Episode 147 Transcript

00:00:00:00 - 00:00:09:05
Dr. Allison Smith
When you come off of the high of all of those estrogens when you're pregnant, that's a really like bottleneck kind of trigger time for auto immune disease.

00:00:09:06 - 00:00:34:07
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.

00:00:34:09 - 00:00:53:17
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, I'm so glad you're here with me on this week's episode of the DUTCH podcast. This week I have one of our very own doctor Allison Smith.

00:00:53:22 - 00:01:14:10
Dr. Jaclyn Smeaton
I'm here to talk about something that we see all the time reported in, and we see so many of you ask questions, and that is all of the inflammatory symptoms that we see during perimenopause and menopause, things like joint pain, increased risk of injuries, itchy skin, allergies that crop up, and even autoimmunity. We see such a rise of that in this time of life.

00:01:14:14 - 00:01:37:09
Dr. Jaclyn Smeaton
And so the question is, is this related to the changes that we see in hormones, estrogen and progesterone and what else comes into the story. Today we're going to give you that comprehensive story and really walk you through everything that you need to know about the role of estrogen, progesterone, androgens, and then cortisol and HPA access when it comes to balancing the immune system through

perimenopause and menopause.

00:01:37:09 - 00:01:56:10
Dr. Jaclyn Smeaton
Because we know this is such a big time of change for women. We cover so many different topics. You're going to walk away with a lot of pearls, even things about itchy ears, that annoying symptom that so many women report. Doctor Allison Smith completed her education at the National University of Natural Medicine in Portland, Oregon. She worked in private practice, focusing on primary care in women's health.

00:01:56:14 - 00:02:16:12
Dr. Jaclyn Smeaton
And over the last ten years, she's shifted really just into the lab space. The hormone Testing space. And she has a breadth of experience consulting with providers on thousands and thousands of cases in the context of women's health and hormone Testing. She does a lot of teaching webinars, case presentations. She writes a lot of articles, and I'm really proud that she leads the DUTCH team, the DUTCH.

00:02:16:14 - 00:02:29:22
Dr. Jaclyn Smeaton
Sorry. And I'm really proud that she leads our clinical education team here at Precision Analytical. Welcome, Doctor Allison. I'm so glad to be here. Allison. Partner in crime. I'm so excited to get this time to talk with you on the podcast. And it's going to be a fun episode.

00:02:30:00 - 00:02:46:09
Dr. Allison Smith
It is going to be fun. Ever since I wrote a piece on immune and what happens in perimenopause when people go through, people want to know about this. People have lots of questions. They want to understand autoimmune risk. And so I'm so excited to talk about it today.

00:02:46:14 - 00:03:06:15
Dr. Jaclyn Smeaton
Totally. I mean, I frame it up a little bit, but that's one thing that I think is like a mystery to women in perimenopause where they get frozen shoulder or a tissue injury. They're getting hurt more when they work out. They're having trouble recovering. There's like these physical joint related issues that rise in perimenopause and menopause. And then like you said, there's like autoimmunity as well.

00:03:06:15 - 00:03:27:14
Dr. Jaclyn Smeaton
So we're going to cover all that today. I want to start with like physical injury and that side of the immune system. And like why do our tissues weekend. What can we do about it. Because I think that, you know, the more you know, we I am pushing into this phase of life myself. Me too. I just realized like how important movement is for my sanity, for my physical health.

00:03:27:19 - 00:03:45:06
Dr. Jaclyn Smeaton
And I think we're talking about that all the time, which is such a healthy thing. We're talking about, like women should be lifting, women should be working out, women should be walking, moving. But if you get injured more easily, it can be such a like a hard thing. It's hard to heal. You have pain. So let's talk a little bit about like laid out for us what's going on during this time frame.

00:03:45:06 - 00:03:47:14
Dr. Jaclyn Smeaton
That leaves us more susceptible to injury?

00:03:47:16 - 00:04:06:20
Dr. Allison Smith
Yeah. I mean, you don't think about what's happening to our hormonal system, first of all. So let's unpack that first. So we have kind of the lay of the land. What's happening with the hormones that might be putting us more at risk for these types of injuries? In our cycling years, our bodies get really used to estrogen cycling.

00:04:06:20 - 00:04:32:00
Dr. Allison Smith
So estrogen, yes, is wildly different from one phase of the cycle to another. But the body has all of these checks and balances for that. You know, progesterone is coming up with ovulation. And progesterone is sort of like a, you know, a modulator of estrogen activities in the tissues, you know, at a time of high androgens when we're younger, which also sort of is a if you think about it, as sort of a reservoir for more estrogenic activity.

00:04:32:00 - 00:05:00:14
Dr. Allison Smith

If we need it, the body can tip the balance towards conversion to estrogens. And, you know, our cortisol system is pretty consistent throughout life. So, you know, we have a diurnal rise and fall of cortisol. It's something that doesn't necessarily decline as we get older. However, when we hit perimenopause, right, we start to break, estrogens often become more dominant because the brain is having to scream a little bit more at the ovaries to do its normal job.

00:05:00:14 - 00:05:16:14
Dr. Allison Smith
We have, you know, an ovarian reserve that's starting to, decline a little bit. And the health of those follicles is starting to change their aging. They don't respond as readily. And as easily. And so they instead sort of respond to increasing FSH.

00:05:16:16 - 00:05:17:08
Dr. Jaclyn Smeaton
Levels.

00:05:17:08 - 00:05:45:13
Dr. Allison Smith
In sort of fits and starts in a way. So those estrogen levels become less predictable. Our progesterone levels start to drop with every cycle that we have. And that's not, you know, an overt change at first. You might still have some pretty good progesterone levels throughout a lot of your perimenopausal transition. But if you were to plot your progesterone every cycle over time, over the ten years before your last period, you would see that progesterone level is declining and that's normal.

00:05:45:15 - 00:06:03:07
Dr. Allison Smith
But we lose some of that ability to temper down, estrogens activity and to it's a modulator of estrogen so it can help to, improve our response to estrogen, and it can also decrease it. And then our age related decline of our androgens, too. It's just like the final hit, right?

00:06:03:07 - 00:06:06:01
Dr. Jaclyn Smeaton
Our like our, yeah.

00:06:06:03 - 00:06:29:06
Dr. Allison Smith

Exactly that, which is our sort of estrogen reserve in a way. Aromatase can activate, Anderson, a dione into, estrogen and then Testosterone into estradiol. So it's a way for the body to, you know, get that activity from estrogen. So when those things all sort of coincide. But cortisol is kind of doing its normal thing if we're not stressed.

00:06:29:08 - 00:06:54:00
Dr. Allison Smith
Even just that shift in balance can shift us more towards inflammation and, immune dysfunction over time. So with that in mind, think about early perimenopause. What's happening. We typically are a little bit more estrogen dominant than we used to be when we were cycling. Because progesterone levels are declining a bit. DHEA levels are starting to decline with age, right.

00:06:54:00 - 00:07:24:16
Dr. Allison Smith
We've had 40 probably. And so we have that lower reserve and estrogen we think of as a potent anti-inflammatory. You know, in the system. We're really it's a it's an inflammation modulator. It's a sign that there may be some inflammation going on if you're estrogens high. But it also is an immune modulator. And it kind of, stimulates our immune system to, to be more responsive to, to injuries or to, any, infection coming into the body.

