Episode 180 Transcript

00:00:00:00 - 00:00:25:07
Dr. Jaclyn Smeaton
Welcome to the DUTCH podcast, where we dive deep into the science of hormones, wellness and personalized health care. I'm Doctor Jaclyn Smeaton, Chief Medical Officer at DUTCH. Join us every Tuesday as we bring you expert insights, cutting edge research, and practical tips to help you take control of your health from the inside out. Whether you're a health care professional or simply looking to optimize your own well-being, we've got you covered.

00:00:25:09 - 00:00:49:22
Dr. Jaclyn Smeaton
The contents of this podcast are for educational and informational purposes only. This information is not to be interpreted or mistaken for medical advice. Consult your health care provider for medical advice, diagnosis and treatment. Hi and welcome to this week's episode of the DUTCH Podcast. I hope you are coming here really well caffeinated and ready for a fast paced, energetic discussion that's going to put together a lot of moving parts and pieces for you.

00:00:50:03 - 00:01:09:00
Dr. Jaclyn Smeaton
We know that when it comes to hormones, there's a lot of interplay, right? It's not just estrogen and progesterone. They don't act alone. There's thyroid, there's cortisol, there's insulin, and there's so much else involved in how we make energy and use energy and how that trickles up and flows into how all of our hormones work in our body.

00:01:09:02 - 00:01:30:07
Dr. Jaclyn Smeaton
My guest today, I think you just nailed it. It was such a fabulous, fascinating conversation that really pulled all of that together. And so if you are a conventional provider thinking about how to how do functional bodies and docs think about hormones in this way, or maybe you're a functional medicine provider, and you just want to learn more about how all of these systems actually interconnect you.

00:01:30:07 - 00:02:04:16
Dr. Jaclyn Smeaton

We're going to love this episode. There were so many great specific takeaways. Like what lab tests you should run, what functional lab tests to run, and what data from wearables actually can make a difference when it comes to tracking how your patients are doing. And we get into the nitty gritty on even things like the newer cardiovascular markers that are being used in functional bodies, and which of them are most helpful, and what are they really telling you about what's happening with your patients at a cellular level that's impacting all of their systems, all of their hormone production, all of their metabolism?

00:02:04:20 - 00:02:24:21
Dr. Jaclyn Smeaton
It was such a rich episode. It's hard to even pinpoint what specifically your favorite takeaway is going to be. I would love for you to share that with us on social after you have a listen. My guest today is Doctor Lara Zakaria. She's a pharmacist and a nutritionist, and she's so good at bridging that functional medicine and personalized nutrition approach with a traditional pharmacy background.

00:02:25:01 - 00:02:50:16
Dr. Jaclyn Smeaton
She had over 20 years in community pharmacy practice, so she knows so much about drugs in that drug model, but then pursued a master's in nutrition from the University of Bridgeport, and then was certified as both a certified nutrition specialist. And she got certified through the Institute of Functional Medicine. So her practice today is really multidisciplinary. She works directly with patients and bills implementation tools that help to scale her care even further.

00:02:50:18 - 00:03:12:00
Dr. Jaclyn Smeaton
She's also a prolific educator. She teaches as adjunct faculty at several universities, and you've probably seen her teach at programs like a forum Functional Medicine. See the Institute for Natural Medicine and AFM. And she just has this real, pragmatic, evidence based approach when she ever she's talking about metabolic health or microbiome or whatever the topic is at hand.

00:03:12:02 - 00:03:33:22
Dr. Jaclyn Smeaton
She works so closely with pharmacists, nutritionists and clinicians to really elevate nutrition and plant medicine as a chronic pillar of chronic disease prevention and whole person care. And ultimately, you're really going to see just the passion that

she brings to all of this and our conversation today. So let's go ahead and bring Laura in. Well, Laura, I'm so glad that you're joining me on the docs podcast.

00:03:33:22 - 00:03:34:20
Dr. Jaclyn Smeaton
It's so good to see you.

00:03:35:01 - 00:03:37:02
Dr. Lara Zakaria
It is so nice to see you too, Jaclyn!

00:03:37:08 - 00:04:13:03
Dr. Jaclyn Smeaton
I always love when I get guests on that. I know we're going to have a really good time, and I'm actually just really excited about today's topic because it's so timely and relevant. And I think something that people really want to know about that affects such a large number of our patients, and we don't really spend enough time getting into the nitty gritty details of it, which is that kind of combination of metabolic health and reproductive hormones and, and stress hormones and kind of why that is part of the what I call the hormone hierarchy, where you have that foundation around metabolic health that has to really be in good stead.

00:04:13:05 - 00:04:25:02
Dr. Lara Zakaria
Well, I love talking about this. So I'm so appreciative to have the opportunity to get into those details, because I'm kind of obsessed with this concept right now. It's been my special interests.

00:04:25:04 - 00:04:50:08
Dr. Jaclyn Smeaton
Go ahead. Well, I can't wait to pick your brain. Before we get into that, though, I wanted people to know a little bit more about you because you have this really unique background. You know, you started your career in community pharmacy and you're trained as a pharmacist, but you've really fully shifted into functional nutrition and herbalism. So I think that that shift sometimes can surprise people because they, you know, our model's built on pharmaceutical drugs, but can you share a little bit about your story and maybe that turning point that kind of sent you looking for a different model of care?

00:04:50:10 - 00:05:11:02
Dr. Lara Zakaria
Yeah, absolutely. And shout out to all the retail pharmacies and community pharmacies that are practicing right now because it is a hard job. And if you guys could all do me a favor, go say hi and thank your local pharmacists because it's a thankless job sometimes. So I think we would all appreciate a little a little bit of kindness and a little bit of grace there.

00:05:11:04 - 00:05:33:01
Dr. Lara Zakaria
But yeah, I started out, as a pharmacist, working in community pharmacy. I've done, I've done big box stores, I've worked at CVS, I worked at Rite Aid, if y'all remember that. And I've also worked in independent pharmacies and I've managed and, worked in compounding pharmacies as well. So I, a lot of my early career was focused on the delivery of medicine.

00:05:33:01 - 00:05:52:16
Dr. Lara Zakaria
Right. Like, how do we make sure that we are giving the right medicine to the right person at the right time, that we're ensuring for safety and drug interactions and all that good stuff? And then, of course, all the insurance stuff that like, comes on top of that. And I really loved the aspect of community care. I loved being able to be somebody that my patients can come to as a resource.

00:05:52:16 - 00:06:13:02
Dr. Lara Zakaria
When they felt like their ten minutes at the doctor's office wasn't long enough for them to get their questions answered, they're handed a prescription and rushed out the door, and they didn't know anything about that medication that they were taking, or if they had any other alternatives, they would come to the pharmacy. They would ask to speak to the pharmacist, and we would have these conversations, and I would get to know them, their background.

00:06:13:06 - 00:06:32:14
Dr. Lara Zakaria
And I would help them explain what the rationale behind the medication was and what to look out for, how to optimize it, how to make sure that it was safe so that part of the job was incredible. The part of the job that left me a little less satisfied was the fact that most of my patients were coming in.

00:06:32:16 - 00:06:48:10
Dr. Lara Zakaria
They would come in one year, and I got to know them and we would, you know, they would get their first diagnosis. Maybe it was hypertension, maybe it was diabetes, and they would get there. That medication failed, and then they would come back a year later and the next diagnosis would get piled on. And then the third diagnosis would get piled on.

00:06:48:10 - 00:07:10:19
Dr. Lara Zakaria
And at the time, you know, I just I just didn't know that these things were intermingled. I didn't understand the systems connection. I didn't understand the systems physiology or the functional medicine part. But it just seemed odd to me that if we as health care providers were coming in so that we can take care of our patients, that we would try to mitigate that downward spiral.

00:07:10:19 - 00:07:33:16
Dr. Lara Zakaria
And and we don't want them to be piling up prescriptions because we keep piling up side effects or we're not fully addressing the problem. And so it's turning into the next set of issues on that, whether it be the cardiometabolic continuum or the autoimmune continuum or what have you. At some point, I started to get really into nutrition.

00:07:33:16 - 00:07:50:11
Dr. Lara Zakaria
I was just like nerding out on nutrition books. I was reading all these different books about, the impacts of culture on our food choices and the changes in the United States in the mid-century, and how we all started shifting the way that we looked at food and the development of convenience food and all these kinds of things.

00:07:50:11 - 00:08:15:12
Dr. Lara Zakaria
So from an anthropological perspective, and I got super fascinated, the fact that we often talk about foundations of diet, like every guideline, whether it's diabetes, heart disease, like you name it, every guideline has a part in there that says diet and lifestyle first, or diet lifestyle as an adjunct that we're not usually trained in, how to deliver that part of the guideline.

00:08:15:12 - 00:08:46:21
Dr. Lara Zakaria
And so we might refer to a dietitian, but very often that part doesn't actually happen. So during that whole era, as I was getting more fascinated in this and, you know, the the aspect of food psychology and why people choose what they want to choose and why people eat certain foods. I started to first I got a certification in coaching because I just wanted to learn how to change people's minds about the decisions that they were making and how to, help them to make decisions that are more aligned with their goals.

