabolic issues that you've talked about so far?

**Dr. Brighten:** When I was alluding to that fifth vital sign in hormones, that's specifically when we start talking about estrogen and progesterone. Now, testosterone is also a very key player, because without it you don't ever actually want to have sex. And so that's one key player in fertility for sure.

So to back it up and to explain what's happening. I explained what was happening with the adrenal glands, with insulin. But understand that your body makes a choice. So ladies, your body is always going to choose survival over fertility because if the environment's not safe, we shouldn't be making babies.

And so a big way your body gets a signal that the environment's not safe is by way of stress. And so yes, there is psychological stress. But what a lot of people don't understand is fluctuations in your blood sugar, that's perceived as stress by your body.

So that means if you're having hypoglycemic episodes, you're skipping meals, blood sugar is dropping, the adrenal glands put that cortisol out to liberate your blood sugar. But all the while, it's getting the signal that this environment is not safe.



So if the environment is not safe, your body is super smart and it makes cortisol at the expense of progesterone. Now, progesterone is our hormone that's highest in the second half of our cycle. You have to ovulate to be able to have progesterone.

So you ovulate. What's left behind is the corpus luteum. And that secretes progesterone, which makes you feel chilled out and calm. You have really easy periods. That's always lovely. And you're not feeling cranky. You're actually really in love with your life, and you're sleeping really well.

But if instead your body's making cortisol, you may not ovulate, or your progesterone may be compromised and dropped. Now we've got PMS. Now we're crying all the time. Or we are very, very irritable. If you've also got lots of estrogen, which is estrogen dominance, at the time, which by the way, this is the most classical way that estrogen dominance occurs in women.

But if you've got that high estrogen/low progesterone...I ask this question in my practice and I say, "Do you, two weeks before your period, A, want to run away to the woods or, B, maybe kill somebody, or C, do all of the above?" And most women with progesterone deficiency will answer C. They'll be like, "Yes, I can't believe you're saying this to me. How do you know about this?"

Because a lot of women go through this when that progesterone is too low. So that's one of the major ways in a menstruating female that we'll see the blood sugar dysregulation, the inflammation, and what's going on with those adrenal glands really impact the sex hormones.

And then as you can imagine, if you're not ovulating or you're not getting your progesterone up, which is how we retain a pregnancy, we can have infertility. Or we can also have early miscarriage as well, which is something that it's very, very heartbreaking. And it should be investigated if you're a woman who's had a miscarriage.

Lots of women have miscarriages but that's no reason not to dig deep or to understand why that occurred for you. So does that make a little more sense in terms of what I'm talking about? And we can certainly talk little more about testosterone as well. I kind of only gave you the brief Cliff Notes on that.

**Dr. Mowll:** Yeah, no, that's really helpful. Particularly from that direction of how blood sugar issues and stress can affect fertility and can affect periods and PMS and so forth. What about the other way around? When a woman has

hormonal imbalance, how does that lead to...how does that affect weight? And then how does it affect blood sugar. And in turn can it contribute to diabetes?

**Dr. Brighten:** Yeah, okay, that's a great question. I realize that you said that to me before, and I didn't get to that. So thank you for bringing that back up. So that same mechanism, now we've got estrogen high. and we've got progesterone low. That's creating inflammation. So we're back to that inflammation state.

In addition, if your adrenal glands are kicking out all this cortisol, like I said, glands don't like working overtime, that overtime, that mechanism is going to basically get broken in what we call adrenal fatigue or HPA dysregulation. Brain and adrenal glands, they're not talking right anymore.

And as cortisol starts to fall, you'll feel very fatigued but most people also start feeling inflammation. And maybe it comes up as like brain fog or it's really very subtle, but that can then allow the cells to become rigid as well. And now we're not docking that insulin on the receptor, now we're getting insulin resistance.

Now, in addition to all of this, if estrogen's high, now we want to store fat. Now we want to store fat in our butt, hips and thighs. If cortisol's too high, that's going to be your belly fat. And then we can see the upper arm, the back of the arms. Everyone always asks me this one. It's usually a testosterone and a thyroid issue going on. So just to add that layer of what we're looking at in terms of where we're storing our fat.

Now, fat cells, they love to stay fat and they love to store even more. So they start secreting other hormones that make it so that they start taking up nutrients. And then it makes it a little bit harder to lose weight. We can also see inflammation rises in this state as well. And that can be very problematic.

