

Jaclyn (00:01.129)

So welcome, Dr. Szal, we're so happy to have you on the DUTCH Podcast again today. Thanks for joining me.

Sara Szal MD (00:06.678)

My pleasure, always good to be with you.

Jaclyn (00:09.277)

And we get to talk about kind of a wide variety of topics today, which I'm really excited to pick your brain about. But I want to start with something that I know has been really top of mind for you related to your new book, *The Autoimmune Cure*. So I'd love to talk about why you really were motivated to write this book. Like, what's going on in health care for women that made you feel like we needed to get this message out?

Sara Szal MD (00:33.282)

Yeah, it's a great question. You what I found about five years ago is that the rates of autoimmunity are climbing. And I feel like it's flying below the radar. Like a lot of folks who don't do naturopathic medicine or functional medicine don't know that this is happening. But I did a research study about five years ago showing that about 30 % of relatively healthy people have positive anti-nuclear antibodies. And so that was a total head-scratcher for me. It wasn't something that I was taught about in medical school or in my training. And then talking to Mark Hyman, I saw him yesterday at Wisdom 2.0, he's found with Function Health, his new startup, that in 100,000 people, that he's tested, mostly healthy people like you and me, 30 % have positive anti-nuclear antibodies. So I feel like there's this rising tide of autoimmunity. And we know from functional medicine principles that autoimmunity tends to be happening in the background in the body for about seven to 14 years before it leads to an autoimmune disease.

So that's really the motivation. And then of course, Jacqueline, what happened was I tested myself and I was positive. So that especially got my attention and it got me thinking about, okay, if one in three of us are facing this problem, what are the proven solutions?

Jaclyn (02:04.489)

So I'd love to start by talking a little bit more about ANA testing because you obviously have done so much research on this to write your book. And I would say it's kind of a controversial area or a controversial test to talk about. So right now, I might get this wrong, so correct me, but a positive would be greater than one to 60. Can you just explain, right, can you explain a little bit about how

that result shows up on a test? Because it's a little bit different than other lab tests. So for listeners who might be new to ANA testing and then I'd love to know your thoughts about whether you're considering that positive to be people who meet the lab criteria to be positive or people who are in that in-between zone where they have positive ANAs but not to the level that are triggering a lab abnormal.

Sara Szal MD (02:50.924)

Yeah, it's a good question because what I was taught when I went through my medical training, conventional medical training, was that the anti-nuclear antibody test is nonspecific. so positive testing doesn't necessarily mean that there's something wrong. But what I've seen in my own patients and in myself is that this cutoff that's, as you said, about one to...64, it's dilution. So it's way of looking at how many antibodies are in the blood that's tested. And what I found in many of my patients is that the number is increasing over time. And this has been found in...epidemiologic research where they've looked at NHANES and they've tracked different groups over time. And while women certainly suffer more with autoimmune disease, four out of five people with autoimmune disease are women. The groups in whom anti-nuclear antibody testing is rising the most is in children, adolescents, and also in men.

So this is not just something that affects women. I want to shout out from the rooftops that there are other populations that are vulnerable. And maybe it's the fact that women are already so affected by autoimmunity that we're not seeing as much of a change in women. But certainly post-pandemic, perhaps related to some of the triggers that we've been exposed to, we're seeing these rising rates. So overall, I would say

The best thing to do in terms of tracking anti-nuclear antibodies is to look at your level over time. Look at a time series. So what I found, for instance, was that my antibody test was rising over time. I tested it for the first time in about 2018. And I use the principles that are in my book to reverse it down to negative. And then I went through a divorce last year and it became positive again. So we can talk about that if you want to.

Jaclyn (04:55.399)

Yeah, I definitely want to dive into that because the fact that it's a movable, changeable metric, first of all, I want to talk more about that because that's so promising because this is really that it's like the tip of the iceberg that we're seeing right now with this rising epidemic. And then I definitely also want to talk a little bit more about that kind of emotional connection for some patients as well. So and I'll just echo, you know, I'm sure you probably don't know this about me, but I have two children. Well, I have celiac. So that's kind of familial.

