Heart Doctor REVEALS Why Most Heart Attacks Come Out of NOWHERE I Dr. Sanjay Bhojraj I Ep #405 Transcript

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Introduction and Guest Background

Hi, I'm Natalie Nidam, your host, and we have a fantastic episode for you today. As always, today's conversation is with Dr. Sanjay Bajraj, who calls himself a curious cardiologist.

And trust me, he means it. After decades treating emergencies, He now focuses on prevention, root cause cardiology and building long-term health rather than chasing short- term crises.

In this episode, he shares why most heart attacks don't come from the big scary blockages you think they do, why stress can be just as dangerous as cholesterol, and how modern imaging, like the CLEARLY scan, gives us a new, far more accurate window into plaque.

We even get into hormone shifts, women's cardiovascular risk, and why cardiologists should probably take perimenopause way more seriously than they currently do.

Now, this episode is brought to you by Regenerive, by Timeline Mito Pure Urolithin-A gummies and Puri Clean Whey Protein Powder, all with special offers just for you.

You got to check the show notes below for those details, but before that, enjoy the shows. Dr. Sanjay, welcome to the podcast. It's who knew a few months ago that we'd be sitting here.

I mean, thank you so much for having me. And boy, it feels like I've known you forever, even though it's only been just a handful of months, right? So we must be doing something right.

I know, and all we did was share a meal with eight other people at a very hot table. I just remember it being super hot at lunch. Under the blazing sun.

Yeah. In Scottsdale. It's funny that you say that it feels like we've known for each other forever because you do establish connection with people very quickly sometime when it's the right fit in person, which I think is the beauty of getting of the world being back to an in-person world.

There's nothing really replaces human connection in a way. Three dimensions, so much better than two dimensions for sure. A hundred percent. But we'll make do with two-dimensions here because that's what we've got.

We're going to talk heart. I mean, I've been wanting to do an episode on with a cardiologist like you forever. So I'm so, you know, if that was part of the, like, Oh, You would do what?

Oh yeah. No, no. There's not a lot of functional integrative cardiologists on this planet. And I think it's one of the subspecialties within medicine that needs it the most because by and large, for the first part, cardiovascular diseases, I feel are avoidable with the proper diet, lifestyle, mindset, mental, emotional, spiritual interventions.

But there's just, you know, number one, the average cardiologist is just so busy that they don't have time to think outside the box. is that it really takes a leap of faith as with anyone really in this field to be able to break out and say, you know what, I think there's something more.

And that's in my career as an interventional cardiologist. That was the the epiphany that I had was, I can kind of just jump into my origin story here.

Yeah, that was going to be the next question. So I'm by training and what's called an interventional cardiologist. We are the best type of cardiologists, which are ones that do cardiac procedures.

I was the heart attack doctor essentially. And so I always the person that you'd need it to in the morning, chest pain, heaviness, elephant in my chest, all those symptoms, get an EKG, we'd whisk you away to the cath lab.

take a catheter, take pictures of your heart arteries. If there's a blockage, get it opened up. And I was very good at that for a long time. Then one day, I remember one particular weekend, when you're on call, at least in my old practice, you were on from Friday morning to Monday morning.

So Friday, 8.01am to Sunday morning, 7.59am. And on that particular Saturday, I had eight patients come in with back to back, to, back-to-back, heart attacks.

And you're just running on adrenaline, go, and I have two realizations. Number one was that I don't think physically I can do this much longer because of the toll it took on me.

I mean, literally life or death, you're measured by seconds. You have to get in, you have open up, anything can happen. So you are just mentally, physically exhausted.

But then, as I mentioned, if diet and lifestyle plays such a huge role in cardiovascular diseases, Where are the thousand right turns where this person went left or left when they went right?

And why aren't we focusing on that in that vein of an ounce of prevention is worth a pound of cure. And that, in a weird way, led me into functional medicine.

Now I run a diet and lifestyle program to help people avoid really cardiovascular risk. And it's not just statins and beta blockers and medicines, but it is, are you connected to community?

Do you feel a sense of purpose?

From Interventional to Root-Cause Cardiology

Are you managing your heart? Let's do deep breathing exercises and look at heart rate variability and manage stress and eat the right foods. Healthy foods may be different than healing foods and just a completely different approach.

In the front half of my career, as I say, I spent 15, 20 years getting medication lists longer and longer. And now my goal is to make them shorter and shorter, and get people off meds and give people back onto life.