And in addition to that, so there is this phenomenon that happens as we age, and I hate to share it because it's kind of sad. But we start deleting muscle cells as we get into our 40s. And skeletal muscle is super important in terms of your metabolism. So if you want to change your metabolism so that you can just lay on the couch all day and burn more calories, build muscle. That's the way to do it.

But there is this phenomenon called sarcopenic obesity, and that's when we start deleting muscle cells, and then we start putting in fat cells and building

more of those. And as that occurs overtime, we'll see even more imbalances in those sex hormones.

So now our fat cells are going up. Our estrogen is going up as well. And because we don't have that skeletal muscle to help us with our blood sugar regulation in the insulin, we can also see the insulin resistance follows. Does that make sense in terms of what I'm saying there?

**Dr. Mowll:** Absolutely. So we talked about how hormone imbalances can lead to inflammation, can lead to weight gain, can affect blood sugar. Particularly adrenal hormones, we talked about estrogen, testosterone, and so forth. And we also talked about how blood sugar issues, diabetes and blood sugar imbalances, hypoglycemia can in turn put stress on the body and lead to hormone imbalances.

What other factors do you see commonly causing hormone imbalances? So if we kind of go a layer deeper, what's actually triggering these hormone imbalances other than blood sugar issues leading to stress in the women that you see in your clinic?

**Dr. Brighten:** Yeah, so at the crux of all of this, we've been talking about the blood sugar, but we haven't gotten into what's happening in the gut as well. So every woman in my practice is going to get just a million questions asked of her. I want the full data of that patient's story, what it's like to live in their body.

But we spend a lot of time on gut health, and we do gut testing as well. We treat a lot of small intestinal bacterial overgrowth or SIBO in my clinic. So the most classical SIBO that they say, "How do you develop this?" It's through food poisoning.

But I actually see in my practice a lot of hypothyroid women that just by not having adequate thyroid hormone, they couldn't move their gut. And therefore they ended up with bacteria in their small intestine, which creates more inflammation and leaky gut. And if you can't absorb your nutrients through your small intestine, you're going to have blood sugar dysregulation. And you're going to have hormone imbalance, because all those nutrients can't get in to build your hormones as well.

So there's the hypothyroid piece. But the other thing too that I'd like to see more research on this but that I have observed clinically, is that women who have either gone on progesterone therapy or become pregnant. And if they

become pregnant and have progesterone therapy, even more of a risk. I'll explain why. But this progesterone therapy or being pregnant can also put you at risk for developing small intestinal bacterial overgrowth.

And the reason is, is that progesterone slows down your gut. So it's a smooth muscle relaxant. So very, very lovely to have progesterone, and if you're pregnant, we really want to have a lot of progesterone because that helps us retain the pregnancy. But that can also put you at risk for SIBO.

And not everybody has gas, bloating, the classical symptoms of SIBO. I see a lot in my practice that we'll test for it, somebody who doesn't have a lot of symptoms, and we see these come back positive.

The other thing we test for in the gut is we also look at doing comprehensive stool analysis and checking for parasites, also *H. pylori*. So we're always looking for underlying infections.

Since about 70% of your immune system's hanging out in your gut, this is where you're going to be really regulating the immune system but also where inflammation can be stemming from. So we're always looking for that extra layer of root cause.

In addition to that, if you don't poop every day, you cannot get your estrogen out of your body. So the liver prepares the estrogen to be moved out. And then you have to have a bowel movement to get that estrogen out. If you're not doing that, then we've got too much estrogen. We'll have the estrogen dominance. And hello, inflammation is back. And then of course we're cranky too, so that's no good. So that's another way that we can see a hormonal imbalance evolve.

Now, the other thing we have to look at is environmental toxins. And the unfortunate truth is, is that most women expose themselves to the majority of chemicals they'll see all day before they leave their house. Things that we find in our makeup, that we find in our personal care products, that we find in our cleaning.

So even what you're cleaning your house with are known as endocrine disruptors. So this is something that we can see a frank estrogen dominance. We can also see inflammation. But we're also going to bog down our detox pathways. And anything that bogs down our detox pathways, that wrecks our hormones.

