Your Guide To Insulin & Oxidative Stress In PCOS Transcript

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Introduction to PCOS and the Summit

Hi and welcome back to the Beyond Infertility Summit. I am your co-host, Dr. Carrie Jones. And today I'm so excited to bring my good friend and PCOS expert, Dr. Natalie Underberg, and she's going to talk about two aspects of PCOS that you may or may not be familiar with.

Now, the first one, insulin you're probably familiar with, but I really want to pick her brain into the areas of insulin that maybe just don't get talked about.

And the second area is oxidative stress, which is a big two words that maybe you've never heard. However, the literature around oxidative stress and PCOS is exploding.

And so by understanding this as it relates to your fertility and your fertility generally, I think you're going to learn a lot. So, Dr. Natalie, welcome to the Summit.

Thank you so much. I'm so excited to be here. Well, I couldn't be more excited because it's been you talk about all the time, you know, PCOS being a huge endocrine disorder, massively affecting women who were looking to become pregnant.

That is your area of expertize. How did you even get into this in the first place? Yeah, so I have PCOS and so that kind of led me to my own journey of, you know, being told at 18 you're never going to get pregnant, you're never going to have kids.

And so as a natural, stubborn human that I am, I just decided I'm going to figure out how to prove you all wrong.

How PCOS Led to Clinical Practice

And then I'm going to do it hundreds of times over to just show you that you're really wrong. And so that's really what led me into this entire field.

And ultimately, it's funny, I almost did it by accident when I first started in practice, I kind of developed my own protocols and then just accidentally kept getting women pregnant over and over.

And I was like, Oh, there's actually a really good system to this. And I knew I was using like evidence based methods, but I didn't know how effective they were working until I just kept repeating the process.

So that's kind of how it all started, was my own stubborn journey and wanting to just show the conventional medical system that there was a possibility for women with PCOS and then ultimately learning through my own practice that this really is a duplicate able model that we can implement for women by addressing underlying drivers like insulin resistance and oxidative stress.

Well, I, I want to talk I love this because yesterday I was reading the article I believe it was on is on a conventional medicine site called MD Edge and it was the opinion of a PCOS practitioner, a doctor who wrote and said, we need to simplify how we diagnose PCOS.

The ultrasounds are getting a little crazy. We just need to focus on the androgens. So the acne, the hair growth in places we don't want, the hair loss, the testosterone, and we need to focus on that and obligatory or irregular cycles.

And I was like, I Google, I was with them. You know, I'm reading the first paragraph like, all right, Google. And they said, what we don't need to focus on at all and is not should not be included in the lab work are things like insulin

and I thought well now you've lost me if you know we're done.

And while there are different, you know, PCOS can be kind of a great scale insulin. True is not a diagnostic criteria, however it is a massive part of the cascade of PCOS.

So let's talk about it. 100%. So it's so wild. Nearly 70%, I would argue, maybe a little bit more of the patient population I see has insulin resistance with PCOS.

So it is the number one driver I'm seeing across the board of PCOS, but then also infertility. So insulin resistance inherently just activates this immune process within the body that triggers inflammation systemically, which affects all of our reproductive organs, but our brain, our gut, you name it.

But in return, the ovaries are also sensitive to disruptions and fluctuations in insulin. They're very sensitive little reproductive organs. And one example of what happens with this is the overproduction of androgens, like you were mentioning, that other practitioner talked about.

Why Insulin Matters in PCOS

Yes, they are very important. Things like DHEA and testosterone can be increased, especially in the presence of insulin resistance. That is, those little ovarian IGF one receptors.

But research also shows that uterine insulin sensitivity results can actually affect implantation. It actually can cause that recurrent loss and miscarriage.

So it's not that women with PCOS can not get pregnant. It's that oftentimes and not what I'm seeing in my own practice. But oftentimes what I see out in the world is that they can't maintain the pregnancy and inherently insulin resistance can be at the root of that and inflammation can be at the root of that.

So yes, androgens are a tiny piece of that puzzle right there, but they're not the problem, right? They can't be to blame, too. They are just responding to the systemic stimulus, which is inflammation and excess levels of insulin throughout the body and glucose throughout the body.

