Podcast Introduction and Guest Welcome

It's hard to not have AI as part of that conversation. Dr. Google, Dr Claude, and Dr Gemini are sitting there. Are they doctors? No. are they intelligent?

Are the good at stringing sentences together? Yes. They good looking at large amounts of data and pattern recognition? Absolutely. Can they do things that we can't do?

Your health is shaped by more than symptoms. Through real stories and expert insights, we explore how your genetics, environment, and daily choices affect your wellbeing.

We uncover root causes and share practical tools to help you find the healing you need. Welcome to the Forum Health Integrative Medicine Podcast. You guys probably aren't used to me as the exclusive host and I'm terrible at it, but I am looking forward to a great conversation with Dr.

Weatherby. Dickon Weatherbee is joining us. He's from Optimal DX, a naturopathic physician. You said 34 years in Oregon since you've started school, I assume.

And I especially excited for this topic because this is where we get the information about what's going on with our bodies. One of the areas that we get information from.

I think it's a very key area. Absolutely. And perhaps one of areas we maybe over-focus on, because that's what medicine has pushed us to do, is to over focus on objective data and then to pigeonhole it in a way where it is not as useful as it could be.

That's exciting about what Optimal DX has done. So why don't you start out by telling us about Optical DX.

What Optimal DX Does

Let's start there. Yeah. So Opt-On DX is an online software platform for practitioners. And, you know, I've been in the field for a long time and I really dedicated my work to be working with practitioners, so I want to make that very, very clear that this is a practitioner-centric web platform.

Basically, what we do is we take patient standard blood work. So the same chem screen, CDC, you're already ordering, and we run it through an analysis engine that interprets the biomarkers against what we call functional optimal ranges instead of the lab's reference ranges.

And what comes out is what call a functional health report. It's anywhere from 50 to 60 pages, presents biomarkers on a scale of optimal, above and below optimal above below standard.

So you kind of get a nice graphical view very quickly of where that biomarque lies within a range. And then we do an assessment layer where we're flagging patterns of dysfunctions, areas of nutrient needs, all those sorts of things.

Then we take all of that information and we provide a list of what we call health concerns. Now we have to be very careful that we're not diagnostic here and we are not treating disease per se.

So we generate a lists of health concern. These are really areas of support that the practitioner should be paying attention to. And then they can take those health concerns and using a treatment plan builder, start building out a bespoke treatment plant for the patient based upon supplements.

So we are also integrated with Fullscript, Designs for Health, and we have a small database of some of the bigger companies in terms of their product lines.

And we recently have an AI-assisted recommended actions, so diet, lifestyle, exercise that are built on a big database knowledge that we've been building up over the last two years.

So you take all of that, build a bespoke, very personalized treatment plan for the patient, and then that gets encoded into a health improvement plan.

So the way I kind of describe it, I hate to use kind like a sausage analogy, but basically we're taking raw material, the same lab work, same report, extract the biomarker data, we create at the end a pretty strong action plan, for a practitioner to present and use with their patient.

We're used by thousands of practitioners in 87 different countries. And we're working closely with about 280 different biomarkers, including quite a lot of functional calculations and ratios and things like that, that we, we calculate within the software itself.

So you can actually take a, a standard chem screen of 105 biomarks and with all the ratios of things, would bulk that up to about 140. and then use that.

So, you know, we do all the work for you, so you're not having to sit there and work out what the T3, free T-3 to reverse T 3 ratio is, or the Homer 2 scoring, Quickie, and all that kind of stuff.

We do it all for use. Right. For our patient listeners, I think it would be nice to help them understand the difference between a normal reference range and what's optimal.

Speak to that a little bit for me, because I don't think. I mean, The real thing that underlines it is that standard lab interpretations, I think, are actually often sort of incomplete.

So we took it like how the ranges get built. A standard reference range. If you're looking at, let's say, a report from Quest or LabCorp or from your hospital, the range that you are seeing are very specific to that particular lab.

Believe it or not, they change. For instance, I always say this, that I could be in Maryland, for instance. I can get my blood drawn in maryland at a local hospital and get the chemistry and cbc.

i can take the exact same blood, fly it to Los Angeles, have a lab in Los angeles do it, and the ranges would be completely different. And the reason for that is that they're based on statistical ranges.