00:08:47:03 - 00:09:03:20
Dr. Lara Zakaria
And then from there, I said, but I kind of want to learn the biochemistry. I want to know why. Why does this food work this way? Why is tumeric so magical? Why are we so obsessed with green tea? And that's where I decided to sort of shift the path and go down the path of getting my master's in nutrition.

00:09:03:20 - 00:09:24:23
Dr. Lara Zakaria
I eventually would get my CNA or certified Nutrition special certification, and I would eventually find functional medicine and get trained in functional medicine, herbalism and put it all together. And what I do now, which is trying to find the place where pharmaceuticals make sense, there are times where they are important, and also they are never going to be the only answer.

00:09:24:23 - 00:09:35:11
Dr. Lara Zakaria
There's always going to be an adjunct that is primarily diet and lifestyle and then as needed, supplements, nutraceuticals, and etc..

00:09:35:13 - 00:10:02:21
Dr. Jaclyn Smeaton
You've really like hit on I think just laid that story out so clearly and I've heard that mindset for from other providers, but not set exactly the way that you've set it, which is that that pharmaceutical like linear curve up with aging there. That's the oftentimes the piece where it's like we're not promoting health. We're not getting people well, it's like whack a mole a little bit like waiting for the next thing to come up.

00:10:02:21 - 00:10:15:08
Dr. Jaclyn Smeaton
And it's really interesting that you bring up the nutrition guidelines. You're right. They I hadn't thought about that. They exist across every condition, but it's like a placeholder that no one does anything about typically.

00:10:15:10 - 00:10:36:15
Dr. Lara Zakaria
And sometimes it's even. I've even heard clinicians say, well, people will do it right. Like, yeah, we know the Mediterranean diet helps improve insulin resistance, but people won't do it. And that's I think like where I was like, but why won't they do it? What's what's the got there? And there's a lot that we could get into there in terms of like access to food.

00:10:36:19 - 00:10:38:18
Dr. Jaclyn Smeaton
Yeah. Systematic limitations.

00:10:38:20 - 00:11:00:04
Dr. Lara Zakaria
Exactly. Systematic limitations, access to food, costs, the time that it takes to prepare food from, you know, if you really want to just focus on whole food, the food waste that happens if I don't go through the food that I just freshly bought. And then there's the whole factor of just nutrition literacy. And not only like, was it back then, difficult to know what it is to eat.

00:11:00:04 - 00:11:25:13
Dr. Lara Zakaria
You know, eggs are bad for you. One day, good for you the next day, go low fat, go low carb. Like there's so much confusing information that's quadrupled in terms of confusion with all the info, BCD, the like, access to information, the conflicting opinions, the the people essentially are trying to get everybody's attention to the next fad, to the next quick fix when it comes to diet and when it comes right down to it, nutrition, diet, lifestyle, they're boring.

00:11:25:19 - 00:11:28:22
Dr. Lara Zakaria
There's nothing super fun or fascinating or sexy.

00:11:29:03 - 00:11:37:08
Dr. Jaclyn Smeaton
It's not foundational. Diet. Yeah. Yeah. Well, I want to ask you one more question on this, and I promise we're going to get to metabolic health for all.

00:11:37:08 - 00:11:41:15
Dr. Lara Zakaria
You guys are listening. Well, it's all pertinent to the conversation of where we're going.

00:11:41:18 - 00:12:05:20
Dr. Jaclyn Smeaton
It only is. But I think as a pharmacist, like, people choose pharmacy because they have an interest in like drug chemistry, let's call it. And obviously that's something that you kind of knew about now that you've you've learned about plants and nutrition and phyto chemistry. Can you talk a little bit about like the difference between this is just for general listeners and maybe for physicians too, who are listening, who are accustomed to a drug model.

00:12:05:22 - 00:12:29:02
Dr. Jaclyn Smeaton
And part of the benefit of a drug model is clarity and mechanism. And then you move into plant medicine where there's like utter like, look at tumeric. How many different binding sites and mechanisms and things like that happen. Can you talk a little bit about pharmacology versus phyto pharmacology from your pharmacy point of view, and maybe help a skeptical listener who is like, plants don't work, plants are dangerous.

00:12:29:02 - 00:12:34:02
Dr. Jaclyn Smeaton
They're you know, we don't know enough. Like, what would you say to all that? And then I promise we'll get into metabolic health.

00:12:34:03 - 00:12:40:11
Dr. Lara Zakaria
I love this question because I get to nerd out on my favorite word, which is pharma cog in AC.

00:12:40:14 - 00:12:41:00
Dr. Jaclyn Smeaton
Okay.

00:12:41:02 - 00:12:42:04
Dr. Lara Zakaria
Have you heard that word before?

00:12:42:04 - 00:12:42:18
Dr. Jaclyn Smeaton
Yes.

00:12:42:20 - 00:12:45:17
Dr. Lara Zakaria
Okay, great. So you know why I'm so excited.

00:12:45:17 - 00:12:46:03
Dr. Jaclyn Smeaton
Yeah.

00:12:46:05 - 00:13:12:04
Dr. Lara Zakaria
Pharmacology is the study of plants in order to derive pharmaceuticals. One of the most famous examples we derived statines from red yeast rice bowl a Saturn, the first Saturn that was developed, was developed to mimic the activity of red yeast rice once we understood its mechanism. Another example of that would be,

00:13:12:06 - 00:13:17:22
Dr. Lara Zakaria
Oh my gosh. Blinking, aspirin and willow bark. Thank you. Willow broccoli.

00:13:17:23 - 00:13:20:12
Dr. Jaclyn Smeaton
Start again. So another another version of that.

00:13:20:13 - 00:13:57:13
Dr. Lara Zakaria
Another example of that would be willow bark, which is how we derived the mechanism for and developed aspirin and NSAIDs. So the idea that plants actually

have a well documented and well studied pharmacology is understood. What we've done is we've taken sort of the ancient knowledge, the ancient wisdom about a plant, berberine, for example. And we have studied it and understood, okay, it does something to these mechanisms that impact blood sugar and LDL production.

00:13:57:15 - 00:14:24:01
Dr. Lara Zakaria
And what we've done from there is try to identify those specific mechanisms, isolate down the active constituents, and then develop a pharmaceutical that can do that, a hundred x 50 times in terms of its specificity. Now that does two things. One, it allows us to come up with drugs that are frankly phenomenal. Like it's really impressive what we're able to do when we go the synthetic route.

00:14:24:03 - 00:14:51:05
Dr. Lara Zakaria
What it does, however, is it dilutes down the magic that is plants and that they don't have their mechanism is always, not always necessarily tied to one individual mechanism. It's actually a combination of mechanisms that's responding to the physiological environment that it's in. So for example, turmeric also has Cox inhibition activity. When we think of NSAIDs we think of Cox inhibitors.

00:14:51:05 - 00:15:28:08
Dr. Lara Zakaria
Right. So does turmeric. It actually does also act on Cox. But the other thing it does is it modulates prostaglandin pathways. And we actually have anti-inflammatory prostaglandin pathways as well as what we generally think about as pro-inflammatory pathways. What NSAIDs can't do is select which pathway they're inhibiting. They inhibit all of them. What tumor can do is actually with nuance, support the anti-inflammatory pathways and the resolution pathways with that, while still dampening the inflammatory pathways.

00:15:28:10 - 00:15:55:02
Dr. Lara Zakaria
So that kind of wisdom that is in plants that happens within our physiology is not something that we have yet been able to adapt when we develop pharmaceuticals. And if you go into the literature and you look at the plant researchers, a lot of this mechanistic research around what plants can do, what pathways they can actually support, what those mechanisms looks like, there's even some a lot of animal models as well.

00:15:55:04 - 00:16:19:19
Dr. Lara Zakaria
What we don't have as much of and what some of the, some of the critique which I think is valid of plant medicine is that we don't have a lot of human studies and a lot of back to back studies or large studies. And so we often are relying on either imperfect meta analyzes or on smaller scale RCT trials to create an equivalence between plant medicine and pharmacology.

00:16:19:21 - 00:16:47:05
Dr. Lara Zakaria
And that is not a perfect approach because plants aren't the same as pharmaceuticals. But it gets us a little bit closer as as clinicians that have been trained in more conventional allopathic, settings to better understand where plants fit into our approach, and how to compare it to the existing, Pharmac. Pharmaceuticals. That said, to me, it's not an awe question.

00:16:47:07 - 00:17:19:03
Dr. Lara Zakaria
It's an end question. To me it's when are pharmaceuticals appropriate? And that includes whether there are physiologically appropriate. There's an indication for them, there's a diagnosis for them, there's a guideline for them as well as what does the patient want and their autonomy and their ability to choose. And very often when we dismiss patients willingness to use a pharmaceutical, we dismiss that as saying, oh, this person's not interested in their health, but it's actually the opposite is true.

00:17:19:03 - 00:17:42:00
Dr. Lara Zakaria
Research shows that patients who are interested in natural therapies and approaching it from a diet or lifestyle perspective primarily are often more invested in their health. They're actually the ones that are trying to do the right thing. And what we I think should do as practitioners is support them in their journey and finding the right balance for them.