So I definitely encourage women. I have all of my patients go to the Environmental Working Group and start cleaning up their personal care supplies right away. And then we start to examine their diet as well. So I think that diet gets a lot of play. But what we have to understand is that we all have very individualized needs. And while someone might say, “Keto’s great for me, and it works well for me,” it may not work well for you, which is why you’ve got to test diets. And you’ve got to feel things out.

We all know though, if you’re eating high quality protein, high quality fats, and your gut is absorbing those things, and you load on all the veggies. There’s no research study out there to really refute. What wins at the end of the day is always exercise and lots of vegetables. That one never loses in the research.

But that’s some of the other things that we go looking for in terms of hormonal imbalance. And then of course, you have to look at stress. Stress is something that is inevitable in today’s society. So many of us can feel the stress. Even when you feel like you’ve got it all dialed in, there are still stressors. We drive cars everyday or we’re exposed to light at night. And we don’t realize that these things are just little subtle stressors to the body.

But if your nervous system is always kicking on the fight or flight, and that’s really where the epinephrine, norepinephrine, cortisol, all that comes in. We’re going to see imbalances in your hormones, there’s no doubt about that.

And that’s usually when we start having issues with sleep as well, which if you’re not sleeping for at least 7 hours per night, there’s no way you’re going to have hormones in balance. And we know from more and more research coming out that like not even your liver will detox appropriately if you’re not getting adequate sleep. And so all of our organs really depend on that circadian rhythm or that light/dark cycle.

So that’s kind of some of the underlying things I think all of us should be thinking about when there’s a hormone imbalance. Honestly, your sex hormones, they just go with the flow. They really follow whatever else is going on. And it’s very rare that I see that the issue is, oh, just the sex hormones are imbalanced. Because the ovaries, the adrenals, the thyroid, the gut, the liver, they’re all talking to each other. And they’re all in interplay.

**Dr. Mowll:** Yeah, that’s huge. So you went through a lot of things. Sleep there at the end. We talked about stress, environmental toxins that are endocrine

disrupting chemicals that actually can block the normal function of our hormonal system.

We talked about obviously blood sugar issues, and a number of other things that can all trigger a hormone disruption, hormone imbalances. And then before that we talked about how those hormone imbalances can lead to fertility problems, PCOS, and blood sugar issues, including even diabetes. So this is huge.

In the last few minutes, I'd love for you to share some of your best strategies for how women in particular can actually balance their hormones. So with all these factors that can cause imbalance, what can we do to actually bring things back into balance or protect ourselves from imbalanced hormones which can then in turn lead to blood sugar issues or diabetes?

**Dr. Brighten:** Yes, so the first thing is you've got to test. So you've got to go looking for that root cause. And it's going to be individualized. And that's why it's so important to get testing and have your story heard by a clinician who understands how all of these things really work together.

So that's the first thing, is getting testing, getting your insulin, your hemoglobin A1C to look at your blood sugar and then testing the hormones as well. And so I recommend, in my practice, what I test is an FSH, LH, and estradiol on day 3. So those are 2 brain hormones. Follicle-stimulating hormone, luteinizing hormone, and then we look at estrogen. Because at that time of the month, on the third day of your period, we should really see that your body is getting ready to make an egg. So we're preparing for that.

And then getting tested at the second half of the cycle, around day 21 for your progesterone. I also like to look at estrogen at that time to understand what the balance is. We can understand if you're ovulating. And we can also understand if your symptoms are connected to that. So definitely want to start with that root-cause foundation.

And there are things that you can absolutely do today to start turning your hormones around. So we talked about the protein, the fat, the regular meals. I cannot stress enough how important it is to get healthy fats in your diet.

So I was totally one of those people that went on a fat-free diet in my twenties because back then we all feared fat. It was like the worst thing I could have done to my hormones. And like, I'm on the birth control pill, fat-free vegetarian diet, and guess what? I have no libido now. And that's a really

common symptom. I just want to know that if your libido is low that's a sign of a hormone imbalance, and it shouldn't be ignored. Ladies do have libidos. This is very important.

So with that, eating healthy fats, I like to have people including like avocado, macadamia nut oil, great cold pressed olive oils. Making sure that you're always eating organic versions of animal fats, because otherwise it can be inflammatory. So getting those healthy fats in every meal can help with blood sugar regulation. But it's also how you make your hormones. So without having fat, you can't actually build your hormones. So that's a really important piece.