So the lab takes everyone who gets tested. So then the Maryland lab will be using Maryland database of patients. The LA lab we'll be in LA and they trim the top and bottom few percent and call the rest normal.

But the people really getting their blood drawn are not a healthy population. They might be healthy for the biomarker that they're looking at. But in general, that's not healthy populations.

So you're really being compared against what we call a sick average.

Why Optimal Ranges Matter

And then I think the second thing that is really different is conventional interpretation reads markers one at a time. So if you've had that experience sitting in with your primary and, you know, they're going through and your cholesterol looks good, your blood glucose is normal, that they are looking at it one biomarker at a time in isolation against a statistical range, Whereas what we do in functional medicine approach is really, where does that marker sit within a tighter optimal range?

So we have that little gray area between optimal and the higher low. And to me, that's what's happening within the

physiology of the patient. Then also, how does the biomarker interact with other biomARKers around it?

And I think really it's those two things is where I the clinical story lives. And it is when you have that ability to be able to look at blood work outside of just the standard range that they're looking at.

And then also the interconnectedness between blood biomarkers. I think there's a huge story to be told and uncovered. Absolutely. The examples that I'll use with my patients because I say, yeah, I know you're normal, but that's not the goal.

Good. We have a region close to us that there's a lot of oil work. There's lot I would say blue collar work and when patients get their lab work done here in Utah Valley, the reference ranges for the AST and ALT are quite low, 36 and 38 or 36 or 42. But if they were to go just three hours away to where a bunch of roughnecks are working on oil rigs all the time, The reference range for AST and ALT now, these are the things that measure your liver function.

The range goes up to 78. In Utah County, almost no one drinks alcohol. They're all drinking alcohol, right? And so when people will see their liver enzymes go up 52, they're like, is my liver going to make it?

Well, yeah, probably so. Let's just figure out what it is. What are you taking that's irritating your livers? You're not going Yeah. Right. But so, and another, I think this is a better example, the reference range for testosterone for women has historically been done based on that we test women that are over 50. So, of course, it's going to be low.

It can't possibly be optimal if you're comparing yourself to another 57-year-old woman. it is going be to low, right? So if we built the Reference Range in this bell curve based women who are 25 to 35, we'd have a totally different set of numbers.

Yeah, exactly. Anyway, I think that's great. And I that what you are doing by both figuring out what is optimal rather than what's normal. Then the real key, and I this is even harder, this elusive even to physicians, is saying, well, but we can't look at these as individual single things.

It would be like looking at words individually and asking what they mean rather then poetry and what it means when you string them together. Yeah. I'm getting lots of great analogies here.

That's awesome. Thank you. Yeah, so I love what you're doing. I think it's fantastic and both for physicians because maybe we've been trained in the one thing at a time approach and for patients because now they can actually get something that's truly going to be a guide.

Yeah. So let's talk about the patients. Patients come in and I presume that you've seen patients through your career and they come to you because they feel dismissed because, they've been told that their labs are normal and yet something's still wrong.

Yeah, it's like they're told everything looks fine, but they still feel terrible. What areas do you, what areas in there do say, oh yeah, this is often something that our tool can help?

Is it with the nutrients? What things do find are most powerful? At Forum Health, we uncover the why behind your symptoms. With advanced lab testing, hormone optimization, and cutting-edge therapies, We help you heal and perform your best.

And now, through shopforumhealth.com, you can access physician-grade supplements trusted by our providers, supporting everything from adrenal health to focus and longevity.

Learn more at forumhealth.com and explore supplements at shopforumhealth.com. Well, let's take a look at thyroid. I think that's a really good one, right?

So because I the thyroid lends itself to probably the number one symptom that most people are experiencing,

which is fatigue and low energy and also weight gain.

So, let's say a patient's TSH 4.2, the lab cutoff is around 4,5. They're considered to be normal.

Thyroid, Fatigue, and Trend Analysis

The physician will look at that and go, your thyroid is normal, but when they start looking at things symptomatically, they're off. So they are clearly symptomatic of some, they may not have overt Hashimoto's or autoimmune thyroiditis at that particular time, but their thyroid is not functioning properly.