00:17:42:02 - 00:18:07:01
Dr. Lara Zakaria
I think the more that we educate ourselves about those alternatives, about the psychology behind those choices, the better we can empower our patients then to

feel, emboldened and to step into the right decision and that we can help then guide them to the correct information rather than them going down the rabbit hole at three M I'm checking with ChatGPT or googling or forums to go try to find the answer instead.

00:18:07:03 - 00:18:24:21
Dr. Jaclyn Smeaton
I am so glad we spent the time talking about that. Thank you so much for answering that question, and I think it is really relevant to our conversation today, which is that connection with metabolic health and hormones, because there is so much that can be done first through diet and nutrition, which we've spoken to, and we think about foods.

00:18:24:21 - 00:18:51:13
Dr. Jaclyn Smeaton
And I'd love to talk about this too, because a lot of the health, quote unquote, healthy foods we eat that contain macronutrients that keep our blood sugar balanced like fiber, come along with it, this complex photochemistry that actually helps in so many other ways. So I'm sure we'll have the chance to dive into that. But I want to start with just talking about that overlap between metabolic dysfunction and hormone symptoms, because these oftentimes overlap in practice.

00:18:51:13 - 00:19:11:17
Dr. Jaclyn Smeaton
And it's like then on top of that, one of these other biological threads that kind of weaves through both of those things is stress and the HPA axis. And that we know that stress and it let's talk environmental toxicity to all of these things, layer in to create a greater risk of obesity and cardiometabolic disease. And I think I think about job as Ana's research.

00:19:11:17 - 00:19:25:15
Dr. Jaclyn Smeaton
I don't know if you ever read his book. Yeah. Toxin solution, which I got. It's probably ten years now since that book came out, but it really was a game changer for me. I'd recommend it's just a consumer book, so if you're a practitioner, it's like a really great read. And if you're a consumer, you can still get through it.

00:19:25:17 - 00:19:48:02
Dr. Jaclyn Smeaton

But the research he did predominantly in Canada, he worked with large employers and found that statistically, the patients that had higher toxic load had the highest cardiometabolic disease, worst outcomes. They're the riskiest patients to insure. It's kind of what he was looking at it from that point of view. Yeah. And then that exceeded like nutrition and weight and all these other factors that we typically think of.

00:19:48:02 - 00:19:50:19
Dr. Jaclyn Smeaton
So anyway, there's so much that goes into this. So yeah.

00:19:50:20 - 00:20:04:18
Dr. Lara Zakaria
Kidney disease two for for, you know, for people that are working with populations that have a lot of kidney disease. And that's also those incidents of that is on the rise. There's a lot of connections between, exposure environmental exposures and kidney risks as well.

00:20:04:20 - 00:20:24:17
Dr. Jaclyn Smeaton
Well, thank you for adding that. So I mean, my point with this all, I'm getting off on a tangent because I'm so excited to talk about this, is that we have this. When a patient comes in with a cluster of symptoms fatigue, weight gain, mood change. Like how do you even start to know, is this a reproductive hormone issue or is this a access issue?

00:20:24:17 - 00:20:27:21
Dr. Jaclyn Smeaton
Is this a metabolic health issue or is it all of the above?

00:20:27:23 - 00:21:04:21
Dr. Lara Zakaria
Yeah. I, you know, it's it's hard to pin it down in my head because they are so interrelated. Right? Like if we go down to the basic definition of what hormones are, they're messengers. And by definition they are not relegated to one system. They are communicating information across systems. And, you know, I think because of our attempt to try to put things into boxes in order to create like a depth of specialty, which I think is important, we sometimes lose the forest for the trees.

00:21:04:23 - 00:21:29:10
Dr. Lara Zakaria
And I think if you zoom out to me, there's a there's a Venn diagram. There is at the core of everything is energy processing and metabolism. Without that function, nothing else can exist. I often equate it to the bank account. If there's no funding to the rest of the cells in the body, there's no ATP being delivered. Then the body ceases to exist.

00:21:29:11 - 00:21:29:21
Dr. Lara Zakaria
It's a you're.

00:21:29:21 - 00:21:31:13
Dr. Jaclyn Smeaton
Doing well, like mitochondria.

00:21:31:19 - 00:21:32:11
Dr. Lara Zakaria
I'm talking.

00:21:32:11 - 00:21:33:04
Dr. Jaclyn Smeaton
The basics.

00:21:33:08 - 00:21:58:05
Dr. Lara Zakaria
The basic the super most basic energetic function, which is ATP production. And it's not just about the mitochondria, but it's very much the mitochondria. Yes. And without that energy system kind of keeping the lights on for the rest of the house, everything's going to go dark. It's not going to work. So at its core, metabolic balance is a big part of the sex hormone conversation.

00:21:58:10 - 00:22:36:15
Dr. Lara Zakaria
Then there are hormones that regulate metabolic function. We think of obviously thyroid or insulin or GLP or leptin or any of those metabolic hormones. Yes. But a large part of what they're doing is regulating what either comes in to power the system or what's going to go out and get utilized by the system. And then deciding based on what's happening in the other realms, whether it be the HPA axis, sex

hormones, what are all the priorities throughout the system, they're deciding then where to allocate that energy.

00:22:36:17 - 00:22:58:05
Dr. Lara Zakaria
So if you've got a system that's under stress and cortisol is communicating that there is stress. Obviously very simplified picture here. But cortisol is communicating that there's a lot of stress on the system. Then that is going to change the way that the metabolic product, the energy is going to get allocated. Because under times of stress, guess what?

00:22:58:05 - 00:23:22:17
Dr. Lara Zakaria
Your hair growth, your nail growth, that's not going to be the priority. It's going to allocate to the things that are important under periods of stress, which is brain function, breathing, heart function. Can we get like the basic supplies to the rest of the body? And can we keep this whole thing alive and at the same time, sex hormones, which are largely part of like reproductive cycles?

00:23:22:17 - 00:23:50:08
Dr. Lara Zakaria
Obviously they have other, other roles to play, but that are largely part of reproductive cycles. Those are going to get down, regulate it again when there's not enough energy to really run the system efficiently. Sex hormones and fertility is not going to be at the top of the priority list either. So that's why I say it's hard for me to split them apart, because what these all these hormones are doing is essentially talking to each other and saying, you're good.

00:23:50:10 - 00:24:15:11
Dr. Lara Zakaria
Okay. You need a little bit more here. Oh, we've got plenty of resources. Let me hand you a little bit more so you can we regulate that system. That's actually the communication that's happening. So if there is dysregulation in the HPA axis or with the sex hormones or with fertility or irregular cycles or hair shedding or what have you, we have to look underneath that and see, okay, first primarily is the metabolism doing okay?

00:24:15:13 - 00:24:26:21
Dr. Lara Zakaria

Is there enough resources allocated to the bank account so that it can have more flexible spending to to spread around to all these other healing processes?

00:24:26:23 - 00:24:52:04
Dr. Jaclyn Smeaton
What a great analogy. And it's really interesting when you talk about fertility and just reproductive health generally. It is one of the last on the list of priorities of the body. And I you know, we see this flipped the other way where, there's such interesting studies on men, with when they do semen analysis of men in their 30s and they stratify them based upon best semen to worst quality semen.

00:24:52:04 - 00:25:22:07
Dr. Jaclyn Smeaton
Yeah, they actually can predict. And there's a linear connection here with men and their chronic disease incidence and even all cause mortality later in life. So certain cancers, cardio metabolic disease and all cause mortality have all been linked to semen analysis in the 30s. And I think it's really the way that what you just described is such a nice way to think about it, where reproductive hormones become like a canary in the coal mine for some really fundamental dysfunction that is too early to pick up.

00:25:22:07 - 00:25:40:15
Dr. Jaclyn Smeaton
But you're not diabetic yet. You're not, you know, you don't have a stroke yet. Your cholesterol is not elevated yet, but you start to see the problems there due to that underlying energy allocation. But it's just like crossing off the lowest priority. And, you know, you're going to see a bigger impact of the body over time. Is it.

00:25:40:20 - 00:26:05:05
Dr. Lara Zakaria
Yeah I think it's oxidative stress. Right. That that is being over and over, whether it's egg quality or sperm quality. Oxidative stress is another marker. But what is oxidative stress if not stress on the mitochondria. Right. So I think that makes a lot of sense to me. And then when I think of it I think of compensation. So to your point, metabolic dysfunction sits on a very long continuum.

00:26:05:07 - 00:26:43:09
Dr. Lara Zakaria

And before we get anywhere close to what we call prediabetes, there is a long, progressive march towards through insulin resistance. And there are some studies that have said that homo er or fasting insulin can rise up to I think 13 years is the longest I've seen in any of the studies. But before we get a diagnosis of prediabetes, and if anybody's ever used the CGM on themselves or on a patient, then you have seen these crazy spikes and dips that happen when somebody uses those and they're not optimized in terms of their insulin sensitivity.