So it's really a really different paradigm shift. Why did I do this? I don't know. I sometimes feel stupid and I wish I could go back into the matrix and be happy as I was.

But now that I've seen the outcomes that There's no way that I could go back because it's just so powerful. And this is really, I think, what cardiovascular medicine and medicine in general really needs to do is not just look at numbers, but look a whole people.

It sounds like the most obvious thing in the world, when you're in trenches as a conventional trained physician or when 7.3 minutes to have a patient encounter and the average patient is interrupted 7 point 3 seconds into the visit.

It's just not designed for that. So, I'm thankful to be able to step out of the system and actually spend the time with patients and take care of people the way that I think people should be taken care out.

There's a long answer to a question you never asked. How do you like that? Yeah, no, but I was going to ask it anyway. I mean, do ever think about how many people, Would you have, if there was two of you and one of who

stayed in interventional medicine and the other one who stepped off the merry-go-round like you did, do you think you would have put you out of business?

I, meaning the, the integrative Sanjay put the interventional Sanjaya out of business. No, I don't think so. I mean, to a certain extent, you know, that denominator is just so big, right?

That, unless I can scale myself completely to be able to address everything, but I think there will always be a role, honestly, for both. And I there needs to.

Um, you know, because, if you have an acute heart attack, I'm not going to tell you to do a four, seven, eight breathing exercise, right? That would be nonsense.

Like go in, get your heart reperfused. Right? No. But, but my point being is that we need both sides of the equation. And I think of this like in chemistry, there's such a thing as a dynamic equilibrium.

If you remember a chemical reaction with an arrow that points both ways. And I think sometimes you need to be on the more conventional side. Sometimes you needed to on more integrative side, but I that the integrator functional side has really not been pursued, right?

And so, you know, I don't think that, everyone's worried about AI and will AI take out cardiologists and well, well integrate of medicine takeout cardiology and regular medicine.

No, don t think so. But I it is a necessary compliment because if you are a healer, which is different than a doctor, a healer really interested in healing your patients, healing the people that you take care of, then you have to step out of that conventional models where you're just treating people, right?

And really as we talk about root cause, and I'm doing a talk a little bit later today on reactive oxygen species in the cardiovascular disease pathology spectrum.

And it's just amazing because all of these very basic science principles don't really get thought about in the conventional world. And so we can effect huge change with diet and lifestyle.

But I think there were always, and we've always seen this where you have someone who you think is perfectly healthy that ends up having a heart attack.

So the more, at least I see it, I call myself the curious cardiologist because the The more I realize, I don't know. It's really fascinating. I would love to try and get the integrative Sanjay to put the interventional Sanjaya out of business, but I think there's room for both of us.

Well, I think that the integrative Sanjay would need to get. I guess I didn't ask my question properly, but I, think a better question would be, and, it makes a big assumption, right?

It makes the assumption that, the patient is willing to do the work to change their course, to, as you said earlier, where did they go left when they might maybe should have gone right and where'd they, go right where they should've gone left.

And so if, And this will lead to a second question, actually. So if people followed the program, cleaned up the diet, clean up, the lifestyle, got it and did the right amount of exercise, not too much, What percentage of people do you think could avoid heart disease?

Yeah. I mean, I don't know that I have a significant, like a number that i can point out to you, but I will say this, and we can look at the data from COVID, right?

So when we look COVID and look that initial period of the lockdown, presumably people weren't as stressed, they were working from home, all these things.

We saw significant decline, i'd say a 30% decline at least in my hospital in our heart attack census. in our stroke census, even in an acute appendicitis census.

Like people going for acute apes into the OR, they all dropped about 30% or so. And I thought that was super interesting at the time because to me that almost like a, okay, if we don't have to drive and be laid and do our meetings and not have deal with coworkers and all this stuff.

Maybe that's the downshift that we see. Now, you mentioned patients doing all the work, and I think that that is where our mindset needs to shift a little bit because obviously conventional systems are not working.

But I number one, returning agency back to patients and reconnecting them with the outcomes of their efforts becomes an issue. And so it's difficult to reconnect somebody.

If you eat healthy for the next 10 years, you won't have a heart attack. It's hard to connect to a negative outcome. People can barely… It is a difficult thing to do.

But if you can say, as you, eat, healthy, watch your blood pressure decline, Watch your energy level improve. Watch the number of naps that you take improve, right?