And then if you are someone who is having hypoglycemic or hangry episodes, I usually say start with eating about every 2-3 hours while you're working on that root-cause. And making sure protein and fat are with those meals or with those snacks, so that we can better regulate the blood sugar.

And then of course, lots of leafy green vegetables. You can never go wrong with that. Especially if you're getting in cruciferous vegetables like cooked kale or broccoli. Those are really great. The research on broccoli and the estrogen metabolism is phenomenal.

So this is going to support liver detox since you can actually move out your estrogen. If you're not having a bowel movement every day, it may be a fiber issue. You may need to use some magnesium in the short term so that you can get those hormones out.

But if you can support that liver detox, those pathways, that's going to help start regulating all of your hormones. And because your liver is so important in blood sugar regulation it is always a good idea to love it up.

**Dr. Mowl:** Yeah.

**Dr. Brighten:** So once we start working on that dietary piece and we start working on lifestyle, like stress reduction, trying to get women—first thing we usually start with is, can you get walking everyday and doing some gratitude journaling. So getting some movement going.

So movement, yes, it's great for sensitizing your cells to insulin. But a lot of people don't realize that most of your hormones don't work if you don't move your body. In fact, you can't convert your inactive thyroid hormone to active

thyroid hormone, which is your mood and your metabolism and helps keep periods regular too, unless you're moving. You have to be exercising.

And so exercise is always going to be very individualized. And this is something I say, work with a personal trainer. Talk to a physical therapist or a doctor to make sure that you're getting the best exercise for your body and where you're at.

And so once you've started with the lifestyle stuff, and we're making sure we've got regular sleep going, that's when we start to go to the next level and look at supplementation as well. And so using things like turmeric, you can start adding that to your diet or you can take that in supplement form, drops inflammation and helps those cells accept the hormones a little bit more.

You can also use things that, if you're starting to experience irregular periods, well, you look for what's going on, you can get herbs on board like vitex and what I call chaste tree berry that you can take the second half of your cycle. That's going to take a good three months to take effect. So if you try it once and it doesn't seem to work you got to give it at least three months.

And then of course bringing great B vitamins, that's going to help liver detoxification. It's also how you build your hormones overall. And so your adrenals need it. Your thyroid needs them. And then your ovaries definitely appreciate those.

The last thing that I want to say though is, I really want to dial in that your blood sugar regulation is super important. And so what I want women to understand from this is that your ovaries actually have the ability to taste. There's been research that shows that if the ovaries are tasting bitter, you're going to have better fertility outcomes.

And we all, whether or not you want to have a baby, we want to be fertile and have a great libido. Because that means our body believes the environment is safe. And you're healthy enough to actually become pregnant whether or not you want to.

But the other thing to understand is, is that in all of these lifestyle and these dietary pieces I've been talking about, is that if your blood sugar is fluctuating, your ovaries, they get the privilege of just soaking up glucose. And so those ovaries, they get hit with insulin that can cause them to make more testosterone. But they also get hit with glucose, and that can cause structural changes to the ovaries as well.



And so I really want to drive that home because I feel like some people may be like, “Oh, Dr. Brighten is saying sleep more and move your body and make sure you’re eating these healthy foods.” But to understand, that’s actually having huge effects on how your ovaries actually function and how all of your glands are talking to your brain and how your brain is talking to them. Does that make sense?

**Dr. Mowll:** Yeah, that’s huge. And that’s a complication, you could call it hyperglycemia or diabetes that really is never mentioned, that those high glucose levels can affect the ovaries and potentially your ability to have children or the health of your hormones as you age. And so this is another big factor to be aware of, for sure.

**Dr. Brighten:** Absolutely. And it’s something to recognize that these changes in the ovaries, they can be happening as a teenager, in our 20s. And so, that’s why it’s really important for anyone listening to this to know that right now is the best time to start, and it is never too late. We can always start with interventions to start optimizing our hormones and lowering our risk for some of these kind of bigger, scarier metabolic diseases.

**Dr. Mowll:** So test your hormones. And you recommended blood test. Do you do other types of testing? Things like saliva, for example, or urinary testing for any particular metabolites. Or do you mainly just focus on blood?

**Dr. Brighten:** Oh no. Yeah, we do a lot of testing in my clinic. So, great question. Sometimes we’ll do a salivary cortisol, so doing 4 point saliva testing throughout the day to see where the cortisol curve is at. Other times I’ll lump it into a test that’s called the Dutch Complete.