But I have two children with autoimmune conditions, a type one diabetic son diagnosed at age nine, and now a 14 year old stepson, so not biologically related, who was just diagnosed with juvenile RA. So really we are seeing this even in the microcosm of our household and the effect that it has on our kids. It's really, we live a very healthy lifestyle as well. I we're not like probably to the level of someone that's really in that therapeutic space, because I'm dealing with teenagers.

However, they are really doing a lot to focus on the fundamentals more than many. And we have always had kind of a healthy lifestyle from that perspective as well. So I completely see that shift, especially in children, which is really frightening.

Sara Szal MD (06:11.372)

Yeah, and your data fits with what we've seen with the NNANE studies. So they looked over 25 years and saw this dramatic increase in adolescents and men. So there's not a lot of clarity about why we're seeing this increase, but certainly there seems to be more triggers in the environment. And we can talk a little bit about root cause of autoimmunity. But I just want to acknowledge that.

You know, you're someone who's got a pretty healthy lifestyle. I've also raised two teenagers, so I know that, you know, all the things that we do are often not chosen by teenagers, and who knows what they're doing when they're not in the house? But, you know, there's still this rising rate. Teenagers haven't changed that much over time. Maybe there's more smartphone use, which could be a trigger. But for the most part, you know, the rebellion of teenage years

That doesn't change so much.

Jaclyn (07:09.254)

So what are some of the main root causes that are coming up in research that are leading to development of autoimmunity?

Sara Szal MD (07:17.428)

One of the leaders in this field is Alessio Fasano, and I'm sure you're familiar with this work as someone with celiac, because that's where he started in terms of understanding the root cause of autoimmunity. So he is a pediatric gastroenterologist who's at Massachusetts General Hospital, and he found that there were three requirements to develop autoimmune disease. The first is a genetic predisposition.

The second is increased intestinal permeability, so-called leaky gut, and third, a trigger. And the latter two are where things get interesting because we can empower our listeners, practitioners, and also citizen scientists to do something about the latter two. So there are supplements you can take. You can try, as I talk about in the book, the elimination diet as a way of dealing with increased intestinal permeability.

And then triggers, this is where I think things have changed over time. Because going through the pandemic, I would say that the rate of exposure to certain triggers has increased. And that includes infection, like the virus that causes COVID, vaccine exposure. There's also trauma, the experience of trauma. And right now, the World Health Organization believes that

There are very few people in the world who haven't been exposed to trauma in some form. And then another really important one that I know is near and dear to your heart and my heart is big hormonal changes. So pregnancy, going through infertility treatment,

postpartum, perimenopause, menopause. These are really common times where we start to see these hormonal shifts triggering autoimmunity. So you mentioned that your son was diagnosed with type 1 diabetes. And one of the things I saw five years ago as I was starting to pay attention to anti-nuclear antibodies was that I had

Sara Szal MD (09:26.654)

many patients who are diagnosed with perimenopause and menopause with type 1 diabetes, multiple sclerosis, Hashimoto's myriditis, rheumatoid arthritis. It's this confluence of factors that we want to be thinking about. We don't want to just have this knee-jerk response of the conventional medicine approach of, okay, type 1 diabetes, give her insulin.

Jaclyn (09:33.503)

Hmm.

Sara Szal MD (09:52.866)

Like we wanna be thinking, okay, what's the root cause and how do we address it?

Jaclyn (09:57.957)

know, interestingly, one thing that was really surprising that it was brought up was when my son was diagnosed with type 1, we went to Boston Children's. And what they said to us as parents, not

knowing I had any kind of medical background, was that the main root cause for type 1 diabetes is microbiome disruption in the gut. And I was shocked to hear that out of their endocrinologist mouth. Happily shocked. I know, really happily shocked for there to be acknowledgement that gut microbiome and gut health plays a role.

Sara Szal MD (10:17.632)

Yay, Boston Children's!

Jaclyn (10:26.203)

in the development? Because of course, every parent in that situation is looking for answers, and every adult in that situation is looking for answers as well. So tell us a little bit about kind of the fundamentals. think people, obviously, if you have an autoimmune condition, we'd recommend that you get Sarah's book. Really dive into the details around that. And you also offer a lot of protocols as well, like really more detailed support. But at a high level, what are the main foundational pieces that need to be considered for someone? Who, let's say, they're maybe early on in the diagnosis or they're noticing that elevation of ANAs.