Yeah. They're cold and tired and they're saying, what's wrong? I just feel so tired. And my husband won't let me turn up the thermostat. But my doc says I'm normal.

Yeah, so functionally I would say, and this is backed by quite extensive research that we've done in the field, I think that you would want to have your TSH high ones, low twos.

The patient isn't imagining their fatigue, but the measurement system isn' really designed to catch that early drift, right? And I think that's the point is also, and as we should have mentioned this earlier, I thin one of the powers of looking at biomarkers this way, too, is trend analysis.

It's not about just a snapshot of where you are today, which of course gives you a lot of really amazing information, but really it's the drift. It is the trend.

Are you trending towards diabetes, thyroiditis, whatever it is, or are you trendy towards relatively being optimal? In fact, glucose is probably one of those great ones to look at because You could do a snapshot of someone's glucose in their 92, which I think is still starting to drift a little bit too high.

And then if you look at historically, over the last five years, they've been 82 to 84 to 85, slowly creeping up. That tells you one story. But if they suddenly come in at 97, and then you've seen their glucose last time was 87, it's only been about six months, that tells another story, almost more of an acute progression.

So I think it's really important too is being able to evaluate biomarkers and the trends of biomarks and patterns over time. So, you know, I, going back to that thyroid issue is like, the measurement system that standard medicine is using because of the statistical ranges that they're looking at, it really doesn't catch that early drift.

And I hate to use a car analogy, but car analogies are actually pretty good. I would say this is a check engine light issue, right? The conventional medicine is waiting for the warning light.

Functional medicine, is reading the gauges before the lights ever come on. Well, you're, I think you are being more kind to conventional than I, would be.

And, and I suspect that oftentimes conventional is, waiting to break down at the side of the road. Yeah. Yeah, okay. Okay. I mean, yes, I am being kind, but yeah.

So it's a sad state of affair. In fact, one of my early mentors always talked about this concept of the nightmare of yet. It's like, you don't have diabetes yet, so we're going to wait until you do, and then we know what to do with it.

Absolutely. We've got insulin, we've go everything that we when we have a disease to treat. Because you have all these things and you try to treatment and the insurance won't pay for that treatment.

Why not? You're not sick enough. Come back in six months when you're sicker and they'll pay. It is mind boggling. Yeah, we're going to wait until we have to take your gallbladder out, right?

Yeah. They're saying we are going take control. I'm not going wait. And they're finding that this sort of intransigence of the industry of medicine and their insurance and they are just saying, no, wait, I am not gonna wait for that.

If I can do it with an herb, I'll do that. Or if I have to get a compounded medicine, i'll just pay for it myself. But I'm going to treat this because yeah, the optimal DX has shown me that I am trending in the wrong direction and that's a problem.

And yeah sure I don't have diabetes yet, but even if i have very early pre-diabetes, let's be proactive. Heck yeah. Absolutely. Tons and tons. I mean I think the problem is they don' know what to do.

Right. I mean, really, they wouldn't know what to do, and I think that that's part of the education that we do for MDs that are coming and working with us.

And I thing one of wonderful things that is happening in medicine right now is that functional medicine is having its day in the sun. I and think a lot of practitioners are realizing, wait, hold on, it's a check engine light issue.

It's that kind of thing as opposed to let's wait until the car is broken down. but they're scrambling. They don't know what to do. Sadly, a lot of it is what we call green allopathic medicine.

Oh, we're not going to give you metformin, but we are going give berberine. We're going use it in exactly the same way, and we will use in a green way.

Which I guess is fine. I actually love that term. You think of it as, well, it's a step in the right direction, but really, is it? Or is, have we not changed the mindset?

Well, yeah, you're right, Andrew. It's like, the philosophy has not change. Right. And that's what has to, underlying philosophy, has changed for there really to be a resurgence of health.

Don't we have to get to a point where we recognize that You don't just wake up one morning as a diabetic. You might actually wake one up as diabetic because at that point you're getting diagnosed as the diabetic, but the trend towards being a diagnosed diabetic is a long one.

Why don' we have ways to be able to assess it ahead of time? There was an analogy that I used. My family lives in East Anglia and we went to an island just off the coast of Suffolk where in the 1950s the US government came and they put in first over the horizon radar detection so that they could actually detect Russian missiles before they were actually able to see them kind of in the sky.