I really like that test because I can see the cortisol and the cortisone. So it’s not always the issue that you’re not making enough cortisol. Sometimes you’re just breaking it down to the inactive form, which can be a big sign that you’ve been in overdrive, and your body’s trying to protect itself.

But in that Dutch Test, we also see things like DHEA, which is an anti-aging hormone. It’s our precursor. So women, this is how we make our testosterone. And another big reason to love up your body now is because when we go into menopause, our ovaries stop, but our adrenals don’t. And we lean hard on those adrenals, that DHEA, so that we can keep making hormones and having some sex hormones.

So DHEA can make testosterone or estrogen. This is another complication in the blood sugar dysregulation, what's going on there. DHEA is an anti-aging hormone though. So there are actually some researchers and experts that believe the whole reason we age is because that hormone gets too low. So I always think it's a really good idea to check this.

Sometimes I am seeing DHEA levels of what a 70 year old should have in 20 year olds. And that's a big trouble there. So that's another reason why I use the Dutch.

And then with the Dutch, it actually breaks down all the metabolites for me. So I think it's great to ask how much estrogen are you making? I think it's better to say, "How much are you making and what are you doing with it?" So this is why I said take those B vitamins, that you've got good methylation activity. So you're protecting your cells and you're putting that estrogen into less harmful forms because if we put it into other forms, we can start stimulating cells unfavorably.

And then the other thing that the Dutch Complete will tell me is it will also tell me what you're doing with your testosterone. So we talked about hair loss. And so hair loss on your head can be a common sign and symptom of PCOS. But women can have this just because they're making the wrong kind of testosterone. And they can make a form that's called BHT. And that's a potent androgen. That will cause you to lose hair on your head if that's what you're genetically predisposed to. Can also cause oily skin, acne, for you to grow a beard. Nobody likes that.

And so we always want to look at that, because what I see is that if women who have had blood sugar dysregulation are having adrenal problems, they'll often have problems with DHEA testosterone. And they can be converting it into the wrong kind of testosterone.

And of course, as you can imagine, that's problematic for men as well. This is what we think of. We look for that when it comes to prostate disease. But in women, it's often overlooked because doctors are like, "That's a male hormone." So that's why I like to use that testing.

And then we also use things like a NutrEval or an organic acid because I want to see about mitochondrial function. I want to see what's happening in terms of energy at the cellular level and look at neurotransmitter metabolites.

And then we didn't even get into heavy metals. That is why I was like, check those environmental toxins. Heavy metals, oh my goodness, yes! They can definitely contribute to diabetes, to liver dysfunction and hormonal imbalances. And we'll also see there's heavy metals and gut dysfunction and certainly neurological symptoms can all go together.

And if you stand back and you look at it, if somebody's starting to struggle in any capacity of their life. So if for example you've got something like SIBO and heavy metals going on and now you're having brain fog and you're struggling at work. Well, now you're going to start getting stressed out thinking about going to work. Now, you're going to be in that fight or flight state. Now we've got all these stress hormones. We're pushing out our blood sugar. Adrenal glands aren't happy. Ovaries aren't having it. It can cause a whole lot of chaos.

And so, that's just to say that if there is anything that's slightly off in your body that you're feeling like, this isn't normal anymore, it's really important to have the testing and to work with a doctor who's going to listen to you because whatever's not normal for you needs to be examined, because it's just the tip of the iceberg. It's just the beginning of what might be coming down the pipeline.

Now, just the last test I want to mention, because I think it's just really important in context of all these. We do quite a bit of Cyrex testing, but there's one test in particular called the Cyrex Array 5, and it's predictive autoantibody screening.

And why I think it's important for women, especially starting in their 30s or after you've had a baby or if you're starting to have autoimmune which is the, that's a whole other talk in itself if you're starting to have those symptoms. Or you're in peri-menopause or just went into menopause, good idea to have this test done.

At all of those stages in our life we are susceptible as women to autoimmune disease. So we get it way more than men do. And what this test will actually show us is what autoimmune disease do you have now? And what might be coming down the pipeline?

And why this is important is because autoimmune disease, it goes wild. You want to make autoimmune disease go crazy? Have really bad blood sugar dysregulation and stress yourself out all the time. Those are the 2 things. So literally, if you can get those things into check, I see so many patients put into remission.