Sara Szal MD (11:02.222)

I would say the first step is to do some testing. So I run an autoimmune panel in every single patient that I take care of. And I spent a lot of time with Mark, as I was writing this book, your CEO, looking at some of the data that you have on patients with autoimmune conditions and what kind of hormone patterns are we seeing.

And a lot of them have disrupted cortisol patterns, cortisol awakening response, diurnal cortisol, five point cortisol. And we want to be thinking of this interplay of your genetics with your environment and some of the ways that that shows up. And I would say the Dutch test, I run a Dutch plus, I'm pretty much every patient that I take care of, really gives us a lot of insight.

So, part of it depends on what the testing shows. If you're someone who's got high cortisol levels, which was my story in my 30s, then there's a way that we address that. If you're someone who's got low cortisol levels or a combination of low and high, we have a different way of approaching that. But I do want to say that we know that low cortisol levels are probably the most triggering for the immune system.

It's kind of a late-stage process that really leads to immune dysregulation or it's associated with immune dysregulation. So at a high level, I would say food first, start with an elimination diet. I tend to do that for three weeks to three months in my patients. It sounds so basic, but what I love

about it is it's free. I have a really simple handout that I use with my patients from the Institute for Functional Medicine.

And when it's well constructed and you're really careful about removing the most common food triggers, so that's gluten and dairy and nightshades and often nuts and seeds, which is probably the hardest thing for people to give up, it makes a big difference. And this has been studied. I remember looking at the elimination diet and rheumatoid arthritis 30 years ago.

Sara Szal MD (13:13.81)

And it showed benefit in terms of reducing pain, reducing disability and function. And yet it's not usually what conventional medical folks are offering to their patients. So elimination diet can be really helpful. As I mentioned, it's helpful in terms of increased intestinal permeability. And if you think about, you just mentioned the microbiome and I want to go a little bit deeper on that. If you think about the systems of the body that are most vulnerable to some of these triggers that we're talking about. It's really the PINE network. And PINE stands for your psychology, your psyche, P, your immune system, 70 % of which is below the lining of your gut, your gastrointestinal tract, your nervous system. Nervous system dysregulation is such a common part of people with autoimmunity.

And then your endocrine system, many of which we're testing with your testing methods like Dutch. So what I generally recommend is you start with an elimination diet. You consider taking some supplements that help with increased intestinal permeability. You also want to replete some of the micronutrients that often can be causing a problem with increased intestinal permeability like vitamin D. And then you wanna really look at your triggers and see if there's a way that you can work with them in a different way. So for women who are in perimenopause, menopause, that might be considering hormone therapy, it might be looking at inflammatory tone and addressing that. Some of the other things that I recommend are addressing trauma, since trauma is such a common part of the story of autoimmunity, know, somewhere around 70 to 80 % of people with autoimmune disease have a history of trauma, then I recommend working with your experience of trauma in a different way. And we can dive deep in that as deep as you like, but it ranges from breath work, things like holotropic breathing to even psychedelic assisted treatment, which I'm now certified in and really believe in in terms of resolving the traumatic response that's often embedded in your body and in your psyche.

Jaclyn (15:45.927)

I'd love to dive more into that because I think that's something that providers have a really difficult time addressing with patients, especially in like a short, even 30 minute, even if you have a long visit, like you're a functional medicine provider, you have 30 minutes. When you're working to address everything, diet, environmental toxicity, all of those factors, you know, what are the ways that you found to really be effective for trauma and how have you incorporated into your practice,

successfully? I think that's the second piece is not just what to do, but how do you help patients do that effectively?