00:26:43:11 - 00:27:10:05
Dr. Lara Zakaria
So there is a long breadth of time that we can use to even, prevent or push back the supposed inevitable decline of metabolic function that we currently associate with aging. My hot take is I don't think that that's inevitable. I think that there are, a lot of factors that make it more and more challenging as we age to maintain insulin sensitivity.

00:27:10:05 - 00:27:42:10
Dr. Lara Zakaria
That includes shifts in estrogen and testosterone that happen in menopause and and rapports that also includes environmental factors. Obviously dietary quality, digestive function, microbiome at the microbiome, bile acid metabolism. There's so many factors to take into consideration. That doesn't mean that it has to be inevitable, though. It's simple, although not easy to accomplish. But that's, I think, what all of us in the space of functional medicine and preventative medicine and lifestyle medicine are trying to accomplish with our patients.

00:27:42:10 - 00:28:02:08
Dr. Jaclyn Smeaton
Yeah, I totally agree with you. And I think it's interesting that long lead time that you described, because there's even a lead time between dysfunction beginning and then detectable dysfunction. And I think about this when we talk about hormones a lot, because I think we're really missing an important piece. I talk about this all the time on the podcast and in my teaching.

00:28:02:10 - 00:28:21:10
Dr. Jaclyn Smeaton
Because when we think about hormone systems, the first thing we think about is the gland that makes the hormone. So if it's thyroid, we think about the thyroid gland or adrenal cortisol. We think about the adrenal gland. But then we think

about, okay, now it's on an axis right. So you have the HPA axis HPO hypothalamus pituitary gland.

00:28:21:10 - 00:28:42:02
Dr. Jaclyn Smeaton
Right. Right. But I think that's it's nice that we're thinking about it as a communication system. But the piece we don't talk about or even think about enough as clinicians is that tissue and tissue. And I think metabolism is probably the best, most well understood example that I use a lot because are insulin resistance is a cellular problem.

00:28:42:02 - 00:29:06:00
Dr. Jaclyn Smeaton
Right. And so you see this happen in the cells long, long, long, long, long before you see insulin start to creep up. And definitely long, long, long before you see glucose come up. So that's right. Glucose is like the last thing that you see happen. Can you talk a little bit about that. And I think we should use this as a model because I, I think that we, we are we most well understand metabolism and how it starts.

00:29:06:00 - 00:29:32:20
Dr. Jaclyn Smeaton
The disease really starts at the tissue level in a result of the tissue trying to respond to an unhealthy environment. Then it starts to affect glandular production of a hormone. Then it starts to affect blood markers that we're screening for. And there's probably decades of time where you could intervene in between there. And that example probably also could be applied to a lot of other hormones that were looking at thyroid reproductive hormones.

00:29:32:20 - 00:29:55:00
Dr. Lara Zakaria
That's exactly, exactly. So what you're describing there is compensation. And let's start by talking about insulin resistance in that model. And then let's talk about thyroid. Because I think there's an interesting conversation emerging around thyroid. And its role and metabolic compensation that I think is a little bit different than the way most of us were probably taught to look at, evaluate thyroid.

00:29:55:00 - 00:30:25:13
Dr. Lara Zakaria

Okay. So compensation I, I, I refer to the process of making sure we keep the wheels on the wagon as long as possible, right. The body is kind of brilliant in that it will do absolutely everything it can to keep things moving forward again, metabolism is the core of everything, so it will try to throw everything else out there other than try to mess up this system.

00:30:25:13 - 00:30:48:08
Dr. Lara Zakaria
Because it is so critical to, so to to life. It's it's incompatible with life to not have an efficient metabolic, system. So that means that when we're talking about insulin, remember, insulin is a signaler. Its primary role is not to balance our blood sugar. Its primary role is to make sure that glucose enters the cell and then is used within the cell to produce energy.

00:30:48:12 - 00:31:13:14
Dr. Lara Zakaria
That's its actual role. So to your point, when it's being produced by the pancreas, that's in response to metabolic demand. And when the insulin attaches to that cell receptor and attempts to bring glucose in to to the party when it doesn't adequately respond to insulin at the receptor site, that's insulin resistance. And as a result of that, you start to see insulin increase.

00:31:13:19 - 00:31:37:20
Dr. Lara Zakaria
So that's why we say that insulin fasting insulin increases before, prediabetes is diagnosed. Because that cell receptor essentially saying I don't have enough glucose sending messages back to the pancreas, pancreas is going, well, I guess you didn't get my message. So let me send you some more insulin. So it just keeps pumping out insulin in response to that cell receptor demand.

00:31:37:22 - 00:32:13:02
Dr. Lara Zakaria
That's if that's insulin resistance. The same exact thing can be said about thyroid because thyroid has to do the same thing. You produce T4, you convert T4 to T3. Hopefully you get that T3, you stick it on a shuttle and you send it out to pretty much every cell in the body. There is a thyroid receptor at that cell engages with that thyroid receptor in order to allow the thyroid in the activity of the T3 relative to T4 is what decides how metabolically active something is.

00:32:13:04 - 00:32:46:07
Dr. Lara Zakaria
So we call, thyroid the master metabolic hormone. What it is it's a thyroid regulator. So it's more like deciding how much gas versus how much we hit the break. And we if you're familiar with reverse T3, reverse T3, I used to call it the the ugly stepchild or step sibling of T3. Because if T3 is our most biologically active thyroid hormone, reverse T3 blocks the activity of T3 and thwarts its metabolic activity.

00:32:46:07 - 00:33:06:23
Dr. Lara Zakaria
And I used to think that, well, you know what this is what's elevated. When there's a lot of stress on the system, we get more reverse T3. And how do we recalibrate the system so that the reverse T3 goes down? Now, I'm not advocating that we promote more reverse T3 anymore, but what I am saying is that there's a reason why that reverse T3 is being produced.

00:33:07:02 - 00:33:37:19
Dr. Lara Zakaria
The body is responding to a physiological stressor that's basically telling it, I need you to pump the brakes right now. We cannot activate more metabolism. There's something else that we have to go do. And that's why under times of stress, you see a shift from active T3 to reverse T3. It's actually a response to stress demand that's trying to reallocate resources and saying, don't put all the money into the bank account for mitochondria right now.

00:33:38:00 - 00:34:03:17
Dr. Lara Zakaria
Slow it down. I need to reserve this function because we don't have enough resources to keep up with that physiological demand. So ultimately now when I see that there's an issue with thyroid, it's not just going to be about how much thyroid are reproducing. To your point, Jacqueline, really well said. We typically just think about it as a we'll put more thyroid in and then we'll get more thyroid activity out.

00:34:03:19 - 00:34:24:23
Dr. Lara Zakaria
It's actually a, phase one is how much is produced. Phase two is how much is activated. These three is how much is delivered, and phase four is how much is actually engaging at the cellular level. And so there are four places for us to optimize or intervene, not just one.

00:34:25:01 - 00:34:46:20
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00:34:46:22 - 00:34:55:11
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00:34:55:13 - 00:35:23:16
Dr. Jaclyn Smeaton
You know, it's I love this conversation. This is how functional medicine providers think. You guys are probably like mind blown, right? But what I love about this frame shift is that the things that we view as disease, like high reverse T3 or even like high cholesterol would be another example that we villainize when really this this is our body's amazing, beautiful way of trying to solve a problem.

00:35:23:18 - 00:35:48:21
Dr. Jaclyn Smeaton
Because if we didn't have these compensatory mechanisms, we'd be very sick very quickly. So it is like a it's a good way to rethink that of a sign of some kind of issue happening throughout that process. Like you said, probably that energy production process versus some kind of failure, you know, it really is it's just a different it's a nuance, but it really should be thinking of a sign of some kind of underlying issue.

00:35:48:23 - 00:36:08:13
Dr. Lara Zakaria
And I think that then opens up the conversation to be able to talk about how do we better support the system, to bring it back, to calibrate it back to function the way we want it to optimally function. So looking at the more as signs and as clues as to how the body is compensating versus a breakdown in the process.

00:36:08:19 - 00:36:27:12
Dr. Jaclyn Smeaton

Right now, the thing about this and this is that with functional medicine, what makes it so hard to practice is that when you start to see these connection points with systems biology, you realize just how complex it is. And you're not, you know, that pharmacy model that we started talking about, like you have elevated cholesterol, you put them on a statin drug to bring down the cholesterol.

00:36:27:12 - 00:36:44:22
Dr. Jaclyn Smeaton
But I think the piece that if you brought functional medicine providers together, you're like, yeah, but that's not fixing the underlying problem that drove that up. So then you talk about are we fixing the risk by lowering cholesterol, which we know the data is not super strong? Yes. In that case that when you lower cholesterol you improve outcomes.

00:36:45:00 - 00:36:56:02
Dr. Jaclyn Smeaton
And it's really because we think about that as a driver of some kind of other issue going on or a marker of some kind of issue versus that core problem at its root, in a simplified way.

00:36:56:05 - 00:37:09:05
Dr. Lara Zakaria
It's a let's start. I want to start with the example of the thyroid, and then I want to go back to your point about, cholesterol, because I think we often don't think of cholesterol as a canary in the coal mine in terms of metabolic functions.