And it was amazing technology at the time. Obviously, there's way beyond. So I'm kind looking at what we do is like seeing over the horizon. We're seeing things that are emerging long before the actually turn into the disease that gets treated allopathically.

And so this is really early warning detection systems. It's the red light, it's light bulb, whatever analogy you want to use. And some practitioners that are new to what we do look at the report and go, holy cow, my patient's about to die because all the warning lights are going off.

Ferritin, Iron, and Inflammation

Multiple systems are out of balance. So we have to work with them and go, wait, hold on, this is not about disease, they're not going to die. This is you using your clinical judgment to tease out what you know about the patient to start putting a plan to bring all of this back into balance, back in to optimal.

And part of that is recognizing the interrelationships between the patterns that you're looking at as well, the metabolic map, so to speak, of the human body.

So, it's very exciting work. That's really the paradigm change that is happening and it is interesting because I think it comes from the patients, more so even that it has come from practitioners that have had their eyes open and that we should not be looking at disease because you shouldn't get there.

We're looking a health. And what you're describing, because, you just said, no, they don't have a disease. Yeah, their health is slipping and so let's focus on the health which is a totally different way to look at it, right?

It's like spending enough time with your spouse, going on a date periodically, writing a note and saying, I love you, rather than waiting until you need either a divorce lawyer or marriage counseling, that proactive approach to your health and just saying, oh, yeah, I know I like to eat Reese's peanut butter cups, but I noticed that if I do it very often, it's not good for me.

I'd like a glass of wine, so I'm going to simply do this less. Some things you have to do, not at all. But some things, you can simply say, Oh, have moderate that, if you want to be healthy.

as opposed to waiting until the doctor finally says, well, today's the day you actually have diabetes. You've been trending towards that for 25 years.

So, I think one of the sad things too, you know, is that oftentimes people have gone down the allopathic route, not getting the results that they want.

And then they've almost waited too long to come and see a functional medicine practitioner. They're now expecting us to be miracle workers. And that's a really difficult situation.

I've seen the trend in my profession. And I graduated 28 years ago. You know, and I have seen that the progression in, in in field naturopathic medicine to be more geared towards pharmaceuticals, peptides, injectables, more heroic methods than I ever had when I was first starting out.

And I think that's partly because a lot of the patients are waiting until it's a little bit too late. And hey, berberine ain't going to cut it, unfortunately.

Maybe they do need a short course of metformin in order to kind of put the metabolic break on. So I would say if you're a patient out there listening to this and you are experiencing some of these symptoms that are not necessarily connected by a regular medical profession, go find someone trained in functional medicine because they are designed to look sort of between the cracks, you know, in the crack between systems and are really good at finding out what's potentially going on with you and helping you make that correction early.

And slow work is good work, right? It's okay. Sometimes we'll do something heroic, but the process of getting healthy is still going to take a while and that's good.

It is like learning to play the piano or learning a new sport. don't expect to be great at it after six weeks and a lesson with, you know, even if you invested the time to sign up for the lessons and you're going to do the thing, You're still not going be amazing at right away.

And that's your health, is make some big changes if want to, but just make those small incremental changes on an ongoing basis and then you'll regain your help.

We've already sort of talked about this, how functional medicine connects the dots. What do you, anything else that you would say with respect to either normal TSH versus symptomatic hypothyroidism, iron ferritin patterns, are there things where you have examples of connecting these dots of, I feel this way, my labs say I'm normal, but You bring ferritin up, it's such an interesting one because the range for ferretin is incredibly wide.

It's ridiculously wide and so you might have a woman coming in ferrotin level of 18, the low normal is 13, let's say. doctor takes a look at it and goes, yeah, you're fine.

Are you? No? I mean, the storage of iron… I'll do it in a period this month. She'll be fine, but as soon as you leave… Right. Her hair is falling out, she's freezing, She's borderline anemic.

I think she probably is an anemic from our window. I think ferritin is an interesting one. Iron is interesting. Ferritine

on its own, I can fool people.