And I think that we're blaming things like hormones, hormones, just little receptors. They're little just little messengers telling us what to do. Right.

And so, yes, insulin is also a hormone, but the ovaries are very, very sensitive to insulin and they're very sensitive, sensitive to these fluctuations to it.

So that's the biggest thing I'm seeing. And when I'm coming in with these natural modalities like supplements and lifestyle measured measures, walks after meals or things like that, women are getting pregnant very quickly and they're maintaining their pregnancies because they're really, really getting down to the root and addressing the root cause of inflammation and androgen dominance in their body, which oftentimes can be driven by insulin resistance.

Which this is great. And I'm going to go I may go back to the beginning because in this same article, while they say you don't need to test insulin, their treatment option was, of course, metformin.

Metformin like me, I was like, hold on, make this make sense. So for everyone who's listening, who maybe has had a glucose test done, a lot of people are familiar. Oh yeah, I've had a few passing the post.

My doctor had me get a fasting glucose. Insulin was probably not on that sheet. It probably wasn't on the lab order. So can you explain what insulin is, what it does in the body and and then we'll go and then like maybe even the reference range being a little outdated, let's just say that.

So if somebody listening has their insulin in front of them or they go and requested or get it drawn on their own and they see this gigantic reference range.

So just sort of give us the one on one on insulin. Yeah. I mean, every cell in our body has these little insulin receptors on it that kind of is the gatekeeper for glucose getting in and out of our cells.

And if our cells are not responding to insulin and they're resistant to it, we cannot get the the glucose or the energy from our food and from our body into our cells.

So inherently, what's happening is if we can get fuel and food to our cells, our cells will scream at the brain for sugar. And we will constantly be wanting to eat more and more and more and crave more sugar, because it's a very smart response that the body has.

The body and the cells are always communicating together and the cells are going to scream for fuel. And so if the body's become resistant to insulin because of inflammation, oxidative stress, you name it, and that can cause kind of a whole cascade of issues.

It can overburden the liver, it can cause our adipose tissue to kind of rapidly store excess glucose, which leads to weight gain. It becomes this whole process.

So regardless of PCOS, I mean, infertility in general, but really any inflammatory condition you want to be looking at insulin and I personally like to see insulin below ten at the very minimum below ten for fertility purposes.

But ideally, I like to see it between like four and eight or even less than eight, maybe four and six if we're looking at a very tight range and I know I think you have your own opinions on ranges too.

I'd love to hear what you have to say, but I know I don't like to kind of give my patients a green light to conceive unless their insulin is under ten, because that's more of just a warning sign that there's still deep rooted issues that we need to address in the body.

And when they see they get an insulin drawn, the range is going to be way higher than that. I do want to put that out there. You're going to see the range go up to 25.

Yeah, but if you've. Got your bloodwork drawn or you go get it drawn and you think I'm good, I'm in the range, I'm 20, I'm 19, I'm 15 or 25 on the on the nose, definitely.

As Dr. Natalie said, we I agree with you that the tighter a single digit, the single digits, somewhere where I'm going for. And I do often see in the functional practitioners focusing on health optimization, which is what we're going for not only become pregnant, stay pregnant and have a very healthy pregnancy and subsequent birth and baby, that the that the lower that insulin is in the 2 to 5 in the 4 to 6 range is ideal.

So please don't let the reference range fool you that you have this big leeway. As she's saying, you might be really missing out on that root cause. It also don't let your practitioner tell you you don't need to have an insulin test done.

It can give you so much insight, as she said, into your health. Right. And say I mean, I even like to look at glucose and A1 C is also a picture.

Insulin Testing, Ranges, and Blood Sugar Patterns

I like to see them all together, even LDH. I like to see them all together to see what the picture is. How is your fasting glucose? How are you responding in the morning when you wake up?

Is your fasting glucose elevated? Is it low? Are you on this kind of reactive hypoglycemic rollercoaster where you're having these low lows and these high highs?

Are you in that early honeymoon phase with insulin resistance? So all of these markers can kind of give me a picture of really where you're at in the journey.