00:37:09:08 - 00:37:11:18
Dr. Jaclyn Smeaton
The stress function, I think about stress physiology.

00:37:11:18 - 00:37:37:22
Dr. Lara Zakaria
Yes, yes, yes, yes. Okay. So let's back up. Let's use, that that simple model where you check somebody's TSH function, you check somebody's thyroid function, you determine that they need some thyroid hormone. And from a pharmacological perspective, we're just going to say, okay, here is some T4. And we're going to put that into this model. And it's going to go do all the things that T4 supposed to do, versus what a more functional approach would look at each of those potential steps.

00:37:37:22 - 00:38:00:15
Dr. Lara Zakaria
How well is that T4 going to convert? How well can I make sure that it converts to activate T3 versus reverse T3, and how well will engage at the cell receptor site to actually have the intended effect that I want. So there are co-factors that actually will support at each of these, points. B vitamins, for example, iron is involved, selenium is involved.

00:38:00:15 - 00:38:38:01
Dr. Lara Zakaria
Vitamin A is involved. Stress is involved. Environmental toxins. Heavy metals in particular can interfere especially at the cell receptor. And at that engagement point. So when we look at somebody and we go, okay, absolutely. This person could use hormone replacement therapy in terms of, thyroid. Yes. And what are some of the other foundational things that we can make sure are addressed so that they're making the most out of that T4 and out of that whatever you choose to use in terms of their thyroid, replacement, that's to me, where we say we're going back to what I said before.

00:38:38:01 - 00:39:07:04
Dr. Lara Zakaria
It's and not or if somebody needs the thyroid medication, that's fine. Now keep going. Run past the the finish line. And let's also make sure we're optimizing it I think stat and use and cholesterol is another really important example to highlight. We know from large studies that lowering LDL using a statin is effective in terms of reducing cardiovascular risk, hospitalization, and mortality.

00:39:07:06 - 00:39:36:00
Dr. Lara Zakaria
That's not the question. The problem is it's not always effective, and there are still people who present with heart attacks and strokes who have low LDL. They've technically hit the target when it comes to maximizing their statin therapy. I think that is an example of what else is happening physiologically. That's not just about what the number says, but what is the elevation in LDL a reflection of.

00:39:36:02 - 00:39:59:10
Dr. Lara Zakaria

So it makes me think of what the liver is doing. So we produce LDL in the liver and LDL as well as HDL is produced in response to physiological demand in the cardiovascular system. So when there is need to repair something it will ramp up LDL. It'll send it out. LDL does its thing. It delivers its resources. Remember, it's a messenger.

00:39:59:10 - 00:40:23:11
Dr. Lara Zakaria
It delivers its resources, patches up the situation. HDL comes in like a cleanup crew cleans up the area and then takes it back to the liver. The liver then re recycles what it can from what's brought back or eliminates what isn't useful from that. So the elevations in LDL are a reflection of physiological are through sclerotic demand. Okay.

00:40:23:14 - 00:40:46:21
Dr. Lara Zakaria
And HDL when it's elevated is protective because more HDL is a better cleanup crew, it does a better job of cleaning up the sites of damage and reducing the the stickiness of the plaque formation that happens at those sites. So to me, we should be asking the question, why is LDL elevated? What's creating more LDL? And then what's the quality of the LDL?

00:40:46:21 - 00:41:09:06
Dr. Lara Zakaria
Is the LDL actually doing a good job repairing? Is it is it it's self oxidized and damaged, or is it nice, big and fluffy and better able to carry resources to do its job on site? Is the HDL elevated because this person has a really good diet? They have plenty of essential fatty acids in their diet. They're eating a great anti-inflammatory diet.

00:41:09:08 - 00:41:47:00
Dr. Lara Zakaria
Or is it elevated because there's so much oxidative stress that the HDL is responding to that demand? Are there triglycerides depressed because there's increased mitochondrial activity? And so their triglycerides are superficially depressed and their HDL is inflated to compensate for increased metabolic demand. Because of this broader picture of increase oxidative stress, increase damage, or increase Arthur's caloric risk, and that all sits on top of a very hard working liver that liver.

00:41:47:02 - 00:42:08:21
Dr. Lara Zakaria
You know, I think we all know the liver is responsible for detoxification. It helps metabolize drugs. It's doing all the stuff. It's also making sure that our iron levels are balanced, making sure our vitamin A levels are balanced. It is responsible for ensuring bile is delivered properly to the gut and utilized properly by the gut. Sure, the gallbladder is important for that, but the gallbladder is really the gatekeeper between the two.

00:42:08:22 - 00:42:45:00
Dr. Lara Zakaria
That's why you can lose a gallbladder but not lose the liver. And on top of that, it's part of our metabolic function. And it's part of activation for vitamin D and for thyroid hormone. It's doing a lot of work, a lot of heavy lifting. So when something shifts in terms of lipid profiles and metabolomics, when it comes to looking at your, HDL, LDL cholesterol, your, glucose control, your A1, c we need to be coming back to the liver and checking in to see what resources is the liver missing, that it can better do its job, too.

00:42:45:00 - 00:43:13:13
Dr. Lara Zakaria
So there's a lot of factors to consider. And I think if this is a new way of thinking or looking at this, I don't want you to feel overwhelmed. Like, oh my gosh, there's so much I have to know or learn. I'm hoping what the message that's coming through is that it's not just a matter of the stat and fixes the job, but more so we start with a stat and if it is appropriate for that individual, and then we continue to build, layer on layer, starting with the basics diet and lifestyle.

00:43:13:15 - 00:43:24:12
Dr. Lara Zakaria
Then from there are there nutrient depletions. We have to close the gap on. And then are there any nutraceuticals or herbs that could be supportive for this environment?

00:43:24:14 - 00:43:42:23
Dr. Jaclyn Smeaton
Yeah, I mean I think about that. We call it a therapeutic order in naturopathic medicine where if you imagine that food pyramid, you have the lowest level

intervention at the bottom, that base, the pyramid should be the diet and lifestyle. Then you move up to natural like nutrients. Then botanicals, then drugs, then surgery at the top. And I completely agree with you.

00:43:42:23 - 00:44:03:08
Dr. Jaclyn Smeaton
When you come in with this model that it is not antidrug, it is not anti surgery. When you come in and you have to assess a patient, if you have a patient in a critical situation like they need surgery, that's the appropriate place in the pyramid. But then once they're stabilized work your way down. Because foundationally the most work should be done at the base of the pyramid in that diet and lifestyle.

00:44:03:08 - 00:44:22:01
Dr. Jaclyn Smeaton
So you gotta use the drug to mitigate. But I think that getting back to where you started, which is like you layer a drug, then you layer a drug, then you layer a drug. The goal is you give a drug, but you also recognize there's underlying physiology that created that need. And then you work at the base of the pyramid with diet and lifestyle to fix that root problem.

00:44:22:01 - 00:44:29:02
Dr. Jaclyn Smeaton
Once they're stabilized and hope that they don't not only don't need the next one, that maybe they can even get off that first one. That's exactly.

00:44:29:03 - 00:44:31:06
Dr. Lara Zakaria
Right. And that's why.

00:44:31:08 - 00:44:37:13
Dr. Jaclyn Smeaton
Pharmaceutical companies don't like that. It's not a very good business model, but we like that in functional medicine, for sure.

00:44:37:15 - 00:44:54:00
Dr. Lara Zakaria
That's okay. I'm not in it to, to win friends. I'm in it to keep people healthy and make sure they live as long as possible. At the end of the day, I always say I'm training for

my 80 year old body or for the zombie apocalypse, whichever comes first. I want to make sure that I give the same opportunity to all my patients to.

00:44:54:00 - 00:45:02:04
Dr. Jaclyn Smeaton
If if we have a zombie apocalypse. You are on my list of friends to call to, like, build a commune and fight together. You are on that list? Yes.

00:45:02:06 - 00:45:03:19
Dr. Lara Zakaria
That guy you. We have a lot of.

00:45:03:19 - 00:45:29:03
Dr. Jaclyn Smeaton
Fun and the Vegas zombies have no chance. Let me. Great. I do want to talk a little bit about how stress layers into this and cortisol because I think people don't really recognize and we talk about stress physiology. But I think even amongst functional medicine providers, it's one of the toughest things for us to really appreciate. Like the level of effect that it has on all of the other systems.

00:45:29:03 - 00:45:49:12
Dr. Jaclyn Smeaton
But when we think about the hormone hierarchy, you talked about that energy production being it really is foundational. You need that ATP, you need that system to be in place. But like from my point of view, the next one on the ladder is cortisol and stress physiology. And can you talk a little bit about the role of cortisol in stress physiology in this complicated soup of hormones.

00:45:49:15 - 00:46:01:20
Dr. Lara Zakaria
Yeah, I no, I recently shifted my thinking. And I'm curious, your thoughts on discipline. I no longer think of cortisol as a stress hormone. I think of it as a metabolic hormone.