00:07:24:16 - 00:07:46:05
Dr. Allison Smith
So it's our it's a responder. So if we were estrogen dominant during that time, we might be over responsive to injury, right. So I think that that's kind of what we start to see with, frozen shoulder, and especially when we find ourselves in a, like a low cortisol state, if we're chronically stressed and we have cortisol, that's not as responsive.

00:07:46:07 - 00:08:11:13
Dr. Allison Smith
That together with a high estrogen can kind of put us at risk for some of those issues that you're talking about with, degenerative joint issues. And, I, I sort of, resonate with the frozen shoulder because I know my mom really struggled with that. She play tennis. She was in her 40s, and she just was having to have cortisone injections, maybe every, I don't know, at least once a year, maybe twice a year for frozen shoulder.

00:08:11:15 - 00:08:12:10
Dr. Allison Smith
So I remember.

00:08:12:10 - 00:08:34:22
Dr. Jaclyn Smeaton
That it's I mention it because it's like it's now documented that there's higher rates of present children, Perry and postmenopausal women. It's such an interesting, strange phenomenon. And like, other shoulder soft tissue injuries like rotator cuff tears, for some reason, the shoulders seem to be disproportionately affected. But it's also a very complex joint with a lot of different movements.

00:08:34:22 - 00:08:40:15
Dr. Jaclyn Smeaton
So it's very easy to injure. But just, you know, another reason why it's important to stay so strong.

00:08:40:17 - 00:08:54:18
Dr. Allison Smith
That's right, that's right. And, you know, yeah, a cortisone injection is great and it's going to get you through that. But if you can treat the underlying issue, you know, if it is a hormonal issue, you can identify these things and we can go after it in a preventive way.

00:08:54:20 - 00:09:18:07
Dr. Jaclyn Smeaton
Yeah. So I mean can we talk a little bit about with these hormonal changes, you talked about how sometimes it causes an increase in inflammation and then also because it's a modulator, it can actually reduce that reactive reactivity as well. So let's talk a little bit about inflammation as a place to start. I think a lot of people wonder about the impact of inflammation and the role that hormones play in inflammation.

00:09:18:07 - 00:09:37:12
Dr. Jaclyn Smeaton
And we know there's a lot of documented immune system changes, like I think about even pregnancy, like there's documentation that people who have autoimmune conditions, it actually resolves during pregnancy. Or sometimes it gets worse during pregnancy, depending on the woman. But there's definitely changes that happen in response to these fluctuating hormones in life.

00:09:37:17 - 00:09:51:05
Dr. Allison Smith
Yeah. But then but then when you come off of the high of all of those estrogens when you're pregnant, that's a really, like bottleneck kind of trigger time for auto immune disease. Right after you.

00:09:51:07 - 00:09:59:13
Dr. Jaclyn Smeaton
Yeah. Right. Like postpartum thyroiditis. It can be Hashimoto's or it can be non immune related, but very, very common in postpartum for that to be a time for it to flare up.

00:09:59:19 - 00:10:27:06
Dr. Allison Smith
Exactly. So I think it's these fluxes in the, in hormones and which is also a hallmark of perimenopause where estrogens are doing this throughout the Perimenopausal timeline. And like maybe each of those fluctuations is like a trigger point, for immune dysfunction. And a lot of women, I think, present to, to the clinic with issues like I have itchy skin or I have.

00:10:27:07 - 00:10:28:06
Dr. Jaclyn Smeaton
Mirrors that.

00:10:28:08 - 00:10:29:07
Dr. Allison Smith
Your.

00:10:29:09 - 00:10:33:06
Dr. Jaclyn Smeaton
Ear is what a weird symptom. But it is actually a symptom of perimenopause.

00:10:33:06 - 00:11:05:01
Dr. Allison Smith
Yeah, but I think it's that like that balance tip towards immune activation and that estrogen dominance during that time. Because estrogen is so stimulatory to the immune system, you can get these sorts of symptoms and even like, too much histamine kind of, response in the skin. And some people end up on, you know,

antihistamines for long term during perimenopause because they're not really realizing they just need some darn progesterone or, you know, some sort of, you know, adrenal support to kind of get the other side of that equation.

00:11:05:03 - 00:11:05:20
Dr. Allison Smith

00:11:05:22 - 00:11:22:00
Dr. Jaclyn Smeaton
So what are some early signs like in early perimenopause that clinicians should watch out for or be you should be paying more attention to. That might be a sign that the patient in front of them. Or if you're the patient, you know, for you that that patient front might be starting to experience some immune dysregulation.

00:11:22:01 - 00:11:45:21
Dr. Allison Smith
Yeah, I well I do I also think about yes, the itchy skin the skin changes. But I also think about even the joint issues that you're talking about not recovering quickly enough from exercise and, you know, having more injuries. That tells me about that, inability to deal with, inflammation appropriately. And I also think about, even sleep issues as being possibly related.

00:11:46:02 - 00:11:47:11
Dr. Jaclyn Smeaton
You know, that's a really good one.

00:11:47:17 - 00:12:14:01
Dr. Allison Smith
Yeah, because histamine is related to sleep and, interleukin six has a diurnal rhythm that can be disturbed by, estrogen dominance. And so I think, you know, if sleep issues and even daytime fatigue, maybe somebody says, well, I sleep great. I don't think I have any sleep problems, but they're tired all day, you know, may may make sense to look into their sleep metrics or think about estrogen dominance and, and perimenopausal hormone shifts as playing a role there.

00:12:14:03 - 00:12:34:10
Dr. Jaclyn Smeaton
You know, talking about I want to talk about sleep a little bit more because I think

that's a really interesting one, because people don't think about the role of like, immune system and inflammation on sleep disruption. Yeah. But it is really impactful. And then I think you layer on top of that cortisol dysfunction, which, you know, is something that, you know, you can experience where you get these cortisol surges at night that wake you up.

00:12:34:12 - 00:12:44:11
Dr. Jaclyn Smeaton
But I think if your body's in a state of, you know, high reactivity, high inflammation, high immune response, there is a risk that, that could trigger cortisol to be released.

00:12:44:11 - 00:12:45:02
Dr. Allison Smith
Exactly.

00:12:45:05 - 00:12:46:10
Dr. Jaclyn Smeaton
Our time as well.

00:12:46:12 - 00:13:14:03
Dr. Allison Smith
Yeah. Well, and it also triggers, you know, whenever cortisol is triggered, a cortisol is a powerful immune suppressor. Right. It was think of like estrogen and cortisol or like Captain America in the Winter soldier like that. Like they were kind of working together and like putting out the fires that the, you know, one person's saving someone, but they are hurting someone else and they're able to kind of pick up, you know, pick up after each other, for the greater good.

00:13:14:03 - 00:13:41:19
Dr. Allison Smith
And I think, you know, they do work together in that way. But, you know, when there's an imbalance with cortisol, cortisol is maybe too high at night. You can have all this collateral damage, right, with, blood sugar dysregulation and other things that can sort of stimulate immune activity as well. So it's a tricky balance is really what we're looking for and why we even Test this stuff to begin with, even though we know the trajectory of these hormones as we're going through perimenopause.