Sara Szal MD (16:22.03)

Yeah, also a good question because I think for those of us who have a full schedule of patients, it can feel like you're opening Pandora's box to be asking about trauma. So there's a lot of ways that I found it to be helpful that I found. me say it again. There are a number of ways that I've found to be helpful. I have everyone fill out at knees questionnaire before they come to see me. And if you want some information on that, you can just Google is questionnaire. I also have one on my website that you can get for free. So I want to know the score of everyone. And in my note, I always say, you know, 47 year old female a score of six presents with hot flashes and night sweats and, low libido. So I use the score and I ask questions about it. You know, there are some people who have an elevated score like me who add someone that they could talk to. And we know that that creates a lot of resilience. When you have an adult who's caring, who can help guide you kind of regardless of what sort of trauma that you experience, it's more the isolation that leads to the 45 different chronic diseases that are associated with higher adverse childhood experiences. So I think an ACE questionnaire is a good way to go. There's also life stress measurements that can be used. And I'm just always listening for it. You for instance, I had a patient who was at ground zero lived in battery park in New York around the time of the terrorist bombings. And she's had a number of health problems over the years, probably related to the toxicity. She had Lyme's disease. had biotoxin illness. She was exposed to environmental pollutants, at the time of the bombing. And so I'm just always thinking about that and looking at the literature that we have, you know, for instance, of women who are pregnant and were in the Twin Towers at the time of the bombing and what's happened to their offspring. You know, I just like to track the sort of data what happens in terms of their cortisol clearance, happens in terms of the epigenetic changes, what happens in terms of cortisol in them and also in their children. If they have the experience of post-traumatic stress disorder, what then happens with their children? So I'm always just listening to it and for me it's an important through line because similar to nutrition,

Jaclyn (19:01.151)

Mm.

Sara Szal MD (19:05.728)

I got almost no education. Maybe you got more education than me, Jacqueline, in terms of taking a trauma history and then knowing what sort of referrals to make. You know, I basically was taught the gold standard, which was refer them to a psychotherapist and maybe prescribe some selective serotonin reuptake inhibitors. There are three that are FDA-proof or post-traumatic stress disorder.

Jaclyn (19:30.835)

Mm-hmm.

Sara Szal MD (19:34.254)

And when I wrote this book and I looked at the efficacy of that approach, the efficacy is 30%. That's horrible. It's not much higher than placebo. So yeah, so when I entered psychotherapy in my 20s with my first episode of depression, probably related to my adverse childhood experiences score, if they had told me, okay, here's the informed consent.

Jaclyn (19:41.243)

Yeah, that can't be much higher than placebo. Yeah.

Sara Szal MD (19:59.598)

there's a 30 % chance that you're gonna feel better after going through weekly psychotherapy at considerable cost and time. I don't think I would have done it. So I'm not saying it's not indicated, a lot of people benefit from it, 30%, but there are other modalities like MDMA assisted therapy, mostly done in research settings right now, that are more than twice as effective.

Jaclyn (20:10.847)

Hmm.

Sara Szal MD (20:27.054)

So I think knowing about that as a clinician is really important. Screening for trauma, even if the only thing you're doing is referring to a trauma-informed therapist. But it's important to realize that don't just refer them to talk therapy because the efficacy is so low. So start to develop a network of people who do more somatic-based treatment, things like somatic experiencing or hukomi, which is something that I've been trained in or another thing that pairs really well with psychedelic assisted therapy is IFS.

Jaclyn (21:08.552)

Mm-hmm.

Sara Szal MD (21:09.775)



So there's lots of different ways to deal with it, but I think the takeaway is that the part of the nervous system that has an understanding of what happened to you is different than the part that needs to heal, is part of the resolution of trauma. So reliving that, talking about it over and over again, like I did in psychotherapy, doesn't resolve it. At least not most of the time.

Jaclyn (21:38.665)

That's fascinating. And I'm really glad that we're talking about this today. And it makes me think about the fact that the way that you would prioritize it by collecting an A score as part of an intake or even talking about it with a patient is therapeutic and is informative because I think a lot of patients really try to not think about it or not raise it or they're not comfortable bringing it up because we don't have a really safe landscape for discussion around trauma in most medical settings today.

Sara Szal MD (22:13.046)

It's a really good point. And I think what you're speaking into is presence, like therapeutic presence. So being able to provide that mindfulness and that therapeutic presence for someone who has experienced trauma, it's a critical first step. Even if you don't know exactly what the right solution is and you're starting to...look at the literature on different treatments and what's most effective, that deep presence really makes a difference.