So you don't want to leave any of those out. If you're getting your if you're getting your labs drawn, you want to check fasting glucose, you want to check ANC and insulin.

And there's even more that you can test. But at the minimum, those three, in my opinion, for everyone to see where you're at and if you're in a good place, because low blood sugar can be just as dangerous as high blood sugar.

So a lot of times I'm seeing these really lean women coming in. They're athletes and things like that. They're not fueling their body enough for the amount of exercise they're doing.

And they're on these hypoglycemic swings where in between meals they are running on cortisol and adrenaline because they're pushing themselves through a5am crossfit workout.

And then they are not consuming enough between meals, between workouts that they are running on cortisol, and then their glucose is just in the tank half the time.

So that's also another problem which can drive up adrenal androgens, which can cause those PCOS like symptoms and the other picture of PCOS, which can be that more adrenal type or androgen type PCOS, which you might be a little bit of a leaner pattern, but those androgens are really, really high under the roof.

And that can be where I see that reactive hypoglycemic in those pictures there. And a lot of women don't actually know that your androgens, like your testosterone, can come in part from your adrenal glands and you have to they sit on top of your kidneys.

But when we think of testosterone in sort of all all world but medical world, we tend to think, oh, ovary, ovary, ovary we're getting is there are two other glands that also make testosterone and can be pushed, just as she said, to maybe be pumping out all that testosterone.

And therefore evaluating that may give you more insight just beyond let's evaluate your ovary. Yeah, absolutely. Absolutely. All right. So somebody is listening.

They have insulin that maybe is less than ideal. What are some top tips that you tend to give women looking to become pregnant? Yes. So some nutraceuticals that I've seen that work wonders for this population, but especially insulin resistance.

I love things like needles, vaccine and AC. Obviously you don't use it long term, but for short term use, it's amazing my or not at all. There's so much research to support that, especially for the PCOS population, things like Berberine, obviously in short term use, you don't want to use that long term either.

I always advise under the care of a practitioner whenever you can, so you can have specific guidance. But these supplements specifically are working extremely well across the board.

I mean, just anecdotally, the evidence that I have within my own practice for these, it's amazing the results I'm seeing with restored ovulatory cycles, getting insulin under control, allowing women to actually conceive but maintain healthy pregnancies, and making enough progesterone throughout their pregnancy to sustain that pregnancy.

So these supplements, when in therapeutic doses, I have found they're extremely helpful for reducing the oxidative stress in general, which is a part of that insulin resistance piece. Right.

Reducing the oxidative stress, but then also bringing down insulin levels, bringing down that insulin resistance and getting it under control. And I think one of the biggest pieces that's completely free and completely easy is movement using movement is insulin is actually something we've taught our patients.

So walking after meal, short walks, 10 to 15 minute walks, even a five minute walk can stabilize blood sugar after a meal significantly. So for women who are like, Hey, I can't afford that.

Oh, basketball, I can't afford that. And a C supplement. Okay, take the ten minute walk after your meal that is going to act as a natural form of insulin for your body is going to bring down that glucose after your meal and stabilize it, get it to large muscles where it belongs and not have it circulating in the bloodstream for long periods of time, giving you that postprandial fatigue, that post-meal, you know, dip in energy, that a lot of women as women, a lot of women with PCOS experience or or with insulin resistance experience and also just feeling that like just sluggishness in between meals, craving sweets between meals.

I mean, you're going to alleviate a lot of that by literally moving your body after meals. And then the next step is obviously resistance training, right?

So if you can lift heavy weights and put them back down a few times a week, it is going to drastically help your blood sugar levels. So that is something I usually find with my PCOS population.

They have to get to that point, right? Because usually the energy's not there at first their cells are not getting the energy they need or fuel they need.

So I'm not going to put someone in the gym right off the bat. I'm going to help them first balance their blood sugar through their walks, gentle walks and movement.

Use those nutraceuticals to get the glucose where it needs to be inside the cell and then start having them lift weights and things like that. So if you're at the point where you're listening to this and you're like, Yeah, no chance in heck that I'm going to go to the gym right now.

That's okay. Start with a walk up your meal. It will help you, I promise. And if you can walk up and down stairs, if you can get on a peloton or a bike, if you can do air squats, this works just as well.