00:13:41:21 - 00:14:06:17
Dr. Allison Smith

You know, why do some people do it gracefully and others have a really hard time? I think if we Tested everyone, we would know the answer to that question. You know, some people just have better progesterone levels as they're going through perimenopause or they have a more resilient, diurnal, free cortisol curve. Or maybe their estrogens always stay in range, but they're, you know, anyway, I think we could have a better handle on this if we were actually looking at these things.

00:14:06:19 - 00:14:29:12
Dr. Jaclyn Smeaton
Yeah, definitely. I mean, one of the things that, you know, I know estrogen really helps to keep the immune system in check. And I think there is this, kind of conglomeration of things that happened where you talked about blood sugar regulation. I think that's an important piece to pull in. While it's not a hallmark or problem associated with menopause per se, it is commonly paired together with hormonal change.

00:14:29:12 - 00:14:52:17
Dr. Jaclyn Smeaton
Right? That's a time in life when you're in your 40s and 50s and 60s, where you really start to see metabolic health problems rise up in people who haven't really been as attentive to it. So I think women oftentimes are going through metabolic syndrome paired with perimenopause. Hopefully we're doing lifestyle stuff. If you're working with a natural bath or a functional medicine doc where you're really staying ahead of the curve.

00:14:52:17 - 00:14:58:20
Dr. Jaclyn Smeaton
But for the general population, we see that a lot. And estrogens actually really kind of keep the system in check. And they really.

00:14:58:20 - 00:15:00:19
Dr. Allison Smith
Don't say that. It covers a lot of it.

00:15:00:19 - 00:15:10:03
Dr. Jaclyn Smeaton
That's why it's like the gloss or the sheen that kind of keeps the bubble from bursting. And then when you lose that, it's like it could wreak havoc.

00:15:10:03 - 00:15:11:20

Dr. Allison Smith
It's exposed. Yeah.

00:15:11:22 - 00:15:24:11
Dr. Jaclyn Smeaton
Yeah, absolutely. So that's another piece of that is that you're almost like lifting the veil when the astronaut goes away, or like removing that container for inflammation. You know, like you said, it's like it's really can act like a fire extinguisher.

00:15:24:13 - 00:15:27:04
Dr. Allison Smith
Exactly. Yeah. Yeah.

00:15:27:06 - 00:15:34:08
Dr. Jaclyn Smeaton
So what do we talk about? I mean, we've talked about pain and joint pain. Are there any other elements that you think are important to talk about?

00:15:34:10 - 00:15:56:17
Dr. Allison Smith
Yeah. I think the sleep piece is a really big part. And I think how our gut microbiome changes, I think it's a time where people might have new food sensitivities or new, you know, allergies. And I think, that's a really common reason people will come into the office is like their asthma is worse or their, you know.

00:15:56:18 - 00:15:57:21
Dr. Allison Smith
Yeah. The itchy skin, you.

00:15:57:21 - 00:16:01:04
Dr. Jaclyn Smeaton
Know, if you've ever had seasonal allergies. Yeah. Seasonal allergies.

00:16:01:04 - 00:16:22:05
Dr. Allison Smith
Exactly. Yeah. And I think, you know, you can you can tie it almost directly to that drop in progesterone. Progesterone is another thing that sort of covers up a lot of about that. Yeah. So so estradiol is stimulatory to the immune system. And part of the immune system is our mast cell system, which is surveilling all of our barriers.

00:16:22:05 - 00:16:49:19
Dr. Allison Smith
And so we think about the skin barrier. When you come into something that you're, come into contact with, something that you're maybe sensitive to, or that you don't want on the inside of your body, you have a response to that. And the mask cells play an important role in releasing histamine. And, you know, histamine, gives us that characteristic, squeals and hives reaction that we all know, maybe, you know, maybe even worse reactions.

00:16:49:19 - 00:17:15:15
Dr. Allison Smith
But typically, you know, people will feel, you know, like that allergic skin reaction with histamine and, so that that is, increased by estrogenic activity. So you might have more of that during follicular phase when estrogen is really dominant, when progesterone comes in, you know, progesterone acts in the opposite way. So it tempers estrogens, effects on masks master side ptosis.

00:17:15:15 - 00:17:41:19
Dr. Allison Smith
So we get fewer mast cells, less mass celled granulation, less histamine. And it's this really nice balance of of how? Or it's a demonstration of how progesterone tempers down estrogenic activity. So as progesterone decreases in perimenopause, we have more opportunity for histamine levels to increase. There's so many other pieces of histamine I feel like that can make people more predisposed.

00:17:41:21 - 00:18:06:22
Dr. Allison Smith
Not everyone is going to have this sort of immune forward presentation of perimenopause. And I think people who have maybe like a gut dysbiosis coming into perimenopause, for instance, already and maybe kind of leaky gut set up because of how estrogen levels are starting to vary quite a bit, and progesterone, we're losing some of our lactobacillus with estrogens.

00:18:06:22 - 00:18:35:15
Dr. Allison Smith
We're losing some of our, our bio diversity. And so the gut microbiome is changing. And that also changes the way we respond right to outside pathogens. So I think there can be like a perfect storm of things, even people with methylation issues.

That's another thing. Genetics wise. You know, if you have poor methyltransferase enzyme, genetics, for instance, you might not you might not clear your histamine very well.

00:18:35:17 - 00:18:49:20
Dr. Allison Smith
So, if you are having a histamine reaction, you're not going to be able to inactivate histamine systemically as well as the average person. And that could put you more at risk in perimenopause. So it can be, you know, perfect storm.

00:18:49:22 - 00:19:07:00
Dr. Jaclyn Smeaton
I love that you're bringing up all of these different confounding factors because it's like it just goes to show it's not straightforward. And it is probably part of the explanation of why these immune flare ups happen for some women and also not for other women. So I want to talk a bit more about the microbiome because I know our hormone podcast.

00:19:07:00 - 00:19:30:07
Dr. Jaclyn Smeaton
But the gut is really important. You know, our bones and definitely for the immune system. And it's so interesting because in menopause or post menopause, when they look at the microbiome of women post-menopausal, it actually looks more like a male gut. Whereas in a cycling female it's really unique. So there are these changes. And, you know, I've done a lot of work research into this area.

00:19:30:09 - 00:19:53:19
Dr. Jaclyn Smeaton
So interesting. But hormones cause shifts in the microbiome and also shifts in the microbiome cause changes to hormones. So it is this like cat chasing its tail going on and by directional. That's right. Yeah. And even then during pregnancy there's actually a complete kind of clearing of the diversity of the gut. So like I mentioned before, pregnancy is another time where we see a lot of immune change.

00:19:53:21 - 00:20:12:03
Dr. Jaclyn Smeaton
And, it's actually very interesting to look into that because the gut, if you look at it, it looks like a just biotic gut. There's like very low diversity, actually a lower count of microbes in the gut during pregnancy, which is in response to these hormonal

changes. And probably it ends up creating a leaky gut state in the gut, hyper permeability.

00:20:12:05 - 00:20:32:03
Dr. Jaclyn Smeaton
But probably that's evolutionary, evolutionarily beneficial, because the whole idea is that when the gut is leaky, everything gets through. So when you're pregnant, it can emphasize like all of your nutrients being absorbed, right? You know, there is an evolutionary explanation, but there's a downside to not having a diverse, strong gut.