That will then reconnect them. And I think this is where really kind of the roles of a healthcare team need to evolve a little bit to involve health coaching, which I, think is absolutely fascinating because now they are that bridge, that link oftentimes between kind the goal that the doctor has or the healthcare provider has for the patient or client and the the effort that a patient or client can put in, right?

And how do you match those two? I always talk about this, my father-in-law, wonderful guy. I've been married now for 22 years. He's like a second dad to me.

And he had a heart bypass 21 years ago. In fact, the year after we got married, and he is now becoming diabetic. The great advice that he got from his physician was, well, eat less and exercise more.

right? And it's just pervasive out there, but talk about completely just not connecting with a patient, right, eating less. So does that mean that if I eat one pizza a day and that's all I you know, less than I would normally eat.

But is that, you like, do I exercise until I put myself into a heart? Like, what does that mean? Right? So we need to, I think, change the mindset and realize that it's not just putting the onus on the patient, but it is creating a better team, right?

And creating, creating better a team to reconnect, shorter, short outcomes. I mean, a few years ago, lost my mind and ran a marathon. Right. And, and it was not, I, And I'm not a runner, by the way.

I hate running and every mile I say was worse than the mile before. So it's just the worst experience in my life. 26 of them, even crazier. That was in the marathon.

It was a training for a half Ironman race that I was running that year. But, uh, but the point, my point was, was that, didn't think of I met mile 20, you know, mile marker one, we've got 25 more to go.

We've get a marker to 24 more ago, But I like, let me get to that tree. Let me get to that crack in the street. Let gone a week. Like in my metabolic program, I give people a form to fill out like at the end of the week and say, what was your win for this week?

And someone just said, you know what? I didn't have cravings, right? That's a small win, but it's win. And you string enough of these together and you get that momentum moving, and so I think that rather than, we do all the time is blaming the patient, oh, must be doing something wrong.

You must have a dietary discretion. is creating a team that can foster success. I think that involves much more

hands-on than you get seeing a doctor once every six months.

Hey folks, I just wanted to throw a little message in here for those of you who are sending me all these incredible questions on social media or through YouTube or even on Spotify, wherever you're listening to the podcast.

I wish I could get back to each one of your personally, but unfortunately I can't. And because I cannot, about a couple of years ago now I created a membership community where I get to hang out with people just like you.

I do live weekly Q&As, almost weekly anyway. We also do have podcast guests come in to answer everybody's questions and do presentations. You get interact live with those podcast guest.

we will sometimes do challenges with some of the partners. Like in 2026, we have a mitochondrial enhancement challenge coming up where we're gonna be testing mitochondria function, We're going to be testing people's deuterium levels.

If you haven't heard about deutereum, we've got podcasts coming down the pipes on that. And then people will be invited to follow a personalized protocol and then retest their mitochondria on the other side.

We offer that in the membership community and we do it at incredible discounts that you just can't find anywhere else. So if you're interested in hanging out with me and other like-minded people, which actually happen to include some pretty awesome practitioners and even some previous podcast guests who've come and joined the community, then I invite you to check it out on my website natnidam.com slash the dash longevity dash community or just go to natnadam dot com and look for the Longevity Community tab at the top of the page.

Click on that and see if this is right for you. I would love to see you there. And we could make 2026 our best year ever together. So once again, that's natnidam.com.

Just look for the Lungevity community tab, at top the of page, now let's get back to the show. It's walking with them instead of, I mean, you know, on the upside, that cardiologist that told your father-in-law to eat less and move more, at least acknowledged that there was something to be done because not, not a lot of cardiologists, there are plenty of Cardiologists out there who wouldn't even have gone that far on that conversation.

Not to say he wasn't right, but you need to give people tactical things, right? That's like, my daughters are in high school and if I said, oh, get a perfect score in the SAT, but I didn't give them like a book to read or a framework or study schedule.

Right. Like, like, so we need to chunk it up for patients into smaller bits and pieces. And, you know, there's an old line, how do you eat an elephant one bite at a time?

Right? And so that's, that, what we needed to do. Yeah, poor elephants, but don't eat elephant because It's just not nice. But like, but the point being is that, you know, I think we need to shift our mindset in healthcare.

And that's where I that the integrative model makes so much more sense because we have the time we build the teams, we had the framework, And, but we're also dealing with things outside of just numbers, blood pressure, glucose, cholesterol, right?

Like in the cardiovascular world to say, Hey, you know what, like one of the best interventions I had on a patient, she came in with palpitations. This was when I was in a conventional model, training in functional world.