So any of that move your body flail around, dance in your living room. I always tell people like whatever it needs to be to get your body moving, that will work.

So that that's my tip and trick for insulin resistance. So look into those three nutraceuticals and move your body. And how many times are people, you know on the phone all day?

I mean obviously, yes. In if you're maybe in an employee situation or a job, you may be on Zoom all day. So even the investment into an under the desk treadmill if that works.

But let's say you're not let's say you just happened to be on the phone or you're talking to your sister, talking to your best friend. Start walking around the house or walk around your apartment, you know, just going back and forth, making some loops, do some laps.

It doesn't have to be crazy, as she said. And that's what I absolutely love. And the research supports it, just as she said, in 10 minutes, 15 minutes.

We're at the point now where we have a dog and I train my husband that. So after we eat dinner, we take the dog for a walk. And even when it's pouring, pouring, pouring down rain where I live in Portland, Oregon, he will go, Well, at least we're getting our 10 minutes after like our 15 minute after meal walk.

I'm like, yes, I have trained you well. Yes, we're going to go get soaked, but we're going to go stabilize your blood sugar. It's so true. And I noticed it even pausing to the next day and how I feel, how I sleep, how I sleep is going to be significantly better.

One important, I think, symptom that a lot of people don't connect you and I probably know this very well, but the waking up between two and 4 a.m. a symptom.

Almost all my patients talk about that. They're like, I just don't get it. I wake up every night between two and 4 a.m.. I'm like, That's your blood sugar and that's insulin resistance.

When you get your blood sugar under control, if you have a high protein snack before bed, if you walk after your dinner, that should not happen. And it usually stops right away.

And I see sleep scores go through the roof. People start sleeping through the night simply by walking after dinner and having a higher protein snack before bed.

It just works across the board. So that's that's something that I think you guys can all watch out for, too, if you're listening to this is if you're waking up in the middle of the night, you need to implement all.

Of the things. All right, now let's go with oxidative stress, because I think oxidative stress is one it's a mouthful. And two, not a lot of people have heard of it.

So teach us about that, how it relates to PCOS and fertility.

Lifestyle and Supplement Strategies for Insulin Resistance

Yeah. So oxidative stress is kind of this. I like to describe it as like a fire within the body and it can be driven by chemicals in the environment, pollutants in the environment, endocrine disrupting chemicals, fragrances, you name it, really.

It's seed oils, inflammatory foods. It's just creating oxidation within the body, which is very damaging to the cells, but especially to the ovaries. The ovaries are so, so sensitive to oxidative stress in general.

Like I said, there are these delicate little reproductive organs are so sensitive. And many studies actually showed that in women with PCOS, the levels of oxidative stress are twice as high.

So I believe that this is actually a major driver of PCOS and it even goes back to the womb like when when mothers of children with PCOS or in the womb, we know they may have higher levels of androgens, higher levels of stress, maybe higher levels of trauma, and then trauma and childhood can also cause stress in the body.

And so this is just priming the environment to be even more or I should say, less resilient to things like oxidative stress or our bodies are already not in a great place going into it.

And then genetically there's all these different genetic variants that are associated with PCOS that make us more prone to specific things like insulin resistance and whatnot.

But all of these chemicals that we're exposed to throughout the course of our life are then affecting all of our cells and especially things like the ovaries and the liver and things like that, which I see the biggest impacts in those specific organs.

In in the case of PCOS, specifically. So we have to be really, really cautious. I always hear women say that they feel like they have to work twice as hard as someone without it.

Right. And it is somewhat true. You do have to somewhat work twice as hard as those around you because you are somewhat swimming upstream. Right. But avoiding those chemicals and those environmental toxins as much as physically possible is going to reduce the toxic burden in the body.

And that is extremely important in the case of managing things like oxidative stress. So I find it especially challenging for women who work. I was just telling someone this this morning who work in very specific lines of work or careers, hairstylists specifically, they're exposed to excessive amounts of chemicals on a daily basis.

They have bigger, higher risk of things like breast cancer and different things like that, but also when with PCOS, they are also in these professions that are exposed to a higher amount of chemicals.