00:20:32:05 - 00:21:05:09
Dr. Allison Smith
That's right. That's right. Well, and I think as, as our gut microbiome does change over, we have this sort of midpoint, you know, and, and I think some people have more overgrowth of certain bugs. I always think of like, Bacteroides for jealousy and, oh, there's a streptococcus version of that same, family. And I think, you know, when when we think about the bacteria in our gut, they are metabolizing estrogens.

00:21:05:11 - 00:21:33:15
Dr. Allison Smith
You know, that typically they're not synthesizing them from nothing. But they are, you know, they're taking those estrogens. And since we're talking about estrogen and they're metabolizing them down, they can change estradiol into estrogen. Or they can and they can change estrogen into 16 hydroxy Astron. And if we have a microbiome that is rich in organisms that express beta glucan, this enzyme, we can then reabsorb a lot of those estrogens back into the bloodstream.

00:21:33:17 - 00:22:02:21
Dr. Allison Smith
And if we're we have fast metabolism of estradiol in the gut by these, these gut bugs, and they're making a lot of 16 hydroxy and we're bringing 16 hydroxy back in, that can really affect our risk for, even autoimmune diseases, which I think is really interesting. So, a lot of interplay between what's going on in the gut, what's going on systemically, and how they're married together and how that ends up manifesting in the person that you're looking at in front of you with these symptoms.

00:22:02:21 - 00:22:03:13
Dr. Allison Smith
You know.

00:22:03:15 - 00:22:34:05
Dr. Jaclyn Smeaton
Definitely.

00:22:34:06 - 00:22:59:01
Dr. Jaclyn Smeaton
I want to talk a little bit more about the HPA axis. And I think this is an area where in particular on our team, you are my go to expert in this area. Like you're I love this, your clarity of communication, your driving passion to talk about it. And I think the, I think the main takeaway for listeners to start with is just how important the HPA axis is for overall health, particularly during perimenopause and menopause.

00:22:59:01 - 00:23:28:12
Dr. Jaclyn Smeaton
And there's so many interesting mechanisms by which the HPA or adrenal axis interacts with the HPA axis. We were just talking about one of them. I just fast where it's like when you have a lot of, stressors, the, the brain, you know, the hypothalamus, the pituitary, the signal that comes out that speaks to the adrenal glands activate, stimulates the production of cortisol, but also of DHEA from a separate area within the adrenals.

00:23:28:12 - 00:23:43:08
Dr. Jaclyn Smeaton
But they're not always linearly released together. But that that same hormone that stimulates both, and there can be a lot of additional androgens made when there's a lot of stress. And they've been really impacts the overall hormonal picture in so many ways.

00:23:43:12 - 00:23:44:20
Dr. Allison Smith
But it also modulates.

00:23:44:20 - 00:23:45:16
Dr. Jaclyn Smeaton
You know, modulated.

00:23:45:17 - 00:23:47:11
Dr. Allison Smith

Line like check and balance each other.

00:23:47:13 - 00:24:15:16
Dr. Jaclyn Smeaton
That's right. So I want to like really I know that's like we're talking about this. And this is not just an HPA axis episode. It's an immune episode. But I want to really explain to listeners how these things are connected. And I just don't think there's anyone who's better than you. Can you start by just talking about the axis at a high level and I'm thinking about, like probably most of our listeners and practitioners utilize a diurnal pattern, like they'll take a salivary cortisol, but there's so much more to it at the tissue level of what's happening.

00:24:15:16 - 00:24:19:03
Dr. Jaclyn Smeaton
Let's maybe start with those basics, and then I want to pull it back to the immune system.

00:24:19:09 - 00:24:55:11
Dr. Allison Smith
Yeah. So I think, you know, it's pretty well understood that when we're under stress, the body recognizes those cytokines and chemokines that communicate with the brain that we're under stress. And we need cortisol. We need an adrenal response to this. And CRH is made in the hypothalamus. And as a response to that, which is a cortical drop and releasing hormone talks to the pituitary gland, tells it to make act, which is the adrenal cortical, cortical tropic hormone that goes to the adrenals and says it's time for cortisol and DHEA.

00:24:55:11 - 00:25:20:07
Dr. Allison Smith
So then we have all the upregulation of those genes that are encoding for cortisol and DHEA. They get produced and then they're in circulation, ready to, hit the road and be taken up by tissues and, bind their, sometimes they have DNA, especially cortisol will have these response elements right on the DNA. And they just upregulate genes kind of directly.

00:25:20:09 - 00:25:59:12
Dr. Allison Smith
They're also glucocorticoid receptors. The alpha receptor, responds to cortisol by up regulating genes in a different way. So lots of cool ways that we respond to that, like

stress hormone. And, and we can measure free cortisol levels in, circulation by looking at salivary levels of free cortisol. And we can also look at free cortisol in the urine, which also has a diurnal rhythm and which is similar but looks a little different because when you're looking at urine, if you take a sample of the first morning void, you're looking at what was produced and circulated and excreted during the night while you're asleep.

00:25:59:12 - 00:26:23:11
Dr. Allison Smith
Of course. So your first point of the day is not the highest point of the day in urine. So always remember that when you're looking at urine versus saliva, but they're both free cortisol. And they give you an idea of what's going on with cortisol throughout the day. And if you have, let's say you're devoid of, you know, any major stressors during the day, your cortisol should be higher in the morning than it is at night when you go to bed.

00:26:23:16 - 00:26:35:14
Dr. Allison Smith
Right. And you should reach the lowest point of all of the day when you're asleep, basically in the middle of the night, your cortisol should just be like the quieTest, lowest nadir it would be all day long. Yeah.

00:26:35:16 - 00:26:37:22
Dr. Jaclyn Smeaton
Sleeping. Hopefully you're not having some stressful dreams.

00:26:37:22 - 00:27:03:01
Dr. Allison Smith
Yeah, exactly. Well, you never know. We can Test that. But then cortisol has to be taken up into tissues in order to have a tissue response. Who cares if it's in circulation, right? You know, it's got to be taken up in the tissues. It has to have an action. And there isn't a fabulous way to measure receptor activity or, you know, what genes it turned on or whatever.

00:27:03:03 - 00:27:26:18
Dr. Allison Smith
But we can look at how it gets metabolized, you know, whether you're mostly making cortisol or cortisone. And we can look at these things as they're being excreted and we say, oh, this is interesting. You have a really strong pull over into active cortisol. I

wonder what's going on. So a lot of times we'll look to the metabolites, the way it's being metabolized, how much is being metabolized.

00:27:26:20 - 00:27:47:14
Dr. Allison Smith
Because essentially with cortisol we're looking for highs. This is what I say, you know, and if you're seeing a free cortisol pattern, that's maybe normal or it's low and flat in somebody who's inflamed or they have a lot of stress. When you look at the cortisol, cortisol metabolites, they're usually pretty high. They might be telling you a different story.

00:27:47:16 - 00:28:08:01
Dr. Jaclyn Smeaton
Let's talk more about that. I want to kind of pause because I think this is an area where you're moving into territory that a lot of people don't know about. So I want to just like, slow it down. What you're saying is diurnal curve is the free cortisol. That's basically what's available to act. And I think if you it has it, you know, cortisol has binding proteins basically just like everything else with sex hormone binding globulin.