It's an acute phase reactant as we know. What would you say about high ferretin? It is inflammatory marker. Is there a normal high that you would still say they are at 420 or something?

That's a little bit too high for me, but I would look at it in connection with obviously the symptomology. Are we seeing, are you having joint pain, muscle ache?

I mean, is the signs of like fire in your joints and that sort of thing is inflammation symptomatic at that point or is it subclinical inflammatory systems that may or may not necessarily be raising their ugly head?

But I'd also look at some of the other patterns of inflammation. I mean, fibrinogen is another one. It's another acute phase reaction that can start to rise when there's inflammation, HSCRP is not one of those.

Again, I think the standard range for HS CRP, is too high. Right, it needs to be lower. But, 0.75 for men and 1.3, for females. You're starting to look at what are some of the additional biomarkers that inform us around an inflammatory process in the body, and are those elevated?

Another issue with ferritin potentially is iron storage issues. For males especially, I wouldn't say it's necessarily genetic hemochromatosis, but I have seen that definitely.

They might be drinking well water that's got a lot of iron in it. They're cooking their marinara sauces in cast iron. You know, they're getting a little leaching of the iron, in fact, one of my very first patients I ever had when I was in practice, I made the mistake of not looking at his labs before he came in.

Cortisol and Hormone Interactions

It was long before the software and the work I doing at that time. And he come in, his ferritin was 1,800. Oh, wow. And he was, yeah, my face, I had my consult with him.

I looked on and go, holy cow. Luckily his ALT was like 250. So I knew that there was definitely some issues there. And we sent him out for some more in-depth and he definitely was.

In fact, he genetically had a very mild snip for hemochromatosis. He was absorbing and holding onto iron that was starting to affect his liver and some routine phlebotomy.

Are you doing some phlebotomy? told them to stop using the cast iron. The other one would be just sort of anemia in general. We always focus so much on iron deficiency anema, but there is the other forms of nutrient anemias with vitamin B12.

A low hemoglobin will tell you that the patient is anemic. It's always interesting to me that practitioners are looking just at the CBC and using that as a diagnosis of, of anemia.

Whereas you really need to know what kind, what is the anemone? What it's like just saying someone's anemic is like, yeah, right. Is it microcytic? Is that right?

Macrocytical, microcephalic. It's the iron is it, you know, there's tons and tons of different kinds. So then, so then you're looking at MCV level, low MCP, high MCB, small, obviously pointing towards iron, large pointing to what's vitamin B12 and that sort of thing.

And then because you see these patterns, then you can make recommendations that are going to make a difference in their nutrients and they can just consistently and slowly improve without having anything heroic because they're not being exhausted when they have a severe anemia and you're having the risk of a transfusion or something.

Right. Talk to me about this, because I take care of a lot of patients that have chronic fatigue secondary to Lyme or mold or lung COVID, Epstein-Barr, those sorts of things.

Inflammation markers, I do, and maybe you'll say, yeah, we don't really pay attention to that. And that's fine. I wouldn't expect that you should. But I did a a of chronic inflammatory response panel testing with TGF-beta-1, VEG-F.

MSH, are those markers that your software is looking at as well, or is that maybe not? Because it's such an esoteric uncommon test. Yeah, it is. It is, we have some of them in mostly just to be able to include those in what we call our blood test results, so you can actually see them.

We're not plotting them against optimal because in most cases that pathology markers Is there an optimal level of those biomarkers? I don't know. I mean, maybe we could have that conversation offline, but you know, I think the other interesting thing in this work that I've been doing for so long is the number of in-depth panels that practices are running nowadays.

Right. Do I even need to do that? Because if I did this other thing, that would give me the same data. Yeah, and I think the trend nowadays is to potentially over-test.

And this was something that we were talking about, I believe, even before we got on the call. This idea that, we need to be testing thousands of different biomarkers in the hope that something's going to show up.

I had these amazing mentors when I was at Nature Pathetic Medicine, one of them sticks to me, he said, never order a blood test unless you know what to do when that blood tests is out of range.

Right. If you can't tell me what you would do if someone has a VEGF of whatever, don't run it. Because what your doing is your shooting in the dark, you're costing your patients a lot of money, potentially for a test that may be not actually that helpful.