Nurses especially I was just thinking about this in the hospital, they're constantly being exposed to chemicals,

medications, hand sanitizers, cleaning products because it's a super sterile environment and then obviously exposed to all these other, you know, viruses and bacteria and things like that that the average person is not.

So I'm seeing a significant increase in nurses as patients because they are also under so much traditional stress as well, which is causing oxidative stress in their body.

So it's there's there's a plethora of issues that can lead to this. But one thing to note is that oxidative stress can affect both men and women. So men are not immune to this.

So the fertility piece obviously comes in. There's the male factor and female factor of male factors. Just as important, we have to consider that. So your male partner, it's just so important that they are reducing their load of oxidative stress just like you are, even though they don't have ovaries, their testes are just as sensitive and their body is just as sensitive as ours is.

So and that's something I think that's not also being considered is how sensitive men can be just as much as we are to these chemicals and toxins and stress. Yeah, I love that you're talking about this because there if you type in, for example, if somebody listening is maybe more like that sort of researcher, you know, they they love Google.

They love getting into the the research for themself. If you typed in oxidative stress and PCOS, you're going to see a lot of science coming out as they're realizing, just as Natalie said, how sensitive the ovaries are, how sensitive the testes are, and the negative impact that it has on a developing egg, as an example, or a developing sperm, for example.

So what Top Tips, fix us, help us. What do we do? So we know that oxidative stress significantly impairs mitochondrial function, so we have to make sure that we are supporting the mitochondria as much as possible.

A red light therapy is an amazing way to do that. I love red light therapy. I do it every single day, but also a nutraceuticals like an AC. Once again, I love curcumin.

I love resveratrol.

Understanding Oxidative Stress in PCOS

That's amazing for oxidative stress, picking marginal is really good for oxidative stress. These have all been kind of shown to reduce inflammation and oxidative stress in general, infrared sauna.

So red light is amazing. But I love infrared sauna for a targeting mitochondrial function. But allowing our body to release the toxins that we are stored, that are stored in the body, that may be stoking that fire from within and causing more problems.

So if we are constantly keeping those detox detox pathways open and eliminating, that's going to help a ton, especially for women who are wanting to prepare for pregnancy and fertility and things like that.

We want to make sure we're extra sensitive to that. And then just fueling the body with really quality, quality foods and B vitamins and things like that that are going to fuel all of the cells in our body.

So obviously, the mitochondria are very sensitive to stress as well. So managing stress, meditating is really helpful. So daily meditation movement, obviously gentle movement, figuring out where you're at and what your body can handle because overexerting are over pushing your body and stressing yourselves even more.

It's going to create more of an issues. You have to really listen to your body in this process and then removing the toxic chemicals and endocrine disruptors in your environment as much as you possibly can through that process, because you don't want to make your body work hard that harder than it needs to while it's trying to prepare for pregnancy or prepare for, you know, the next phase of your journey, whatever that may be.

So those are some of my my top tips and solutions is also make sure you're hydrating right? So getting enough water through through the body, through the cells, through the kidneys to make sure we're able to flush the toxins that we're exposed to.

And then re minerals aging. So a lot of people are deficient in a lot of key minerals. So making sure that you are focusing on minerals through this process, because that's a huge part of allowing the natural detox pathways to work efficiently, is flushing with fluids, flushing with minerals, and making sure the cells have what they need to function optimally.

It's interesting. I love that you said Patogeno. I mean, I love everything you said, but technogym all and transverse are resveratrol. I was just reading about yesterday in regards to endometriosis and how because of their anti inflammatory effect there, it's been studied as a nutrient to help reduce the inflammation.

Well, this particular talk is that endometriosis is related. There are a lot of women with endometriosis who are struggling with fertility and in a lot of pain and a lot of inflammation.

And just knowing that many of the key things that Dr. Natalie said reduces inflammation. So it feeds multiple birds with one seed. Right. It will help with insulin.

It will help reduce inflammation and therefore reducing oxidative stress, help the PCOS, reduce the endometriosis pain and inflammation. Yeah, it's a win win win sort of all around.