00:28:08:01 - 00:28:29:09
Dr. Jaclyn Smeaton
So when you're thinking about cortisol that's free. You know you're seeing the amount that's available to the tissue. Now you're shifting. And on the DUTCH chest you see that on the left. If you shift to the right you can see cortisol metabolites, which on the first page is the bottom right dial. And that that sometimes is out of sync with what you'd expect to see with free and tell us what that means.

00:28:29:11 - 00:28:44:11
Dr. Allison Smith
Exactly. So when you're a free, cortisol is much lower compared to the metabolites that suggest that the production of cortisol was really high, you took up a lot of cortisol in the tissues, but you metabolize it very quickly and burning right through it.

00:28:44:11 - 00:28:45:02
Dr. Jaclyn Smeaton
Right? Right.

00:28:45:02 - 00:29:01:01
Dr. Allison Smith

You're burning through it as fast as you can get it. And that's a body adapting to high cortisol. Why would the body want to adapt to high cortisol? When you think about what cortisol does in the body, it does a lot of good things, but it also does a lot of bad. It does like at the expense of a lot of other systems.

00:29:01:01 - 00:29:13:21
Dr. Allison Smith
So, you know, we think of cortisol as catabolic. It's tissue wasting. It breaks down bone like so that we can run away from the thing that's going to kill us. Other body systems are going to suffer long term.

00:29:13:23 - 00:29:31:17
Dr. Jaclyn Smeaton
I always told patients like cortisol is kind of like a fire extinguisher, and you want to have it handy so you can, like quickly release and put out a fire. But another way to think about that is like if you don't control it, you would have foam everywhere. And that would be a problem. And that's what ends up happening when you have all this cortisol around, you know that that foam is starting to cause a problem.

00:29:31:17 - 00:29:47:20
Dr. Jaclyn Smeaton
It's like degrading your furniture, like you said, eating out your bone. So there has to be some way to kind of control that if it's around all the time. That's one of the ways that I always talk about it. I like to give these little tips because it can be hard to explain to the patients, but they have to take it home in a way that means something to them.

00:29:48:02 - 00:29:48:13
Dr. Jaclyn Smeaton
Yeah.

00:29:48:15 - 00:30:12:11
Dr. Allison Smith
But you know, your body is adapting. It's very smart. Your body knows what to do, in, chronic stress. And that is a way that you can identify as a health care practitioner when you are Testing cortisol is you kind of owe it to your patients to look a little bit more deeply than the free cortisol pattern, which which can only tell you how much free cortisol is available to tissues.

00:30:12:12 - 00:30:18:20
Dr. Allison Smith
But you can't see the other side of that, like the body working so hard to keep it where it is. You know.

00:30:18:22 - 00:30:40:04
Dr. Jaclyn Smeaton
It's fascinating. That particular piece, I think, is worth double clicking into because I think, well, when I was in practice full time, I ran like just a salivary cortisol. And I think we did. That's how we were trained in and we thought we were doing a great job. But now that I've seen so many Tests and I see the metabolites cortisol, I think about how many patients I thought were high or I thought were low.

00:30:40:06 - 00:30:54:12
Dr. Jaclyn Smeaton
Yes, sir. Cortisol was high or low, but their metabolites don't match that. So what that tells you is the production of cortisol is actually much, much more or less than it looks like on the curve. And the problem is that you have all this tissue adaptation going on.

00:30:54:14 - 00:30:59:03
Dr. Allison Smith
Exactly, exactly. I think of I think of all the ones that were normal.

00:30:59:05 - 00:31:01:05
Dr. Jaclyn Smeaton
Exactly. That's one thing when you're like oh actually.

00:31:01:05 - 00:31:04:09
Dr. Allison Smith
Oh is that your curve looks normal. I guess there's nothing wrong here.

00:31:04:09 - 00:31:12:07
Dr. Jaclyn Smeaton
So yeah I'm sure some people are listening are like yeah my curve looks normal. I don't feel normal. Maybe I need to pass instead of just be salivary.

00:31:12:12 - 00:31:13:14
Dr. Allison Smith
Yeah. Dig a little deeper.

00:31:13:16 - 00:31:36:02
Dr. Jaclyn Smeaton
Yeah absolutely. And so this is really important because I think, you know, and one thing that I found really interesting I studied medical anthropology in college was that in menopause there are some cultures that do not report symptoms at all. Most traditional tribal cultures, they don't report, like even hot flashes. What alone? All these other problems. So it gets me thinking about the lifestyle.

00:31:36:02 - 00:31:41:00
Dr. Jaclyn Smeaton
And of course, it's not just stress, it's also diet, movement, etc..

00:31:41:01 - 00:31:42:01
Dr. Allison Smith
Environment.

00:31:42:03 - 00:31:54:17
Dr. Jaclyn Smeaton
Yeah, there's so much that's different. But I think about, you know, that entering into perimenopause, it's a really good time to go into preparation mode. It's like preparing for the shock.

00:31:54:17 - 00:31:55:18
Dr. Allison Smith
Your stress.

00:31:55:20 - 00:32:28:07
Dr. Jaclyn Smeaton
Like checking your stress is one of the most important things that you got to do here, like prepare for the apocalypse. It's not the apocalypse, not that bad. But the more prepared you can be going in, the more resilient you can be to in in all different ways. You're going to be able to handle those hormonal changes. And hopefully, particularly if you're inflamed already and you have signs of chronic inflammation like allergies, eczema, asthma, autoimmune conditions, or even like I think about even elevated a Anna's antinuclear antibodies, sometimes they can be high but not high enough to hit a diagnosis.

00:32:28:12 - 00:32:29:00

Dr. Allison Smith
Yeah.

00:32:29:02 - 00:32:35:00
Dr. Jaclyn Smeaton
Like I just think all of those are signs that we should be paying attention to those fundamental things that would be lowering inflammation.

00:32:35:01 - 00:33:10:01
Dr. Allison Smith
Exactly. And is that tying to estrogen dominance and cortisol dysregulation? Yeah, probably. You know, this is the right time. And a lot of us are taking care of our aging parents, and we're still raising kids. And we're, you know, in the busiest working time of our lives. And we're like, what? Whatever compounded stressors happen in our 40s. So like everything you can kind of control or at least be mindful of and create a space for yourself to kind of release some of that stress, I think is so important.

00:33:10:03 - 00:33:37:05
Dr. Jaclyn Smeaton
Yeah. Can we talk about that stress system because like for some women obviously the HPA axis is balanced enough or cortisol secretions appropriate where that balance is maintained. And then for other women it's not and inflammation starts to go haywire. What makes the difference are like what would you look for on a Test event? Or what would you look for in a patient sitting in front of you to identify that this woman is more likely to be.

00:33:37:06 - 00:33:38:00
Dr. Allison Smith
Dysregulated.

00:33:38:06 - 00:33:39:18
Dr. Jaclyn Smeaton
Or just regular? Yeah. Yeah, right.

00:33:39:23 - 00:34:04:14
Dr. Allison Smith
I always ask about sleep. I think sleep is probably the biggest one. I think if you if you have someone in front of you who is prioritizing their sleep, and they're able to fall asleep and stay asleep through the night, you know, and they're getting, I don't know,

eight hours would be great. But even if we're like, over six hours, 6 to 8 hours of sleep per night at six really sounds bad.