Um, and she come in palpatations and I said, when do you get them and are they related to your cycle and this, that and the other. And finally, out of nowhere, I just asked a question.

Do you feel safe? right? Like why would a cardiologist have that? And turns out she was not safe. She was in an abusive relationship and all these things.

And that was precipitating her palpitations and her stress and that stuff. I certainly didn't have the resources to put her, but I connected her to people that had the resource and luckily she got better, right.

So that's the easiest thing to me would have been just to prescribe a beta blocker, which is I think what most cardiologists would've done. But this is where the difference between being a treater and being healer comes into play, And so, and so I think we just need to have, you know, like a kinder, gentler approach to patient care and, be able to give them time and really practice, this precision end of one medicine where, the person in front of me at 10 o'clock is very different than the give like understand the context of where people are coming from, understand what their exposures are, what they're mindset were.

And I'm not saying that I have all the tools for this, but at least I've knit together a network of other professionals that can send to and say, Hey, you know what?

It sounds like you're dealing with a ton of little T trauma. Why don't we get you to a trauma specialist that you can do that because until you are emotionally healed, You're not going to be physically healed.

I think it's so important, the work that people like us do, because we're really in the business of improving lives, not just improving numbers. Well, helping people to have agency, like you said at the beginning.

So when you made this transition, and even to this day… And we're going to get into the nitty-gritty. Just guys, hang in with me because we are going into The Clearly Scan, we will go into CIMT, and we'll talk about blood lipids and Lp little a, all the things.

But before we go there, How, how did your colleagues react? Are they sending you people now or do they have they've knocked you off as saying Dr Sanjay?

Oh yeah, he fell off the edge. Yeah, they, They tend to think I'm a little bit crazy. Um, you know, and, uh, I guess maybe they'd given up on me because before at least once a month I'd get, get a text from one of my old partners and say, Hey, when are you coming back?

Right? Like what's going on? And, um, And I think it was just because they wanted somebody back in the call rotation. They didn't want to be on Q4 call or whatever it is.

But I talk to cardiologists, it's like a, oh, bless your heart.

Patient Agency, Coaching, and Small Wins

Good for you, but I'm never going to do that. Yeah, exactly. And that's cute. There's always maybe an undercurrent of, you're going to wake up one day and realize that you've wasted a few years of your life and then you'll come back.

Hopefully, and this was something the administrators at my job when I turned in my resignation said, oh, are you going be begging us for a job in two years?

And I'm not sure if there's going I was like, the admin told me and I said, okay, maybe this is what I say. I literally said maybe, you know, but at least I know that I'm on my right path, right?

And I've doing what you do. And so, and for me, just like I saying, like that one, I am going to run to that crack or that tree or whatever. As I start to accumulate outcomes in clients and patients of mine, know, that's where I'm like, okay, you know what, I think I am on the right path here.

God is instructing me the universe, the algorithm, whatever you want to call it, is moving me in the direction because I know that I've gotten hundreds of people off of blood pressure medicines.

And we have a much more intelligent discussion about the necessity of statin drugs. I have gotten hormone

balancing and neuroinflammation and all these things that people honestly would have just pinballed around medical specialists for.

Like we can just, you know, with a lifestyle and diet kind of approach, I think now I completely believe that about 80% to 90% of the medical things that people present to me with can improve and can improved significantly than the 10 to 20% time I have to put my thinking head on and do some advanced testing and things.

But, So, so yeah, it's definitely been an evolution. I'd lie if I say there weren't days where I'm just like, Oh, I wish I could just go back. Life was so much simpler.

Right. And, but, honestly, feel like I am on the right path. It's almost one of these inevitabilities where you just feel you're moved by a higher power.

You know, like one those people movers at the airport, you know what I mean? Where you are walking and the platform is moving or whatever. where I feel I'm at right now is that even on my worst days when I am like, oh my gosh, self doubt and the devil on one side and angel on the other side.

The devil is louder than the angel. But I still feel like as I see people do better, as help people avoid heart attack and avoid going back to the cath lab, you know, I, um, the cardiac procedure suite, like I just feel like, you don't, this is the right thing.

And there's a thousand interventional cardiologists out there practicing intervention, cardiology, but there was like three intervention cardiologist practicing integrative medicine, right?

And this was really the power behind what we should be doing. So yeah, it's, interesting journey for me, for sure. I'll bet. Well, it's kind of like when you know, you, know and you can't unsee what you've seen, like all of those, all those cliches apply here.