00:46:01:22 - 00:46:03:05
Dr. Jaclyn Smeaton
Oh, I tell me more.

00:46:03:05 - 00:46:18:11

Dr. Lara Zakaria
Okay, so think about it. So okay, let's first let's let's stick let's go backwards a little bit and think about stress physiology. First thing that happens under stress I call it the break light effect is you get your catecholamines right. Yeah. So I usually like I'll say okay, you're sitting in your car, you're going 80 miles an hour.

00:46:18:12 - 00:46:35:05
Dr. Lara Zakaria
And in front of you the brake lights turn on. And without even thinking, within a millisecond you have assessed your surroundings. You've looked to the left, you've looked to the right. You've done the math on how far the car in front of you is and how fast you hit that have to hit the brake, and you've looked behind you to see if anybody's following you too closely.

00:46:35:05 - 00:46:55:01
Dr. Lara Zakaria
And if you hit the brake too hard, are they going to slam into you? You also know if you quickly brake to the left lane, brake to the right lane, because you have these catecholamines dopamine, epinephrine, norepinephrine that have flooded into the system within seconds, that allow you to be more cognizant and more alert on your environment. We call that the fight or flight effect, right?

00:46:55:01 - 00:46:58:13
Dr. Lara Zakaria
Yeah. That is you immediately responding to that environment.

00:46:58:13 - 00:47:00:02
Dr. Jaclyn Smeaton
There's a lot of thinking about it. Yeah.

00:47:00:03 - 00:47:17:01
Dr. Lara Zakaria
Yes. Without even thinking about it. Yes. There's a little bit of muscle memory there. There's a little bit of training. More experienced drivers are going to be better at that than less experienced drivers. But once the resources are there, once the fuel is there, that is going to be the response that you have, because that is what your body knows what to do to protect you, to preserve you.

00:47:17:01 - 00:47:50:19

Dr. Lara Zakaria
That is our modern day version of the Sabertooth Tiger attack. Same thing right now. Some of us have learned to adapt this to our day to day lives in the form of I'm going to go to the last minute to work on this report. I am not going to, you know, respond immediately. I'm going to wait till the absolute last second when the pressure is there for me to respond to this uncomfortable text, I'm going to down a bunch of caffeine so that I can artificially raise my catecholamines so that I can be more attentive in this, meeting or what have you.

00:47:50:21 - 00:47:58:22
Dr. Lara Zakaria
We have learned to press on this stress response when needed in order to get to the attention benefit.

00:47:59:04 - 00:48:07:12
Dr. Jaclyn Smeaton
That's so interesting. You're right. Because you want that performance enhancement even if it's subconscious. Yeah, you're right. We totally do. I do the same thing.

00:48:07:12 - 00:48:29:08
Dr. Lara Zakaria
I've got my coffee sitting right here. As I say this, I'm not trying to pretend to be, you know, better than anybody at this process, but that's essentially what we do, right? And in and again, in a high stress environment, different people have to perform at different levels. This has become sort of a common phenomenon and part of our culture essentially right now.

00:48:29:10 - 00:48:55:02
Dr. Lara Zakaria
That said, that resource will eventually run out and give way to the more sustainable, long acting stress hormones, which one of which is cortisol. So then cortisol comes in and goes, oh, so this isn't just a passing thing. The the the brake lights are still there. And now that I am stuck in standstill traffic, now cortisol comes out because it goes I'm going to be late to pick up my kids.

00:48:55:04 - 00:49:17:16
Dr. Lara Zakaria

I'm going to be late to this meeting. My boss said if I was late one more time, I'm going to be. I was going to be fired right? All the other now longer stress adaptations come into play. Okay, but the goal of those is to allocate resources more efficiently, to respond to the stressor that is, that you're faced up against in that moment.

00:49:17:18 - 00:49:54:00
Dr. Lara Zakaria
And cortisol, more so than these catecholamines, is meant to sustain that response. That's why your blood sugar goes up when cortisol is released. That's why insulin rises alongside of it. The goal of cortisol is to help to make sure more resources are allocated to sustain this level of energy and effort, and as a result, blood sugar increases, insulin comes in, grabs, that sugar, sends it to the cells so that we can sustain energy and continue to run away from the saber tooth tiger, or continue to be stressed out about whether or not we're going to make it to work, and we're going to be fired today.

00:49:54:02 - 00:50:18:03
Dr. Lara Zakaria
So that's why I started thinking of it more as a metabolic hormone. And I don't think it belongs strictly in that category, because its job isn't explicitly to manage those hormones, but its job is to tell the metabolic hormones, the mitochondria, the, insulin to then respond and adequately nourish the cells to sustain that energy.

00:50:18:09 - 00:50:42:15
Dr. Jaclyn Smeaton
You know, I accept that frameshift there. I, I align with that. And I think you're right. I think we talk about it as a stress hormone, because it's a physiologic stressor that stimulates the production of cortisol. I describe it to people a lot as like it's our bodies. Fire extinguisher. Right. Like when you need to do something, it can jump out, it can put out the fire, but it does that through diversion of resources.

00:50:42:15 - 00:51:08:08
Dr. Jaclyn Smeaton
And again, this is where you see that the systems that are most critical, like you talked about brain function, muscle health, you know, not muscle health, muscle energy production, clarity of thinking. Those urgency, you know, blood to the heart, blood to the brain. That's what happens. You divert resources there, but at the expense of some of those slower, less in the moment, important things like digestion and reproduction, predominantly.

00:51:08:08 - 00:51:18:19
Dr. Jaclyn Smeaton
So I completely agree with that. It it does. It shifts from a systems perspective, the way energy resources are happening and the way metabolism happening. I think that makes total sense.

00:51:18:19 - 00:51:42:05
Dr. Lara Zakaria
Well, and just like you said before, we often think of things as where they come from versus what activity they have or the tissue that they then have impact on. And then let's flip it the other way. We often think of stress and cortisol being high, but we both know we've seen plenty of low cortisol. And folks that have been in chronic stress for a really long time where the cortisol response isn't adequate.

00:51:42:05 - 00:52:22:16
Dr. Lara Zakaria
So on the other end of that spectrum, they're not able to mount that response, are not able to get motivated, or they might, you know, dawdle in bed and really have a hard time, like getting motivated, get it started in the morning. Their focus, their energy isn't there. Their body composition starts to change, right? Their ability to put on muscle mass starts to shift because on the other side of that, low cortisol is obviously a change in circadian rhythm and circadian cycle, but also a now more insulin resistant picture and a difficulty than doing what we need to do in order to offset insulin resistance, which is builds muscle mass and shift body composition in

00:52:22:16 - 00:52:39:08
Dr. Lara Zakaria
the other direction. So now you start to see kind of, what seems like a paradoxical picture, because we associate cortisol with insulin resistance, high cortisol with insulin resistance. But on the other side of that is continued insulin resistance and poor utilization of resources.

00:52:39:10 - 00:53:03:17
Dr. Jaclyn Smeaton
It's really interesting is I think one of the things I love about the DUTCH test is that whenever you're looking at reproductive hormones, you're adding in cortisol and that HPA axis. And I think just fundamentally the acknowledgment that these systems don't exist in isolation, particularly reproductive hormones, androgens, you

know, estrogen, progesterone I think is a win. You know, you're already adding in one system.

00:53:03:17 - 00:53:04:21
Dr. Jaclyn Smeaton
There when you're look.

00:53:04:22 - 00:53:25:14
Dr. Lara Zakaria
You've taught me something about that, too. You've taught me about the connection between metabolize cortisone and cortisol and thyroid. Not to add to my, list of reasons why I think cortisol is a metabolic hormone. But, like, paint that picture for us and tie it back to the thyroid, because I think that further kind of shows this connection.

00:53:25:19 - 00:53:55:04
Dr. Jaclyn Smeaton
Oh, yeah. Absolutely. I mean, one of the things we've talked about and and I was on Laura's podcast, recently we were chatting a little bit about this, that when we look at tests, we oftentimes see things on there that are not what we're testing for, that are related to cellular metabolism, thyroid health, etc. and I think all of our docs within the team, we see so many like literally thousands and thousands of tests that will jump on with their practitioner to talk them through and say, oh, have you tested this patient's thyroid?

00:53:55:04 - 00:54:22:22
Dr. Jaclyn Smeaton
They look like they could be a little hypothyroid. And the providers like what you know, you can see that, like where's the thyroid test? And it's like, oh, that's not the thyroid. But we see certain patterns emerge or we see think patterns that make us think they have metabolic dysfunction or, you know, early pre-diabetes or, even toxic, toxic exposure or there's patterns that we see where, like, you see aromatase go up or you see, you know, you see changes to how the, five Alpha Phi Beta doc.

00:54:22:23 - 00:54:25:00
Dr. Lara Zakaria
To see what the key enzymes upregulated.

00:54:25:00 - 00:54:49:11

Dr. Jaclyn Smeaton
Yes. Key enzymes change in response to the environment that's around them. And again this is our body's compensatory mechanisms that we can pick up on those. And when you see these like check check check check all these little things that are adjusted on the test, it's like, okay, this root cause might be going on. So similarly we do look at cortisol clearance rate oftentimes and see that if it's very fast that's typically metabolic dysfunction like insulin dysregulation.