But you want to check for this. Because a lot of conventional doctors will diagnose diabetes or pre-diabetes, I see this all the time, “Oh, you have prediabetes, don’t worry about it till its diabetes. And then come back to me in 5 years, we’ll give you a drug then.”

The problem with that is that because they just think, *Okay, adults only get type 2, kids are the ones that get autoimmune*, I see it gets missed a lot in women. And so having this testing can help you understand, are you making antibodies to your pancreas? Is this what’s going on?

You can also look for other autoimmune diseases which can be the root cause of your hormone imbalance, of your inflammation. And you know, it doesn’t even have to be autoimmunity of the actual pancreas or anything to do with the blood sugar specifically.

You can have autoimmunity to your thyroid. And that can start to manifest as irregular periods, blood sugar imbalances. And all the while, the root cause is really an autoimmune disease. And so that’s a test I really recommend that women get and investigate.

I always think it’s better to know. In this test we can see your IGA antibodies, that means you haven’t quite made that autoimmune disease, yet but you’re thinking about it. And if you’re thinking about it, then I love that because I can put it into remission then.

And that’s where we can come in, and we can do that work. And we know, okay, if you have antibodies to this particular tissue, you need to be diligent about these lifestyle practices. And really need to feed these tissues and keep them healthy. And also what should you be looking out for in the future?

**Dr. Mowll:** Yeah, that’s great advice. So you just rattled off a number of really important tests to consider. The Cyrex Array 5 autoantibody test, which as you mentioned there, there are some specific autoantibodies for blood sugar issues and diabetes, as well as of course, thyroid problems and many, many other areas of the body.

And I think you made a huge point there that you don’t have to have autoimmune diabetes for an autoimmune condition or an autoimmune state to affect your blood sugar and weight and other things, hormone imbalance, adrenal function, thyroid function and so forth.

So huge thing to do. Organic acid testing for mitochondrial function. You talked about doing the Dutch Test, which is basically an adrenal and steroid hormone test, sex hormone test, which is really important. There are other, obviously, salivary adrenal and hormone tests that you can do as well and some good blood testing.

So these are all important tests to consider. Obviously when you're working with a good functional medicine practitioner/doctor like you, you're going to not only get the test done but be able to kind of analyze them in this important manner to prioritize what needs to be addressed first.

And I think that's really the value of, one of the values, one of the main values of working with a functional medicine doctor. You get to know what to do first to be able to make the biggest impact on health. So this is great. I think a lot of people, their heads are probably spinning after this because there are so many connections. But this is really what health is about. It's not simple.

**Dr. Brighten:** That's what makes it fun.

**Dr. Mowll:** Yeah, it is. And people oftentimes will ask me, "I've changed my diet. I'm exercising. I don't understand why my blood sugar isn't coming down." And this is just another one of those eye-opening presentations that make you say, "Ah, okay, well maybe this is something I haven't evaluated closely enough." I've seen many, many cases where it is the hormone imbalances that are really driving the insulin resistance and blood sugar.

So, Dr. Brighten, thank you so much for sharing all of this. Before we wrap up today, any last thoughts, comments, anything else you want to share today with our audience?

**Dr. Brighten:** I just want to say how grateful I am that you're putting together this summit. Because it's exactly what you've said, it's not going to be just one thing. They're all connected. That's really what makes it fun in my opinion, why I like practicing medicine.

But I think the most important thing is to always advocate for yourself. If you feel like you're not getting that root-cause approach or your doctor isn't quite looking at all the pieces, that doesn't mean they're a bad doctor. It doesn't mean that you can't be healed. It just means that you need to dig deeper.

And in my clinic, we have a saying, "We don't heal our patients. We teach them how to heal themselves." And so know that you do have the ability to

heal, I see it every day. I see every day in my practice the women who are the exceptions to what conventional medicine said couldn't be done.

**Dr. Mowl:** Beautiful. I love that message. Well, thank you again for being part of The Diabetes Summit 2018. This has been a real pleasure.

**Dr. Brighten:** Yeah, thank you for having me.

**Dr. Mowl:** And for all of you who are joining us today, thank you for being part of our Diabetes Summit this year. Stay tuned for our next session. And remember, everyone, keep climbing and don't ever give up. Thanks, everybody.