00:34:04:16 - 00:34:35:16
Dr. Allison Smith
Six and a half to eight, let's say. Let's not go. Let's not make six a goal. But I think, you know, that makes a huge difference to cortisol. And then, you know, people who have, a sound dietary approach, like a nice whole foods diet, lots of plant foods during the week, eating fish. You know, a lot of the stuff that we think of as just being like, baseline foundational good health practices for eating, I like to hear that people are eating breakfast.

00:34:35:21 - 00:34:43:07
Dr. Allison Smith
If I hear somebody say, I'm never hungry until 11 a.m., I'm like, cortisol, let's go. Let's look at it. You know.

00:34:43:09 - 00:34:46:03
Dr. Jaclyn Smeaton
There's you're waking up with it surging, suppressing your appetite.

00:34:46:06 - 00:35:03:21
Dr. Allison Smith
Exactly. Yeah. So I think you can listen. You can listen for things like that or like, I just don't get tired until two in the morning, Cortisol. You know, and sympathetic nervous system activation is really tightly tied to cortisol in our HPA axis. So those are the things I listen for.

00:35:03:23 - 00:35:14:13
Dr. Jaclyn Smeaton
I love those suggestions. I just on the sleep piece. One of the takeaways that I really love is I've been utilizing hrb or heart rate variability, which almost every tracker would hate.

00:35:14:13 - 00:35:15:21
Dr. Allison Smith
My heart rate variability.

00:35:15:23 - 00:35:16:14

Dr. Jaclyn Smeaton
You hate it?

00:35:16:16 - 00:35:21:05
Dr. Allison Smith
Oh, I hate mine, mine, mine is so poor.

00:35:21:07 - 00:35:43:12
Dr. Jaclyn Smeaton
Yeah, but it's a great sign I think. Like, I love that you're looking at sleep. And I always think about our resilient how can we measure resilience. And I think the HPA axis measurement like on the DUTCH Test is the gold standard supreme right. If something's better than and actually let's talk a minute about serum Am cortisol. So I think if someone's never seen a functional medicine doc and your doctor orders that, is that useful or not.

00:35:43:12 - 00:36:01:00
Dr. Jaclyn Smeaton
But hold that thought for a second. Yeah. The RV is like a day to day measure of how well you're doing on the stress. So much better. Yeah. So it's measured. It's basically we should have more variability in our heart rate through the day. It shows that we can respond to a stress like a fight or flight, and then we can come back down to normal.

00:36:01:01 - 00:36:20:04
Dr. Jaclyn Smeaton
Normally it's the latter part. It's the come back down that we struggle with. But it's the turning on and off of the sympathetic fight or flight, parasympathetic rest and digest nervous system. So when you have a good RV, it's showing that you can go back and forth like that. And we use the heart rate as a measure, because when we're in fight or flight, our heart rate goes up.

00:36:20:06 - 00:36:24:16
Dr. Jaclyn Smeaton
Now, if you are, you know, like like apparently you, Allison, to me.

00:36:24:18 - 00:36:27:01
Dr. Allison Smith
And your heart rate variability is 12 this morning.

00:36:27:03 - 00:36:44:15
Dr. Jaclyn Smeaton
Yeah. Like it's a sign on the day to day of how you're doing with that. And I really love that as a measure. Because if you are working on stress, it can be really hard because you're like, no, I don't really feel that stress. I'm good, I'm good. But then you guys like a data measurement. Yeah. Of how you're doing with that.

00:36:44:15 - 00:37:00:13
Dr. Jaclyn Smeaton
On top of all the sleep measures. So I love to put that out there. I am also flunking this class. It's like this health class, especially right now with everything going on in life. But, it's a really good measure. And I think such an important thing for particularly, like, high functioning women to be working on.

00:37:00:13 - 00:37:17:16
Dr. Allison Smith
Yes. To monitor. Yeah, yeah. I wonder what HIV does with burnout because we, we kind of know what cortisol does. And burnout. You know, the car kind of flattens down and, you know, really characteristic and I bet I bet heart rate variability has some connection that turned out to.

00:37:17:21 - 00:37:25:10
Dr. Jaclyn Smeaton
Yeah, we can we should look into that. But now can you talk a little bit about Am cortisol and whether that has value. And this screening process.

00:37:25:12 - 00:37:50:16
Dr. Allison Smith
I think am cortisol is the way to go. If you're suspecting for your insufficiency okay. Maybe you know like really extremely low cortisol. However, it's not going to tell you much other than that, unfortunately. But the thing about serum cortisol is that it is mostly bound, you know, unavailable to tissues. It gives you kind of a total cortisol production.

00:37:50:16 - 00:37:56:03
Dr. Allison Smith
So it gives you that peace, which is nice to look at against the free cortisol pattern.

00:37:56:06 - 00:37:58:00
Dr. Jaclyn Smeaton
Be different. It could be very different than that.

00:37:58:01 - 00:38:23:06
Dr. Allison Smith
Yeah. But it almost always is completely different from free. You know, it's almost always normal. And when it's not at, let's say it's a little bit low, a lot of times you'll do, a DUTCH Test or a or you know, a salivary cortisol, diurnal pattern. You're looking at the free fraction. And a lot of times the body is keeping that completely normal to tissues.

00:38:23:06 - 00:38:45:17
Dr. Allison Smith
You can take a low total production and have a completely normal, free, bioavailable, bioavailability because the body controls cortisol binding globulin. And so, you know, there's so many checks and balances that, that allow free cortisol to stay normal for a long time while production goes down or while, you know, metabolism is working hard to keep it normal.

00:38:45:19 - 00:39:08:00
Dr. Allison Smith
So, it is helpful, I think, to look at both sides of it. You, you can look at a total cortisol in serum, but you don't want to stop there ever. For for an adrenal, like a full adrenal assessment, you always want to follow that up with a free cortisol diurnal pattern in the metabolites and get a sense of what the cortisol clearance rate is to really get a sense of how cortisol is functioning in the body.

00:39:08:02 - 00:39:29:22
Dr. Jaclyn Smeaton
Yeah, that makes a lot of sense. Yeah. Now, on top of stress impacting hormones and estrogen and progesterone, androgens and those reproductive hormones impacting inflammation, there's also a direct connection between stress and inflammation. Yeah we talked a little about cortisol is anti-inflammatory activity. But what about the effects of chronic stress on people's immune system.

00:39:30:00 - 00:40:01:14
Dr. Allison Smith
Yeah I think acute stress is really simple. You know acute stress. We have all of those

cytokines and chemokines speaking to the brain and the upregulation of the HPA axis and cortisol coming out and fighting the fight. But when it comes to you know, chronic inflammation, it's a little bit different. The the body starts to sort of shut down its, response to cortisol and even to, and even to estrogens activities.

00:40:01:14 - 00:40:22:20
Dr. Allison Smith
I mean, if estrogen is too high or too long, you know, your alpha and beta receptors, which act kind of differently, you know, er, alpha is kind of the gas and air betas like the brakes. They, they start to be expressed differently, you know, in, in different, you know, relative levels. And so it changes our response to estrogen.