So I'm not saying that to you obviously, but I am saying to a of the practitioners out there because believe I mean I see incredible panel. I mean, these must be costing thousands of dollars.

Oh, yeah. Yeah, for sure. And I wonder sometimes, you know, more is not better. Mo ain't better, it's, I think we can do a lot with, just a, wouldn't say a basic panel, but, really decent comprehensive panel and then if those results are coming back and you're still not really sure what is driving that inflammation, run an ANA, run a rheumatoid factor, but use that discretion.

Finding inflammation is not hard. When I find those values useful, for example, if a person has Bartonella, they likely have a very high VEGF. they're going to have to pay out of pocket to do a test for Bartonella and that test is going cost them $800 and their insurance will cover a VEGF, right?

So that's sort of usefulness, but to find inflammation, well, they are going have a high sed rate, a higher CRP, something is gonna show up, ferritin, and you already know they have inflammation because they told you their joints hurt and they were swollen, so here's one that I think is useful for our listeners, cortisol.

Talk to me about cortisol because there are so many people that are afraid of it and they think it should be low. And then there're people I think understand the range and that sort of thing.

Then there people when it's high, they're like, well, I feel good here. So talk to about that a little bit. What's your opinion on it? Well, the issue is the testing methodology that you're using to measure cortisol, obviously we're a blood chemistry lab.

I mean we are not a lab, we were an analysis system around blood. As soon as you put a needle in someone's arm, their cortisol levels are going to spike, right?

So just subjectively, the actual act of testing somebody, you're going get a cortisol increase. Now, do they build that into the range? Maybe. I don't know.

Then we have diurnal variations. When is that cortisol taken? So I think cortisol from the blood is actually a little tricky because of so many variables that go into the level itself.

Thyroid Antibodies and Lab Standardization

We do what we call kind of almost like a total cortisol or the AM cortisol is kind what would prefer if we were going to be able to do testing because most patients are, I would say about 85% of blood panels that get loaded into the software are fasting.

So we can presume that if there's a cortisol there that it's going be on a fasting sample. Now occasionally we'll get one where someone has also done an afternoon cortisol on the same day, then they can add that in and now we've got an AM and a PM cortisol.

So, I think the testing methodology is slightly problematic. Now, of course, then there's the salad. The time of day, whether they ate, what they did for the three days previous.

There's so much that goes into that. Yeah. But then, we're not doing salad very cortisol. When I was in school, obviously, the first AS, was it called ASA?

Adrenal stress, no, ASI, adrenal stress index was kind of developed in the mid 90s where they were doing the four, you know, with the DHEA. And then you got that stand, that very classic graph.

I think that's actually a really almost potentially a better way. Then you've got dried urine and then there's the cortisol derivatives and all of that stuff.

It's a little tricky. I would say that it's an important biomarker to look at in terms of sort of overall metabolic function. You know, I think you can look up the interactions of cortisol with other biomakers.

A classic one would be looking at it in the context of thyroid as well. So let's say a patient comes in low normal thyroid and they have a relatively high cortisol from chronic stress.

You know, the cortisol is doing two things there. It's impairing the conversion of T4 into active T3. So maybe pushing that T-4 more towards reverse T 3. One of the nice things we do the free T three to reverse to three ratio, which you can kind of see what that's looking like.

And at the same time too, I think high cortisol, is suppressing TSH centrally. You kind got two thing going on is that the, cortisol's really impacting on the thyroid function.

So does your algorithm look at it in the context of DHEA as well? Yes. Yeah, it does. Typically you're seeing, you know, high cortisol, low DheA, hi DHeA.

You know it tends to have that and we do the DHA to cortisol ratios, which is kind of nice. I don't think it's anywhere near as comprehensive as it is if you are doing salivary or sort of urine, sequential urine testing.

over time, but at this point, it's a very nice snapshot. That's something that could be submitted to your tool. Like if that data existed, that's not something Optimal DX can analyze.

No, I was very clear when I first got into this work is like I realized that there was a lot of these, what we call sort of esoteric or the Jenova tests.

And I, you know, I very clearly said, there's a lot of work still to be done in blood. So I'm just going to stick in that lane. And there are some really amazing people out there that do the other stuff.