Right. I do want to go back to red light therapy for those who are new to red light therapy and have no idea what you're talking about. Well, what do you mean, red light therapy?

Yeah. So this could be a combination of near and far infrared light. So there's several different ways you can get this. You can get this from, like a little red light panel.

It really targets deep within the cells. You can do a big panel like I know Juve has a big panel. A lot of the infrared saunas now have red light panels, but ultimately this affects everything at a cellular level.

So it might be pain, it might be inflammation, it might be oxidative stress, it might be your immune, your natural immune response.

Reducing Oxidative Stress and Supporting Fertility

So red light therapy can really support everything. But there's also amazing research on red light therapy for fertility outcomes. So they've actually put it in the category of the assisted reproductive technologies, and there's research showing that it significantly improves fertility outcomes with couples who do even just 3 to 5 minutes of red light therapy a day over the ovaries and over the reproductive organs.

So it's really interesting. I actually kind of put that in some of my fertility protocols is get one of those little red lights I love, like the womb box or the jujube or whatever is in your budget, obviously, and do that for 3 to 5 minutes a day and it actually can improve your reproductive cells and your reproductive outcomes, which is really, really amazing. So it's, I would say newer in the last 5 to 10 years and like the biohacking world, you know, the thought of bio modulation.

But I think a lot of us practitioners have been doing it to experiment on ourselves for a while and I know I noticed great improvements in my skin and my energy.

When I do it, you can do it over the thyroid to help thyroid function. I'll put it over my stomach to help just with with gut health overall. So a lot of people do it for targeted areas, for joint pain, for endometriosis.

It can be really helpful on that topic. Also, high dose ginger is really helpful for endometriosis. I love that a lot of people even do like a ginger oil in a capsule.

And take that, it's quite a bit more potent than a ginger powder. And so we have so many options for that. But red light therapy is amazing. I've seen it work wonders and even for patients with like M. S for like M. S lesions, you can put it over or behind the spine if people have more lesions or the brain.

So lots of really, really good things there with red light therapy. I am a huge fan. I when we talk about the mitochondria, you know, we all learned about the mitochondria of course, in school, the cellular powerhouses.

Yeah. And it makes ATP, you know, the energy she's been talking about. And one of the steps to make ATP, you have a thing called cytochrome C and it has a photo receptor on it, photo meaning light.

And so as she's talking about how red light therapy really supports the the mitochondrial function, it literally is giving the beam of light to help that cytochrome c part get you to the next step so that you can make ATP, which I just think is the coolest thing that our mitochondria are said.

You know what, I really like light and of course that can include sunlight as well, but not does it work for everybody and it surely doesn't work for those of us in the Northern Hemisphere right now in the winter.

So then we red light far near-infrared light is another great option. And I have also I heard seen online the biohacker boys who are using red light therapy to put over, you know, their reproductive organs to improve sperm outcomes or testosterone outcomes and circulation and circulation. Yes.

And I thought, yeah, you know, if we're putting it in our lower abdomen, pelvic area, ovarian area, then of course they are probably putting it down there to improve their outcomes as well.

So good for them. Yeah, 100%. I know. I'm like, yes, everything women do, men can do. Also, we do not neglect the men that the sperm is so important. Young men are also very sensitive but also very receptive.

Like it is amazing how quickly I can see results on a sperm analysis change in just 90 days with a change in diet, reduction of stress, some B vitamins.

It's like it's not even fair. Sperm bounce back so quickly. It's not fair. Yeah, it it makes a really big difference. All right. Well, I absolutely love that you came on the Summit today to drop all of these amazing clinical pearls of knowledge, tell everyone where they can find you.

Yes, I live on Instagram for the most part at the PCOS Doc and then also my website, PCOSdoc.com. I have several different courses and programs for one of PCOS, but then also pregnancy programs.

Red Light Therapy, Male Fertility, and Closing Remarks

So pregnancy prep academy is my flagship. If you are wanting to prepare your body for pregnancy and then I do have my own supplement line as well, so you can access that all through there.

I would love to connect. Then I hope everyone can tell the absolute passion that comes through when she talks. So again, like I said, thank you so much for coming on the Summit today.

We really appreciate it. Thanks so much.