00:40:22:22 - 00:40:42:10
Dr. Allison Smith
Same thing happens with cortisol. The glucocorticoid receptors, the alpha kind are like the gas. And the betas are far less responsive, maybe not even responsive at all. And so even though you might have normal cortisol levels, you could have a vastly, hindered response when it comes to immune suppression.

00:40:42:10 - 00:40:58:14
Dr. Jaclyn Smeaton
So the thing and no matter what, like even insulin, I think people know that I'm not. All right. You have this hormone, insulin, that when blood sugar is super high and insulin super high, the cells become resistant. And that's where you have insulin resistance, meaning that insulin doesn't do this job as well at the cells level, at the issues, the tissue.

00:40:58:14 - 00:41:14:18
Dr. Jaclyn Smeaton
Right. It's happening at the cell level. So what you're describing is really the same thing happening. Yeah. With cortisol it's like the cells are not responding of course which could mean the cells are on fire and the cortisol is being released to try to put that fire out. But can the signals not get in there?

00:41:14:20 - 00:41:41:22
Dr. Allison Smith
Exactly. And that's when you get these runaway, you know, inflammatory presentations. And, you know, maybe the cortisol looks okay but it's not getting the job done. Then you kind of know, oh this this is probably glucocorticoid resistance.

Usually you'll see elevated cortisol metabolites, on the Test whether cortisol is normal or usually it's, you know, trending low or flatlined on the free cortisol pattern when this is happening.

00:41:42:00 - 00:41:58:13
Dr. Allison Smith
Right. That's a very common chronic stress pattern with we used to call it hyper metabolism. Now we call it high cortisol clearance rate. Is very very much indicative of that. Like chronic inflammatory chronic immune, you know, kind of response.

00:41:58:15 - 00:42:14:14
Dr. Jaclyn Smeaton
Well, you've really naturally transitioned us to the DUTCH Test, which I want to talk about this in depth, because I think people think about the this is like if you're a provider and you're using the Test, this is where you want to really listen. If you've gone like in the car listening and you're, you know, half paying attention, now's the time to really pay attention.

00:42:14:14 - 00:42:42:10
Dr. Jaclyn Smeaton
Come to class. Okay. So when you're looking at the DUTCH Test, you know, I think people understand the basics of I know how to read what's happening with estrogen, progesterone, androgens. Cortisol I think is a little tougher concepts from what we hear from providers. We've talked about that. But I want to layer in that there are a lot of patterns that we see that we talk about this with, like our clinicians on our team, we see thousands of reports because we review reports before release, especially anything that looks out of the ordinary.

00:42:42:10 - 00:43:00:08
Dr. Jaclyn Smeaton
And then we're looking at Test reports all day long with customers. So with our physicians who are calling in for support on their reports, we look at hundreds and hundreds a week of patient cases. It's a lot of DUTCH Tests. And through this you start to see patterns with different conditions, like there's patterns with PCOS that go beyond just the androgens.

00:43:00:10 - 00:43:04:04
Dr. Jaclyn Smeaton
There's patterns and people who are obese that go, you know that, you can see that

or.

00:43:04:06 - 00:43:06:03
Dr. Allison Smith
You can see it immediately before you even.

00:43:06:03 - 00:43:06:10
Dr. Jaclyn Smeaton
Get the.

00:43:06:10 - 00:43:07:01
Dr. Allison Smith
Requisition.

00:43:07:01 - 00:43:33:12
Dr. Jaclyn Smeaton
Yeah. And I think that that is some of the gold in our course, our Tests. It's not diagnostic. It's not like you're running a DRP. However, these patterns are suggestive to us that that patient has something going on underlying. I want to spend the rest of our time on our podcast today talking about those, because I think especially when it comes to immune balance, you wouldn't think about DUTCH Test being an immune Test, but it really does give a lot of insight into what's happening with the immune system.

00:43:33:12 - 00:43:43:04
Dr. Jaclyn Smeaton
So can you talk a little bit about what we see with an overactive immune system or a lot of inflammation? Are those different? Are you talk about them all together?

00:43:43:06 - 00:44:05:12
Dr. Allison Smith
I think it's good to talk about them all together. I think, you know, the the obvious one is the cortisol piece, like our brain goes straight towards the stress system, right? Cortisol. You're looking for high cortisol, whether they're captured in the cortisol metabolites or they're captured in the free cortisol that's hitting the tissues in the diurnal pattern.

00:44:05:13 - 00:44:16:09
Dr. Allison Smith

You know, we're looking for highs. Typically if you're seeing a lot of low, low, low everything, you know, you're looking at somebody who is like and end of the road.

00:44:16:11 - 00:44:17:18
Dr. Jaclyn Smeaton
You know they've been through the high.

00:44:17:20 - 00:44:42:03
Dr. Allison Smith
They've been through the highs. Yeah exactly. And that and at that point you're seeing usually a flatline curve a a low or absent cortisol awakening response and very low cortisol metabolites, you know, at that point usually that patient feels really crummy. And, and they, can't mount, an immune response appropriately anymore, and they can't, manage their inflammation.

00:44:42:03 - 00:45:20:06
Dr. Allison Smith
And they're usually, have a number of diseases that are usually being treated by lots of different medications. And they're, they can be difficult to manage if you don't get those cortisol out of the tank. But most people are going to be coming in with some presentation of high cortisol, whether it's freeze or in the metabolites. So you want to identify that, pretty quickly and go after that, using anti-inflammatory supports primarily and also, adrenal adaptogens to make sure that the HPA axis remains ready to, participate in the negative feedback loop.

00:45:20:06 - 00:45:45:02
Dr. Allison Smith
Right. Which gets disturbed with chronic stress over time. The not so easy part or not so intuitive part is what high cortisol and stress does to some of our other hormone systems as well. So we think about, aromatase is an enzyme that changes our androgens into estradiol in US drone. It is upregulated by stress and cortisol.

00:45:45:06 - 00:46:11:22
Dr. Allison Smith
So you know, if we have more aromatase activity moving our androgens into estrogens, you're going to see estrogen dominance. You might see high estrogens even. And even though estrogen has some really important roles in controlling inflammation, you know, tends to be anti-inflammatory. But it can be both pro and anti inflammatory depending, on the tissue needs.

00:46:12:00 - 00:46:32:01
Dr. Allison Smith
You know, it's a sign that there is inflammation right. So we think about estrogen when you see it dominant in a patient especially with low progesterone or low androgens. And that estrogen is really kind of the the sticking out like a sore thumb especially with high cortisol is that should be a big sign like oh I'm looking at inflammation here.

00:46:32:03 - 00:46:55:00
Dr. Jaclyn Smeaton
I bet a lot of people are thinking about their patients and how often they see the estrogen. So much argumentation. And I think we naturally go to phase one metabolism. But if you have looked at patients like that with estrogen and estrogen dominance is not a scientific term. Let's just put that out there. We're talking about a relative comparison of estrogen to progesterone as far as like where they fall in relationship to other women their age.

00:46:55:01 - 00:47:13:07
Dr. Jaclyn Smeaton
It's not a scientific calculation. So I want to put that out there because I think a lot of people utilize it like it is one, and it's not a disease state. And I want to be super clear, but these are patterns that we see when we are looking at hormones in totality. So I bet a lot of you were like, oh yeah, I have so many women with estrogen dominance, I never really thought about the fact that inflammation could be a driver for that.