I am not doing the lime or any of that. So yeah, I look at this as that first test that everybody should get done. It's a first pass. So, you know, really good general view how the metabolic systems are functioning in this body.

Is there a menu of you can do the basic or the more complex? You said there's 80 biomarkers. If I knew now what I know when I was building the software, I would probably build it in a slightly different way.

I started building this in 2011, and so the field has really emerged. Like I said, it's tons more biomARKers than I ever imagined putting into the One of the things that the software doesn't do is it doesn' judge the biomarkers and then kind of make an assessment.

It's like the more you put in there, the better the output is going to be. So it's, it is, The assessment side is probably based around I think 110 biomarkers that we're looking at.

And these are all the very, I would say relatively common biomARKers, that provide the recognition. More like a CMV, CBC, thyroid. Yeah, then you know pretty detailed hormones, pretty detail thyroid, a lot of cardiometabolic markers.

Are there labs that would point towards graves like the TSI? Yeah, definitely TSI. So we're looking at, I think the T… There's probably not a lot left out on the thyroid side.

No, thyroid's pretty comprehensive. All the way comprehensive? We actually did quite an interesting… I'm going to do a little segue here for those of you sort of biochemistry nuts, but I don't know if you know, every lab in the world has a different way of looking up the thyroid antibodies.

Oh, now I didn't. oh my god you it's ridiculous so we built a way to be able to actually handle the ranges of different labs and we have we now i think have about 190 different Labs that we work we don't work with personally but we extract data from them yeah you analyze their we analyze it I mean, anybody can put in results from any lab, but basically what we're doing is if you use a lab in Mumbai and you're a software subscriber, you can submit that lab report to us and we'll build a template to be able to extract the data from it.

Now that lab in Mumbai is probably running on standard international units and probably is running weird and wonderful unit. I mean, there's a whole world of the interconnectedness between just biomarker results globally is enough to blow your head open, but we handle it.

And one of things that we noticed was that there was no standard. range or unit or way of expressing thyroid antibodies. So this is the thyroid globular antibodies and thyroid peroxidase.

In terms of being able to do an analysis of those, it's not because you're looking at apples, pears, cherries, bananas. So I went deep into the research and we came up with this concept called the thyroid antibody index where we can take whatever the result is, whatever range is and put a standard index on it so that you are looking at the same fruit in every single country.

Female Hormones and Clinical Judgment

And I've written a few articles on it in the software. So now we are able to actually standardize thyroid antibodies and now being able do an algorithmic analysis of those standardized indexes to give you a sense of How far are those thyroid antibodies straying away from the range to give you a sample?

Or has it improved based on that you had the patient cut out gluten or take low-dose naltrexone or what have you, right? Like, as if they're going to different labs, they'd never know.

they would never know. Because I tell you what, it's like you go to a lab in Australia and the normal for thyroid peroxidase is zero to 36. You go the Quest, is 0 to 1. Some lab is Mumbai, 0-4.11.

you know, Durban, South Africa, it's 0 to 13. But now we can standardize it. So yeah, that's pretty cool. There's

definitely work we're doing within the software itself that I think is fairly groundbreaking in terms of how we help you, the practitioner, make better sense of what's going on.

And the thyroid is definitely one of those areas. I do think we do a really good job. Female hormones? That is a tricky thing to work with because of menstrual variabilities.

And yeah, so we, we sad to say is that we haven't found a way to really be able to crack the assessment side of female hormone analysis through blood.

We can do testosterone because that you're still feeling that your tool is useful. It's just a matter of the practitioner actually has to have a little bit more sense because there are so many things going on.

They have to ask all those questions of, where were you in your cycle? And they have to look at the patient and say, well, she looks estrogen dominant.

And you have know, oh, She has a history, a family history of PCOS at least, and they're putting all this together and you can't get that data, which makes it really hard for your tool to do all of this, but your tools still make the practitioner more powerful.

If they things in their head, because that's how we practice medicine, is this thin slicing that we don't even realize. I'm looking at the patient and I know she's 37 and she has been pregnant twice and has acne, and all of that is going to play into how I look at it.

It's like all these light bulbs are going off. Yeah, exactly. We can definitely help. The doctor can't do all that, but it would still make the doctor's ability to look the data a little bit more powerful than if they just took it raw.