Like, to go back to being an interventional cardiologist right now, I think it would be a struggle. It would well, and it was, towards the end of when I was staying on, because it wasn't like I leapt, jumped head first without trying to create soft landings.

But it, was a, struggle for a while. And I, think that led to burnout in psychology. They talk about the ought self. who you feel you ought to be and who are, right?

And so as that split widens, that fueled my burnout quite a bit until finally I was like, you know what? This is the path that has been chosen for me.

In Hinduism, we call that your Dharma, your purpose in life. Your purpose and life is to find and share your purposes in your life, it's kind of a crazy thing, and I'm like you what, this is chapter three or chapter four or five of my book and the The worst plan B I have, I can go back to being a cardiologist one day, but this is really what needs to happen for my continued evolution as a human.

So I just kind of gave myself to the ocean and we'll see what happens. Love it. Okay, so let's get into some technical stuff here. Let's go. Well, clearly is a specialized type of a CT angiogram, which is different than a coronary calcium score.

So let's just start. Let's go through all of them and I'll start with the carotid intimal medial thickness. um, is looking at one particular layer of the blood vessels.

So when we look at a blood vessel, there's got three layers. There's what's called the intima, which is the inner lining, the media, kind of expand and contract.

When you feel your pulse pulsing, that pulse is as a result of the strength that we want. Yeah. You definitely want pulses. No, I mean, like you want the flexibility.

Is that what stiffens with age? Yeah, well, stiffening, we can talk about stiffing I think, but yeah, because there's a neuro hormonal part of stiffen and then there is a mechanical part stiff.

So on the outside is, let's just say, the elastic component. On the middle, that's really the meat and potatoes. That's where you have a lot of the cells circulating, vascular smooth muscle cells, and dendritic cells and immune cells in modulators.

And that where foam cells come in and form atherosclerosis. Then there's the intima, which is the barrier. It's like the skin of a blood vessel that is layered on top by something called endothelium, a single-cell layer-thick group of cells.

I think of it like old shag carpeting on inside. Anyway, lot Good shag carpeting. Not the nasty kind. Yeah. It's like that fun stuff that I had in my house growing up.

So when we talk about carotid intimal medial thickness, as I mentioned, the media is kind of like, I consider it like the workhorse of the blood vessel in terms of active biology where it happens.

And so that's where you can get thickening, plaque formation, starts, all of these things. When we look at a carota intima medially thickness We're doing an ultrasound of the carotid artery.

The carotted artery sits in the neck. Whenever you watch a detective show and they push on someone's neck to check if they're alive, that's the crotad.

Just as a quick safety public service announcement, never measure both carots at the same time you'll pass out. So one at a time. I always put that out there.

And don't use your thumb, because you'll measure your own pulse. Well, when you're measuring on somebody else, yeah, Because you have a pretty significant vasculature in your thumbs.

So anyway, so CIMT is looking with ultrasound at the carotid artery and getting a measure of the thickness, thickness then assessing as a surrogate of plaque because, you can't tell the difference, but there are associations with an increased C. I. M. T.

and atherosclerosis. And remember that process of platformation, what we call athroscorosis, is non prejudiced. It happens everywhere, right? There was an old, I think it was a WC fields line.

I'm not prejudice. It's very likely it's happening in others. And in fact, the literature shows it is about a 1.6 to threefold increase in coronary risk if you have a CIMT.

So they're not 100% correlated, but it stands to reason if have plaque in your carotids, you're probably going to have something building in you heart.

How much plaque is significant? So when we talk about significance in the interventional world, we talked what we're really worried about is flow disruption.

So I've got three daughters will have long Indian hair. And so I say there's always some amount of hair in their shower drain. But when it gets to a certain critical mass, then the water starts to back up and I have to go sneak the drain out, right?

So in the arteries, that flow limitation happens around 77, 0%. That's when you start to see kind of a reduction of flow and a pressure drop, which is what we'd look for across the vasculature.

So that is, you know, what's considered quote unquote significant when we look at coronary arteries for stenting or whatever, like peripheral vascular, renal arteries, wherever I used to put stents in, 70 is kind of that benchmark, is that metric.

But what gets hidden behind that is when we look at the blockages from 20 to 50%, these are less mature. So they have what's called a thin fibrous cap.

These are the ones that are likely to rupture. They're really just metabolically angry on the inside and they had a lot of inflammation in them. those are the ones that will cause acute cardiac events.