Jaclyn (22:47.005)

Yeah, and I think not only that first step, but I think it also inspires patients to maybe take step number two because they realize it's so high on your treatment plan. It's so important to you, and especially for something that, really, rheumatoid arthritis, which could very easily feel disconnected or not related to what you've been through. So I love that that's really being talked about. So we've talked about nutrition. We've talked about triggers. We've talked about trauma. Is there anything else that we're missing when it comes to kind of those overarching therapeutic approaches?

Sara Szal MD (23:23.746)

Well, you invoke the microbiome, so I feel like we should talk about that a little bit. You know, what's what we're seeing in the microbiome literature, and I feel like we're still at the learning to crawl stage when it comes to understanding the microbiome, understanding the impact of diversity, loss of diversity, compromised microbiome and how that links to autoimmunity. We're still at the early stages, but what we definitely see is that especially for

Jaclyn (23:28.52)

Okay.

Sara Szal MD (23:52.32)

inflammatory bowel disease, or multiple sclerosis, for a number of different autoimmune diseases that a compromised microbiome is part of the story. We also see a compromised microbiome in people who experience trauma. So post-traumatic stress disorder is associated with microbiome changes, and that was just published in the last year. So gut rehab is a big part of the work. When I write a book like *The Autoimmune Cure*, I'm trying to find the basic things that are really well proven and supported by high quality evidence that everyone can do. So not everyone can afford to do microbiome testing and then, you know, the 12 to 18 months that it takes to really rehab a gut that's in trouble. But there's a lot of things that you can do short of microbiome testing. You know, I've got one patient in particular who's in the book who is a now retired professor at UCSD, University of California, San Diego. And he was diagnosed with Crohn's disease. He is the father of supercomputers. He's public about this. I'm not, you know, violating HIPAA. He was part of the team that recruited Rob Knight, who is one of the leaders in microbiome research to UCSD. And based on Rob Knight's data in the Human Gut Project,

Jaclyn (25:10.015)

Mm-hmm.

Sara Szal MD (25:19.05)

what this patient decided to do was to start making a smoothie. And so he would go to the farmer's market and he would take a little piece of that and, you know, a couple pieces of fruit and different vegetables, all different colors. He went a little overboard because that's kind of the way he is, but he chose 57 different fruits and vegetables. He'd make a smoothie out of it and then he would freeze it and he'd have about four ounces a day. And he completely

Jaclyn (25:34.974)

You

Sara Szal MD (25:47.52)

reformed his microbiome inside of a few months. So that's an example of something that you can do for microbiome rehab. There's also the 5R protocol that we use in functional medicine, which is much more involved. But if you want the simple version, I would say start with a smoothie.

Jaclyn (26:06.143)

I love that, diversify your plant intake and get more fiber coming from more places. So I love that smoothie approach and it seems so simple, like anyone could really implement that.

Sara Szal MD (26:18.478)

Anyone could do it, although I would say the data shows 25 to 35 different varieties, species of fruits and vegetables are sufficient to change the microbiome. So you don't have to do 57. You could, you could do 20. Yeah.

Jaclyn (26:32.543)

There's no matching number. That's great. And I actually read a study that the transformation of the microbiome can be detected within 24 hours of a dietary change. When you look at standard American diet to whole foods diet or Mediterranean, I'm not sure which is in the study. And when you look at kind of that whole foods diet to standard American diet, the changes in species diversity and like biomass changes within 24 hours, which is scary and promising depending which direction you're moving in.

Sara Szal MD (27:04.206)

Well, I prefer to look at it in the positive direction because, it's so exciting and hopeful and inspiring of the behavior change to realize that you can change your gut so quickly. So, you know, just making good choices today, having five different colors of the rainbow in the food that you're eating. You know, I always keep fermented vegetables in my fridge for when my supply of fruits and vegetables is relatively low.

Jaclyn (27:15.059)

Right?

Mm-hmm.

Sara Szal MD (27:32.908)

so that can get that color that we know makes such a difference in terms of your immune system.