Yes, yes. Exactly. Well, this has been really great. I think what you've done is fantastic. Certainly for practitioners, because I'll let the secret out, I let it out over and over, we're not as smart as you think we are.

If you're a patient listening, were not a smart, as we wish we were, right? And so every tool that we can have at our disposal as practitioners to improve our ability to help you become healthy, We need those tools.

And this is a tool, that I, think most physicians would really benefit from. So last question, let's wrap up with this unless you have any other parting words, but where do you see the future of this?

Where do see for patients in being able to get better data and personalize their health? You know, it's hard to not have AI as part of that conversation.

Dr. Google, Dr Claude, and Dr Gemini are sitting there. Are they doctors? No. are they intelligent? Are the good at stringing sentences together? Yes.

They good looking at large amounts of data and pattern recognition? Absolutely. Can they do things that we can't do? absolutely.

AI, Human Expertise, and the Future of Functional Medicine

But I think that last part about what you were talking about around the estrogen, side of the conversation that we were just having, I think is really important because you were talking about the clinicians' judgment, experience, and all everything, the intuition, things that, we as practitioners have learned and absorbed over the years that We've been doing this work.

And I would say even a new practitioner coming out of residency has got eight years of experience under that belt. They've seen it. So, if you're a patient out there thinking that you don't necessarily need to go see a practitioner because AI can do it, I would say, please, stop thinking in that way because you really need a human being at the other end to have a really nuanced conversation around what's going on, because the practitioner that you're

working with is going to be able to make sense, provide context, provided judgment, providing experience, all of the things that an AI engine is not going be beable to do.

And the thing about an it's sycophantic. It's going to want to give you what you want it to hear unless you train it well. And believe me, most people aren't training their AI that way because they love that.

They love Yeah, yeah. So if you can imagine if your if someone that's really interested in your health and you're sitting there with chat GPT every night typing in all of the things that you are dealing with.

Chat GPTs absorbing all about putting it into memory and every and now you upload a lab. It's going to use all the previous conversations as your friend to look at that lab result and it's gonna give you exactly what you think it is gonna say.

And the thing is, you run that same lab on someone else's AI, it's going to give you a completely different interpretation. You come to my software and you put exactly the same Lab in week after week, after a week.

It's gonna give me the report because it is not built on AI. Its built human logic that I built over 30 years of doing this work. Is built research, is built clinical reasoning.

So, I know we sort of strayed away from the question that you asked, but I No, that's a great answer to the question because the future, I think what you, what I heard you say is the feature still needs to include humans that have knowledge.

And a lot of times we don't know why we know what we now. In fact, we can't even tell you why. We think, Hey, this is what, you should do because we're doing this algorithmic thing without knowing that we are doing it.

That's how we make decisions as humans. And so when you go see your practitioner, you're going to have some guidance that they can't even explain how they learned what they've learned over the past, whether it's eight years and they're fresh out of school, or it is 30 years, and have been out school for a long time.

And I don't think anything that you said is a critique of what AI can add, but it a tool that does not supplant things. The tool you've built is not supplemented by what the AI is doing.

That's my interpretation of everything you shared, which I think is a great explanation for patients to say all the tools we have are important and none of them can replace another.

But I'm really, I mean, one of the most exciting things, you know, like you have been around the block for a while, is that I think with the roles that some of functional medicine influence are playing out there.

Functional medicine is finally getting its day in the sunlight. And I it's really exciting. I thinks it is a really excited time to be in this space. Patients are excited about the possibility that there is an option out that isn't just about waiting until you're, have a disease.

So, I think it's a really awesome time to be a functional medicine practitioner. I also think that it is a difficult time for you to become a function medicine practitioners.

It's about finding that lane that works for using the tools that make you a better clinician and better servant to your patients that you are there to serve.

Selfishly, Optimal DX is one of those tools you should take a look at. That certainly sounds like it. Well, this has been a fun conversation. Yeah, we should do it again.

I think there's a lot more to talk about. That's right. Thank you again for coming and to our listeners, thank you for listening. Join us again next week and look into seeing if you can persuade your practitioner to use this tool because it will help you, it'll help them help.

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