00:47:13:09 - 00:47:19:23
Dr. Allison Smith
Could be a driver. And then I also think about some of the organic acids that we look at unattached to, like a mineral.

00:47:19:23 - 00:47:22:22
Dr. Jaclyn Smeaton
Not a lot of people know to look. So I'm really glad you're raising this.

00:47:23:00 - 00:47:45:10
Dr. Allison Smith
Yeah. Quinlan eight is probably, one of the most sort of potent markers of inflammation on our Test. It's actually itself is a neurotoxin in the system. When it

builds up and is, high, chronically. So we have to be really careful with high Quinlan eight levels. They show up in the urine when you're inflamed, and so it's really great.

00:47:45:12 - 00:47:46:08
Dr. Allison Smith
Marker.

00:47:46:10 - 00:47:57:07
Dr. Jaclyn Smeaton
Now, I know it's neuroinflammation. Yeah, but is it. And can you just talk a little bit because I get that question a lot. Is it only inflammation in the brain that causes Quinn to be high or also some stomach systemic inflammation.

00:47:57:07 - 00:48:28:00
Dr. Allison Smith
But it because it is a neurotoxin it can cause neuroinflammation. And I think that's why we call it a neuro inflammatory marker. Right. It's very much active in the CNS for sure. So but yeah, inflammation is the driver. You will almost always see it elevated in, patients who struggle with obesity. So that type of inflammation that's, you know, systemic and coming from adipose tissue, especially central adiposity, you'll see pretty high levels.

00:48:28:02 - 00:48:55:17
Dr. Allison Smith
Really that entire pathway, if you think about quintal and eights really coming from tryptophan, and tryptophan metabolism to serotonin being hijacked, in a way, by some of these inflammatory cytokines that are up regulating the enzyme conversion of tryptophan on down into the urinate pathway, which goes all the way down to form NAD, which is, you know, so factor to everything.

00:48:55:19 - 00:49:28:05
Dr. Allison Smith
Right. It's our de novo niacin synthesis in the body essentially. Yeah. But on the way to nad we have all these stops along the way. So if you're low in B6, you might build up in some of these legs and urinate and kind of urinate. And then if you're, when you're inflamed, there's an enzyme that converts Quinlan ET into NAD that can't function properly when we're inflamed or we have phthalate exposures is another reason, but, so there can be, like, toxic exposures that slow that enzyme down.

00:49:28:05 - 00:49:34:17
Dr. Allison Smith
But when you build up in Quinlan ET, not only is that caused by inflammation, it can cause inflammation too.

00:49:34:18 - 00:49:41:04
Dr. Jaclyn Smeaton
So fabulous. We love when things happen like that. Yeah, yeah, it gets bad and then it just makes itself worse.

00:49:41:06 - 00:49:56:01
Dr. Allison Smith
That's right. I think a melatonin too, as kind of an inflammatory marker when it's too low because melatonin is a is an anti-inflammatory in the body. If you have low melatonin, it is suggestive of, you know, oh.

00:49:56:03 - 00:49:57:18
Dr. Jaclyn Smeaton
My light went off. Sorry. Oh, no.

00:49:57:20 - 00:50:00:06
Dr. Allison Smith
That's okay.

00:50:00:08 - 00:50:04:06
Dr. Jaclyn Smeaton
Okay. Sorry about that. Everybody okay, back to where we were.

00:50:04:12 - 00:50:25:09
Dr. Allison Smith
Back to work. Yeah. I think about melatonin in particular as a pretty nice inflammatory marker. If it's if it is low, really, even if it's high as well. Probably, endogenously, it maybe could be a sign that the body's working a little bit too hard, to leverage some of its antioxidant potential, but definitely low. If your melatonin too low.

00:50:25:09 - 00:50:33:07
Dr. Allison Smith
Right. It's a sign that maybe cortisol is high since they sort of oppose one another. And, yeah. So that's a good one to look at too.

00:50:33:09 - 00:50:48:03
Dr. Jaclyn Smeaton
Great. I mean, there are so many different patterns that can be seen. And I want to point out a resource we have if you are a DUTCH provider, if you're currently a customer, you can log in to the portal, the provider portal. And under education we have these mini guides and we have mini guides that go into some of the patterns.

00:50:48:03 - 00:51:09:20
Dr. Jaclyn Smeaton
We have one for insulin resistance. We have one for inflammation. So I encourage you to look at those. And it teaches you a little bit about what you might see on the charts. Kind of like what Doctor Allison's going through. And then on the back side, there's actually a checklist, which I find so helpful because you can look at it next to a report and actually see how many of the changes that we see associated with that pattern your particular patient has.

00:51:09:23 - 00:51:21:06
Dr. Jaclyn Smeaton
And it can really be helpful to be like, okay, is this a problem or is it not a problem here? So I would definitely check out those resources online if you're a DUTCH provider, and if you're not, become one because they're free, even if you don't order it just.

00:51:21:08 - 00:51:38:19
Dr. Allison Smith
Yeah. And look at it against your perimenopausal patient lab results. I think it makes a lot of sense, especially if they have sleep issues or skin issues or, you know, joint issues or any of these that make you think inflammation, you know, or, new allergies and that sort of thing. So.

00:51:38:21 - 00:51:59:01
Dr. Jaclyn Smeaton
Right. Well, it's been awesome to cover all this today. I think there's a lot of nuances to perimenopause and menopause that affect women, the women that come into our offices that are asking us for help, that the connections aren't as clear as being just directly related to low progesterone or low estrogen. So I love that we have the chance to cover this topic in more depth.

00:51:59:01 - 00:52:00:00
Dr. Jaclyn Smeaton
So thank you so much.

00:52:00:00 - 00:52:02:16
Dr. Allison Smith
For your time. You probably go further in androgens next time.

00:52:02:18 - 00:52:19:17
Dr. Jaclyn Smeaton
Yeah, we need more time we can cover Anderson give you more part two. I will have to make time for that. Definitely let us know you guys as you're listening, if you want to hear more about androgen and inflammation and perimenopause as well. So thank you guys so much for joining us today. Thank you, Doctor Allison, for joining us.

00:52:19:22 - 00:52:37:23
Dr. Jaclyn Smeaton
If people want to get access to you and pick your brain about their patient cases, they can call in to DUTCH. They can book an appointment with you or with any of our docs on our team. And I highly encourage you guys to do that. It's a free service that we offer. It's unlimited, and you can get support on the DUTCH Test that you're ordering if you want to talk, especially you're newer in ordering.

00:52:37:23 - 00:52:42:07
Dr. Jaclyn Smeaton
You can talk them through with our provider team and everybody is fabulous.

00:52:42:08 - 00:52:45:20
Dr. Allison Smith
We left injured out on hormones and functional medicine.

00:52:45:20 - 00:52:49:19
Dr. Jaclyn Smeaton
So we heard and we get paid. We do. Life could not be better.

00:52:49:22 - 00:52:51:05
Dr. Allison Smith
Could not.

00:52:51:07 - 00:53:05:06
Dr. Jaclyn Smeaton
If you guys like what you heard today and you want to hear more, I encourage you to subscribe to our podcast wherever you listen to them and make sure you follow us on Social Outcast, and we would love to hear from you. And if you want to join us, we launch a new episode every Tuesday. So hopefully we'll see you next week.