Jaclyn (27:39.391)

Fabulous. So I want to shift gears a little bit and talk a little bit more about hormones, of course, because we love hormones here on the Dutch podcast. And I know you mentioned the shift that hormones have or the impact that a shift in hormones can have on autoimmunity. So I'd love to know more about, especially the most of our population of listeners is that perimenopause, menopausal. What are the big changes that you see? Of course, we do know that there's a jump in diagnosis of autoimmunity in that timeframe, like women when they hit their 40s, tell me a little bit about what you've observed or what you've come across in research regarding those big hormonal transitions.

Sara Szal MD (28:17.822)

of people think of perimenopause and menopause, let me start again, we can edit right, a lot of people think of the transition of perimenopause and menopause as being primarily happening in the ovary, but that's not the way to think about it. You really want to think about it more globally. So it's not just a change in your hormones, it's a change in your immune system. Pretty massive. It's a change in your metabolism. Quite massive.

Jaclyn (28:23.518)

Yeah, we can edit.

Sara Szal MD (28:46.23)

And so when we think about all these different systems that are changing in perimenopause, it makes sense that we see more odd immunity. So there's changes happening in the innate immune response as well as the adaptive immune response. There's massive changes happening as estrogen starts to decline and doesn't work with insulin quite as well. So glucose metabolism goes down pretty sharply. And it is part of the reason why over the age of 40, women lose about five pounds of muscle and gain about five pounds of fat every decade, unless you're doing something about it. So there are these massive changes that I think are at the root of the rise in autoimmunity. A lot of women experience dysregulation.

There's more than 100 plus symptoms of perimenopause. And I would say the net effect is feeling dysregulated, feeling more irritable, feeling like you've got mood changes, you've got sleep changes. Women have double the insomnia as men do. They've got this greater risk of Alzheimer's disease. And that's not something that happens in your 60s or 70s. It happens in your 30s and 40s. So there's this massive change that's happening. And the good news is, there's a lot you can do about it. So there's ways that you can modulate your immune response. You can do that with the way that you eat, with the amount of vitamin D that you get, with rehabbing your microbiome if you've got issues with it. There's a lot that you can do in terms of glycemic control. I talk a lot about the

continuous glucose monitor. I think it's essential for women over the age of 40. And what I love about devices like the continuous glucose monitor is that it really puts the power in the hands of women or men who are using the CGM and allows you to personalize diet in a way that we didn't have access or transparency toward until healthier people started to use it. But I'm someone with pre-diabetes and I can tell you that the biggest influence I've ever seen in terms of

Jaclyn (30:50.975)

Hmm.

Sara Szal MD (30:58.638)

keeping my mean glucose less than 100 and my standard deviation less than 15 is to wear a CGM and to get into this loop of integrity with the food that I'm eating so that I'm not spiking and causing dysregulation in my metabolism. And another important piece here is that dysregulation is more common in people who've got the experience of trauma.

And you might not think about trauma as a root cause for the patient that you have with pre-diabetes or diabetes, but it sure is. as we look at things like adverse childhood experiences score, we know that they're associated with 45 different chronic diseases, not just the ones you would think about like depression or substance use disorder, but...

Jaclyn (31:33.503)

Hmm.

Sara Szal MD (31:50.634)

with autoimmune disease, with cardiovascular disease, with cardiovascular events, with stroke. So many of the top killers are associated with higher adverse childhood experiences. So we want to be thinking about that.

Jaclyn (32:07.251)

Yeah, I love that kind of holistic approach. And I love the normalization of the CGM use. I see you on social media all the time giving a nice post while you pop your new one in. It takes away the fear that it's going to be painful to put on or that it's difficult. It's really, you do it while you're speaking. I know you're well-practiced, but you know, they're really approachable if people can access them financially, you know, before they meet the criteria of diagnosis and need them with insurance. So,

Sara Szal MD (32:35.896)

That's me.

Jaclyn (32:36.903)

Yeah, so I love that you also are thinking about hormones kind of more globally, because you're absolutely right. Those changes, probably metabolic changes, are one of the biggest reasons women come in for support in perimenopause. And now we have cardiovascular health, brain health. There's a lot on women's minds during this time that there's so much that can be addressed, whether using hormones or not, during that range of age.