00:54:49:11 - 00:55:00:11
Dr. Jaclyn Smeaton
And maybe they're overweight. We see a lot of that. Or if it's very slow we're usually asking have you screened this patient for thyroid health because it looks like they're metabolisms a little low. And it does affect metabolism of hormones like cortisol too.

00:55:00:13 - 00:55:20:05
Dr. Lara Zakaria
Yeah. Well I appreciate you always explaining that so well. And it makes so much sense to me again, from the context of how these are communicating with each other. And they don't not sitting in isolation. It makes perfect sense to me. And, you know, the fact that you like my paradigm shift here, my is means a lot to me.

00:55:20:05 - 00:55:21:20
Dr. Lara Zakaria
So thank you, I like it.

00:55:21:22 - 00:55:40:09
Dr. Jaclyn Smeaton
Paradigm shift accepted. I want to talk a little about testings. I think one of the things that can feel you mentioned, I don't want you to be overwhelmed when you hear this practitioners. And it can feel overwhelming because we're taught in medicine in a very linear model, you see this, you test this and confirm it. You give this drug and it's very straightforward.

00:55:40:09 - 00:56:02:09
Dr. Jaclyn Smeaton
And I think one of the most difficult things of adjusting to a systems biology or functional medicine type approach is that the system can feel it can feel very complicated. What once seemed clear now feels cloudy. And so we lean on testing.

And this is why we look at functional lab tests so much. And why we judge is so used because you get that more complete picture.

00:56:02:09 - 00:56:18:11
Dr. Jaclyn Smeaton
Can you talk a little bit about how you use testing to kind of untangle this? And I'm talking about standard lab tests as well. Like you mentioned fasting insulin, which isn't regularly recommended but probably adds value to catch something early all the way through the functional labs.

00:56:18:13 - 00:56:44:20
Dr. Lara Zakaria
Yeah, absolutely. I'm actually going to add to that too. So I'm going to I have my standard labs, my functional lab go tos, and then I have my what I call longitudinal data. And that's the wearables and all the tech and the stuff that we can also leverage. So starting with foundational labs, I think for a long time, especially in functional medicine, there was this idea that we really have to, like, get as much data as possible and that the more data, the better.

00:56:44:20 - 00:56:59:16
Dr. Lara Zakaria
And that gave us more information. I think there are times where that is really useful. I think I've gotten a little bit more precise in which of that data is going to be more critical in which situation. So the basics are great. Like the other day, I had a patient come to me and she's like, I got an iron pan.

00:56:59:16 - 00:57:22:23
Dr. Lara Zakaria
All's like, where's the CDC? She's like, I didn't get one because I didn't think you needed that. It was like a course. I need one like, of course we want a CBC. The basics are the basics for a reason. They still give us a lot of information. Because not only does that CBC tell me how your body is using said iron, how it might be using your B vitamins, but it's also potentially telling me if there's any immune stress that's happening.

00:57:22:23 - 00:57:50:22
Dr. Lara Zakaria
And right off the bat, I could do a cheap, simple, easy calculation to see where I might need to go next and what I need to prioritize next. So yes, an HCP and ESR is

great. Ferritin obviously is going to give me information about inflammation, but one marker by itself gives me some data. The markers in a pattern give me a lot more data, and they help me then prioritize what the findings could potentially mean and where I want to focus and be really precise in my diet and lifestyle.

00:57:50:22 - 00:58:12:17
Dr. Lara Zakaria
Prescription. Same with a CMP, same with, basic, cholesterol panel. Still helpful now, would I like to take it a step further? Yes. Even the HRA now agrees with us that we should be looking at advanced cardiovascular testing, including an B and an LP, little A and an HCP. So that's already been included in those conversations.

00:58:12:17 - 00:58:40:04
Dr. Lara Zakaria
And those guidelines are shifting. I still like fractionation testing. I still like looking at an NMR or, lipid quality testing. So the size of the lipid particles small, medium, large, including LDL and HDL, I still think that's really valuable because that tells me something that the other tests don't tell me, which is how hard is the liver working to make these, and how hard is the mitochondria working to prevent it from oxidizing?

00:58:40:06 - 00:59:04:20
Dr. Lara Zakaria
The smaller those particles are, the more dense that they are. The the that kind of means that there's not enough resources to make big fluffy, healthy particles. That is, to me an indicator that there is oxidative and mitochondrial stress on the system. So all that is super helpful. Triglycerides could be a useful marker for, identifying early insulin resistance.

00:59:04:22 - 00:59:32:10
Dr. Lara Zakaria
Low triglyceride, high HDL as a pattern could be a marker that there's increased mitochondrial demand, sometimes that precedes a autoimmune flare or an autoimmune diagnosis. Sometimes it's just a factor of just increased mitochondrial stressors, or, in, in not sufficient resources to feed that mitochondria and make it work optimally. And then those basics plus basic hormone testing.

00:59:32:12 - 00:59:57:04
Dr. Lara Zakaria

Honestly, if there's like one thing I'd love to want everybody to walk away with, why don't we do more consistent hormone testing? Serum testing? Why don't I know what my baseline hormones were when I was in my 20s versus when I was in my 30s, versus when I was in my 40s? That would be really helpful to track over time, to understand when something starts shifting in my 40s and my 50s, is this what is this relative?

00:59:57:04 - 01:00:16:15
Dr. Lara Zakaria
What's a delta to my baseline? And we can kind of track that and get better data and better information about perimenopausal changes. And when they actually start versus how we're guessing now at this point and saying, I think they might start more than a year before final menses. So I think that would be really helpful. So that's on the basics part.

01:00:16:20 - 01:00:56:04
Dr. Lara Zakaria
From the advanced perspective, DUTCH is one of my favorite tests. Actually. I'm not saying that because you're my friend and you're sitting in front of me. It is one of my favorite tests because not only does it give me an idea, obviously a better sense of how the hormones are behaving. Obviously like the metabolism of the estrogen hormones is so helpful, the, you know, understanding that alpha versus versus beta, metabolism of progesterone and testosterone and androgens is super helpful, but it's the only test that actually gives me a metabolomic insight on how the c p enzymes are functioning and then how methylation is handling the phase one versus phase two production.

01:00:56:06 - 01:01:22:01
Dr. Lara Zakaria
There's no other way for me to measure that. I could do genetic testing, and I can know what your C OMT is and your CHF bar is doing. But the presence of snips does not necessarily mean that the body is behaving in a specific way. So being able to see it, track it, make changes that help to shift the epigenetic expression of those genes gives me a better sense if we're moving in the right direction and how the body then is handling that talks version.

01:01:22:06 - 01:01:53:08
Dr. Lara Zakaria

You mentioned this earlier. Snip. If I give somebody, all these like herbs and foods and healthy like, options to help to upregulate phase one and phase two detox, I'm also going to upregulate the metabolism of, toxins. And if I don't have balance between phase two detoxification like methylation, or beta glucan additions or salvation, then I could be causing more stress on the system and creating more oxidative stress.

01:01:53:08 - 01:02:19:22
Dr. Lara Zakaria
So it's really helpful for me to see like, okay, what is actually happening physiologically in response to some of the interventions that we have. And I like to put it next to, basic serum testing. And then I love being able to see obviously the stress response. That's really helpful. There's a lot of times where patients will not it's hard for them to make the connection like they identify so much as strong, driven people.

01:02:20:00 - 01:02:43:11
Dr. Lara Zakaria
And they are always there for everybody. And they're always so like ready to go. And they're like giving, giving, giving, giving. But they don't realize how that's impacting their physiology, their stress in their HPA axis. So to be able to show them their cortisol curve or the lack thereof, really helps to drive that point home that we need to focus on restoration or we need to focus on the axis and on their stress response.

01:02:43:13 - 01:03:07:00
Dr. Lara Zakaria
And then I love microbiome testing. I wish I can give everybody a microbiome test every year, for Christmas or their favorite holiday. Because I think it's really helpful for us to understand what's happening in terms of microbial balance and how that's impacting some of their symptoms as well as their potential risk factors. I think it gives people tangible information about their gut health.

01:03:07:02 - 01:03:26:00
Dr. Lara Zakaria
And, I, I, I'm seeing more and more, at least in my practice, I see a lot of people with digestive issues, changes in their digestion, people starting GLP ones, and then all of a sudden their digestion has completely like changed. And now we're trying to untangle that. So it's a helpful lens as to what's happening, on that level.

01:03:26:00 - 01:03:47:21
Dr. Lara Zakaria
So those are probably my top two like go tos in terms of advanced testing. And then category number three are wearables and longitudinal data, things like aura rings Apple Watch, Garmin Whoop, what have you. Those are giving us data in terms of recovery and activity activities. Nice. That's that's cool. I like being able to track my heart rate when I do my workouts.