Sara Szal MD (32:58.488)

There's so much to come.

Sara Szal MD (33:03.49)

That's right. And you know, one of the things I've gotten obsessed with, and this is related to my next book, is the mitochondria and what's happening at the level of the mitochondria. Because in women, the primary regulator of the female body is estrogen. And as estrogen starts to decline in the second half of perimenopause, we know that the mitochondria take a hit. And I just have been looking at the literature on how

Jaclyn (33:11.647)

Hmm.

Sara Szal MD (33:30.52)

Your mitochondria, the demand on your mitochondria goes up hugely in pregnancy. so postpartum is often a period of mitochondrial impairment. In fact, during pregnancy, more adverse pregnancy outcomes like preeclampsia are associated with changes in mitochondria. And then in perimenopause and menopause, your mitochondria also can become impaired. So there's so many things that affect your mitochondrial function. Cortisol levels.

And so that's another through line that I think we need to be paying attention to.

Jaclyn (34:02.847)

I love that you bring up the mitochondria because it's such a big impact for fertility as well. And there's some really interesting research of primarily in men because men are so much easier to test. But we do believe that's an analogous story for females as well. But that semen analysis on men in their 30s, you could justify doing that as a wellness screening because we start to see there's huge amounts of mitochondria in the epididymis and in the testicle tissue. And what we start to see is as mitochondrial health declines, you get a massive reduction in sperm health and egg quality as well, or follicular quality, ovarian function, et cetera, that we should be looking at that for more patients to identify those that might be at an earlier risk for, and in men, it's like they're looking at all-cause mortality really related to sperm impairment in their 30s. So really, that thread, that mitochondrial thread that binds is a powerful one. can't wait to read your next book.

Sara Szal MD (35:01.036)

Well, I always learn things from you, Jacqueline, when we get together. So I'll have to take a look at the semen analysis. And you raised such an important point in women, egg quality, and how mitochondria really track, mitochondrial health tracks with egg quality. And so that presents some testing opportunities in terms of looking at mitochondria and thinking about the...different micronutrients that are needed, the macronutrients that are needed to support your mitochondria, the U cortisol levels that are needed to support your mitochondria, and then it also helps us in terms of solutions like how we can support our mitochondria especially once they become impaired because it's reversible most of the time in terms of getting the mitochondria to get better.

Jaclyn (35:49.255)

Mm-hmm, yeah, that's amazing part. Tell me a little bit about your use of like serum versus dried urine testing. I know you use both in your practice and I think people would be curious to know how are you using serum, when are you using serum and when are you using like a Dutch test.

Sara Szal MD (36:05.1)

I use both because serum is really the universal language, at least of conventional medicine. So I am always sending my notes and writing letters to referring physicians or to the primary care doctor of the patient that I'm taking care of. And often for the women and men that I take care of, we're relying on their primary care doctor to order, laboratory testing through insurance. So, serum testing just makes a lot of sense. And often I use it as a screening test. So for instance, if total cortisol is not where we want it to be, it's greater than 15 in the morning, or it's less than 10 in the morning, then for me that's justification to do additional more comprehensive testing. So that's when I do dried urine testing. And I was remembering as I was preparing for this time with you, Jacqueline, was remembering 20 years ago, 25 years ago, where I used to do 24 hour urine to look at hormone testing and to look at metabolites, especially. It's a huge investment. Who wants to have that big jug

of urine in the refrigerator? Nobody. Nobody wants that. European women did a little more than US women, but most women would be like, you want me to do what with my urine?

Jaclyn (37:09.791)

That was an investment on your patients part. And yours.

Jaclyn (37:25.306)

Yeah

Sara Szal MD (37:26.218)

And so dried urine testing is just so much easier. I find it's easier than saliva testing. I so appreciate the way that your company has been so thoughtful and methodical about publishing the literature of the reliability of dried urine testing. So I think of serum testing as being the screening test. And there are certainly some outcomes that are associated with serum level testing.

And I think it's important, for instance, if I start someone on testosterone to know what her baseline serum level is, free and total, and also sex hormone binding globulin. But then once I get a woman started on hormone therapy, then I think dried urine testing together with the serum testing is giving me the most comprehensive story.

Jaclyn (38:17.055)

And I'd love to hear your thoughts about cortisol as well. You mentioned you use the Dutch Plus, which is for people that don't know the difference, we offer the Dutch Complete and the Dutch Plus, which are really the same test except the Dutch Plus collects cortisol in saliva, which allows us to get a cortisol awakening response, which is three time points collected right upon waking, waking plus 30 minutes and waking plus 60 minutes. And there's really compelling literature around the cortisol awakening response being highly indicative of resilience and how someone can handle stress almost like a mini ACTH test. But I'd love for you to explain because you said you're usually using the Dutch Plus. Tell me a little bit about why you're choosing that over the Dutch Complete because both are valid ways to measure cortisol, urine and saliva.

Sara Szal MD (39:05.922)

They're certainly both valid. My understanding of where we are with the literature is that the best way to measure cortisol is probably saliva. So I think for a cortisol awakening response, mean, one



of the problems is that you can't do a cortisol level when you first wake up 30 minutes later and 60 minutes later in the urine. So you have to do that in the saliva. And I love how

Jaclyn (39:16.487)

It's

Sara Szal MD (39:32.008)

Dutch Plus makes that really easy in terms of the collection. It's also

Jaclyn (39:37.013)

that's a big difference. Yeah, because you don't have to spit in a tube. You just chew on this cotton thing, which is like if anyone's ever tried to spit in a tube to collect saliva for a genetic test or hormone test, it's really a lot more difficult than you would think.

Sara Szal MD (39:50.646)

It's more difficult and that's where you start to lose your patience. Your patients are like, are you serious? They wake up dehydrated and so being able to saliva is tricky. So I really appreciate how you guys have made it easier.

Jaclyn (40:07.455)

You know, one more thing about that, interestingly, was that Mark really, when he developed that, they called it a salivatte, that is like chewable cotton swab, is that it allows you to collect saliva in about 30 seconds, whereas when you spit in a tube, it can take people five minutes to get enough to test. And that's hard to get a cortisol awakening response that's accurate, because you really want a pinpoint measurement if it takes a long time to collect, which I thought was a really thoughtful piece that I had never thought about until I'd spoken with Mark.

Sara Szal MD (40:36.628)

It's really smart. So it's good to hear the backstory on that. It makes a lot of sense. And, you know, I take care of a lot of different types of patients. I've got professional athletes, I've got executives, I've got a ton of perimenopausal and menopausal women. And I find that the DUSH Plus is the most comprehensive and helpful, especially looking at people who are focused on performance. And so there I'm mostly looking at executives and

Jaclyn (40:40.542)

Yeah.

Sara Szal MD (41:06.958)

I work with a lot of professional basketball players. so, you know, most of those folks are really focused on career longevity. And cortisol is a big part of that story. So that, you know, when they're when they're in season, these NBA players and they're flying all over the country and they're playing and back to back games. And, you know, some of them are getting played every night and they're doing a lot of minutes. It's important to see what's going on with their cortisol levels. And I find that about 80 % of the players, even the superstars that you know about, have cortisol issues.

Jaclyn (41:44.569)

I'm not surprised and the time zone changes that they're facing. There's so many challenges for that lifestyle.

Sara Szal MD (41:50.026)

It is and they, you know, they often take private jets to get home, but they get home at like two or three a.m. You know, they're not getting the sleep that they need to be able to restore and recover.

Jaclyn (41:56.095)

Mm-hmm.

Jaclyn (42:00.319)

fascinating. Well, I've really appreciated our discussion today. So thank you so much for joining. If you want to learn more about that approach to autoimmune disease and more about that kind of functional medicine approach to understanding root cause, I highly recommend that you check out Dr. Zall's book, The Autoimmune Cure. And it's really a great comprehensive, thoughtful approach that's scientific but not too hard to understand. I think you're going to walk away feeling really well informed and also with some steps that you can take for yourself or for your patients as well. think it's worth a read for a provider as well. So thank you so much for joining us today.

Sara Szal MD (42:36.864)

My pleasure. Good to be with you, Jaclyn.