01:03:47:21 - 01:04:17:06
Dr. Lara Zakaria
That's cool. But I think what's even more powerful is the recovery data, how well I'm sleeping, how much deep sleep versus REM sleep versus light sleep I'm getting or my patient is getting? What's heart, what's our heart rate doing? What's our RV doing, and how is that reflective of our, HPA axis and our sympathetic drive? And we all know that sleep and restoration is one of the most foundational and critical pieces.

01:04:17:06 - 01:04:40:11
Dr. Lara Zakaria
If I had to say, like, boil it down to one thing that is common thread across the board when it comes to longevity or chronic disease risk, I would say it's sleep and recovery. And so having that insight every single day, 365 days a year in terms of what your recovery looks like, what your sleep looks like, and what your sympathetic system is doing in response to that recovery is such critical information.

01:04:40:11 - 01:05:09:15
Dr. Lara Zakaria
We also know that chronically low hrb is associated with increased risk of chronic diseases. That includes cardio metabolic diseases, dementia, cancer risk, diabetes risk, heart disease risk. So it's a really powerful tool to identify that as well as to potentially screen people for sleep disorders that would warrant a referral for sleep assessment. So that's one I've touched on before.

01:05:09:15 - 01:05:31:17
Dr. Lara Zakaria
But being able to help people make the relationship between the food that they're eating. Yes. Understanding how that's impacting their blood sugar. But even more powerful is the impact of stress, the impact of a bad night's sleep on their blood

sugar response or on their cravings. And the impact of physical activity and helping them better time their fueling to their physical activity.

01:05:31:19 - 01:05:51:22
Dr. Lara Zakaria
So, so helpful. One for creating awareness and helping us get back into our body and realize what our body needs to function optimally and to to then better personalize that approach because, you know, for one person they might be eating a food and that food is great for them. For another person, that food may be having the opposite effect that is intended.

01:05:52:00 - 01:06:13:10
Dr. Lara Zakaria
And then the last thing I have to say is body composition scales. Like on a one woman like soapbox to throw away the dumb scale, as I like to call it. And let's replace them with body composition scales. If you're going to weigh yourself, then why use a metric that just tells me nothing about the quality of the weight that you're carrying?

01:06:13:12 - 01:06:49:09
Dr. Lara Zakaria
I'd rather track, especially if body composition is a goal for you. Recomposition is a goal for you. I'd rather track whether or not you're building muscle that rather than just understanding what the weight on the scale says. And I'd rather understand what your visceral fat is and track that trend, because that is, those two markers are much more, important when it comes to preserving longevity, to improving your insulin sensitivity, to improving your metabolic flexibility, and to the overall health goals that we usually have when it comes to cardio, metabolic or metabolic.

01:06:49:09 - 01:06:53:14
Dr. Jaclyn Smeaton
How do you have one that you like, the scale or a couple that you like? Like, I don't like having.

01:06:53:15 - 01:07:13:01
Dr. Lara Zakaria
One that I like, but I have a couple probably, so if if you're a clinician or you're looking for scale in your office, I do like the embody series, of scales. And they have a couple of different price points. I think it's a great investment if you're already

weighing people when they come into your office, why not have them get a better body composition metric?

01:07:13:07 - 01:07:31:06
Dr. Lara Zakaria
So I think that's a good one. What I, what I also will say about them, they have at home versions. So there's the H 40 and the H 30 that both have visceral fat. As a tool, the H20 does not. So I don't usually recommend that one. And I would I want to also mention is that visceral fat is a tricky marker to measure.

01:07:31:09 - 01:07:52:16
Dr. Lara Zakaria
We do not have great options to measure it. We're basically doing calculations in order to estimate visceral fat. So just know that that is not the most accurate way to get visceral fat. The most accurate weight is still going to be a dark side, and even that is questionable. So it's more the number of times that the amount of data that we can get and have it.

01:07:52:17 - 01:08:17:16
Dr. Lara Zakaria
Looking at the overarching pattern, his visceral fat coming down, is it staying steady or is it going up? We're better. Those those, body composition scales are better at measuring muscle mass, fat percentage, fat free mass, water percentage are much more accurate about that if it's an accurate scale. So there is single mode, dual mode and multimode essentially.

01:08:17:16 - 01:08:35:06
Dr. Lara Zakaria
If you've ever sat on one of those scales, you know, you usually some of them you have to hold in your hand and there's like pads at the bottom. What that's doing is it's sending an electromagnetic frequency and that's creating a circuit. With that circuit, it is able to basically distinguish if it's hitting up against a fat cell, a muscle cell, a water cell, or a bone cell.

01:08:35:12 - 01:08:56:14
Dr. Lara Zakaria
And it does the the physics calculation and boop boop boop boop. It spits out what each of those metrics are. The more modes it has, that means the more circuits it's creating, the more specific it could be. So it could tell the difference between a trunk

or cell versus the cells in your arm. And so it's going to be a more accurate measure of those.

01:08:56:16 - 01:09:22:12
Dr. Lara Zakaria
So I generally recommend if you're looking at different scales in body run pho you have multi nodal options. And so look for that when you're looking at the specifications on the scale, I just know the embody. Well and so I know that that one is a multi multi modal one. So that's probably going to be the best, best bet if you want to make a recommendation to your patients.

01:09:22:14 - 01:09:39:19
Dr. Lara Zakaria
And yeah. The more data that we can get that over time the better we can track. I have a lot of patients that are coming in obviously on GLP as, as I'm sure everybody does. And, you know, they get frustrated. They're like, oh, you know, I haven't really lost weight. I mean, I feel different in my body, but I just haven't lost weight.

01:09:39:19 - 01:10:02:12
Dr. Lara Zakaria
And then when we track them on a body composition scale, I can then pinpoint and say, okay, your muscle is growing. That's because you've been in the gym, working out, doing progressive training three times a week, and they feel so much better about their progress. And they know that they're fueling their body better. Because what I often see is, I don't feel like I'm losing any weight.

01:10:02:12 - 01:10:24:17
Dr. Lara Zakaria
The scale still says the same pounds, so I must not be gaining. I must be not losing weight. Let me restrict my diet more. And then what happens is that they're not fueling adequately. They're missing their protein and their fiber targets. That's impacting their gut health. It's impacting their motility and that's impacting their muscle density. And so no wonder we see those side effects from those groups more frequently.

01:10:24:22 - 01:10:41:06
Dr. Lara Zakaria
So this way I could be really targeted. I could say okay, well let's look at your wearable. Did you get enough sleep this week? Did you get your workouts in this

week? Did you hit your protein and your fiber targets this week. And then we can go from there and really customize, you know, the next steps for their protocol.

01:10:41:08 - 01:11:14:03
Dr. Jaclyn Smeaton
I'm so glad I asked that question because I learned a ton. This is great to have that level of detail. So thank you so much. We are going to have to have you back on, because I was actually even hoping we'd get to some of the treatment aspects of metabolic health. And we're going to have to have a version two if you're willing to kind of get you back on here so we can tie it up, because I think it is so critical for us to be talking about improving energy production, improving metabolic health, glucose regulation that we are already seeing like with GLP ones, as an example, all of the other benefits that are

01:11:14:03 - 01:11:29:08
Dr. Jaclyn Smeaton
coming alongside with people losing weight. Finally. So I want to end and the fact that we need to be the advocates for people to do it in the right way so that they're not, you know, calorically restricting so much of their metabolism shuts down, for example, which we could also see in the chat. So thank you so much.

01:11:29:08 - 01:11:33:19
Dr. Lara Zakaria
For thank you. And Jaclyn Yes, I will come talk to you every day. So you know I love that.

01:11:33:23 - 01:11:39:18
Dr. Jaclyn Smeaton
Thank you. That sounds so fun. Now if people want to know more about you and your practice, what are the best ways for them to get in touch with you?

01:11:39:20 - 01:11:54:13
Dr. Lara Zakaria
Yeah, absolutely. So I spent way too much time on social media, so you could probably catch me on Instagram or LinkedIn. You can search my name. I should be there. I'm also the foodie pharmacist with two FS. Or you can come visit my website at Lara Zakaria.com or find me on Substack.

01:11:54:15 - 01:12:09:18

Dr. Jaclyn Smeaton
Awesome! It's been awesome to have you on. Thank you so much, Laura, and thank you to each of you for listening today. We'd love that you join us for these awesome conversations. I hope you learned as much as I did today. If you like this type of conversation, you want to know more about functional medicine and you want to know more about hormones.

01:12:09:18 - 01:12:28:06
Dr. Jaclyn Smeaton
All the connective interplay. I encourage you to first hit subscribe to wherever you're listening today because we release a new podcast every Tuesday. We have amazing guest on Just Like Doctor Zakaria that share all of these insights for us to really keep learning. And you can also follow us on social that DUTCH test. And then as well I encourage you to visit us at DUTCH Test dot com.

01:12:28:09 - 01:12:44:14
Dr. Jaclyn Smeaton
We do a find a provider feature. If you're looking for DUTCH test and you're just a consumer looking to connect to the provider who can do this. And if you are a provider, I encourage you to find that finder. Become a provider button and start to work with us. So thank you so much. We'll see you next Tuesday.

01:12:44:16 - 01:12:57:04
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