And so this is where a lot of times we see some discrepancy in testing and we'll get back to calcium scores and all this stuff I promised in a moment, but I think it's a good point is that, you know, we've heard of, of you like, Oh, did you hear about, Bob, right?

I'm sorry if anybody out there is named Bob. I hate to put that out. But Bob went to the normal stress test on Monday and then had a heart attack on Tuesday, and so heart attacks must be caused by stress tests.

We try to find these correlations. No, but what happened was Bob probably had 30% or 40% plaque that was not flow limiting. Ergo, therefore, you wouldn't see it on a stress task because stress tasks are really only geared towards finding those flow living tests But because it's the 20, 30, 40%, 50% lesions that are less mature and rupture, the hemodynamic stress, that sheer stress on that cap probably unroofed it.

And that led to his heart attack, right? So question before you keep going. So if Bob is an athlete, is he more likely to have an event? Well, so that's in an acute setting generally of like a couch potato type person that like the weekend warriors where you see this a lot.

I live in Southern California and I'm always nervous about the first gorgeous SoCal weekend because that means that people, and it's like when I trained in Michigan and we always worry about first snowfall because you have people who are not doing anything for a long time.

They're going out and shoveling snow, which is a very physically demanding thing here in SoCal and have people go out surfing or do endurance cycling that they weren't accustomed to doing.

And that was a huge hemodynamic stress on their cardiovascular system that led to this event happening, right? So chronic athletes are a little bit different.

So endurance athletes, and I used to see a fair number of endurance in my triathlon days, so we have this, but there are adaptive changes that can happen.

So your body gets more accustomed to these forces of nature, these hemodynamic things that happen, interestingly though, they are not immortal is that you see, you can see premature coronary calcification and endurance athletes you can see left atrial stretch, so increasing in size of the chambers as a result of what we call in the cardiovascular universe, excessive endurance training.

And in a lot, EET it's called, and in lot of literature that's described as running more than 25 miles per week. Now, if you're a runner or an athlete, 25 Miles is, I mean, for me right now, not something I would do, but it is not that much.

Of course, different sports are different. Cycling is a different hemodynamic stress load than running, or swimming, just to put it in the triathlon days.

So we're learning a lot about these athletic events and athletic endeavors rather, and how they may differ. But just because you're a long-term athlete, you may be subject to other stresses that a couch potato wouldn't be.

Right? So nobody is safe, but that's why everybody needs to know their risk. And that why everyone needs- Right…. to their numbers, know Okay. Another question for you is I have heard, and because I'm just going to go out, because people in a community, so all these questions are bouncing around and I don't have the answers.

And I like, I am interviewing a guy, getting the answer. So if somebody has a CIMT score, let's say it's 23 or 24,

25% or 30%, does that necessarily represent plaque or could the thickening of the wall be due to something else?

I mean, generally it's going to be some sort of atherosclerotic process. Most of the time. I'm mean you can have, um, uh, you know, medial hyperplasia from, from other like trauma can cause it.

And I had one, one guy who was a surfer that took a surfboard to the neck and that caused a huge inflammatory response. Um, so, but generally speaking, when we're looking at CMT, yeah, I would say, it was plaque bilateral.

It's gonna be plaque. Yeah. I mean, if it's bilateral, generally, nature loves symmetry, right? And so generally you're going to see it on one side or the other.

That being said, the aorta, with the vessels come off, they are not symmetrical. So generally speaking on the right side, you've got what's called the brachycephalic trunk that then splits into the carotid and the left and right subclavian on the right side, each has a different, or on left side rather, they have a take off each one.

So the carotid has its own origin and the left subclavian has it's own original. And that is to say that when we see vascular disruption or plaque, it generally is at what we call a bifurcation point or a fork in the road.

Because that's where the currents of blood flow get a little bit more chaotic and you've got pressure drops and things like that. It's generally going to be at a Bifurgation or split in flow.

that will see these plaques and things develop. But yeah, if it's bilateral, generally that's going to be atherosclerotic. That's not to say it has to pretty significant trauma to see kind of a vascular response, not just like wearing a tie to work for 40 years.

It's like if you took a seatbelt and a car accident or something, that the sort of stuff we're talking about. Yeah. Just to hop back though, to complete our discussion.

So CIMT, ultrasound based. I think the strength of that is that it's non-ionizing radiation, right? So it is ultrasound. And so we're able to see, thankfully the carotid is an easy enough vascular distribution to access that.

It gives us a good proxy. established as a potential screening tool. And I know there are a lot of people in their offices will have CIMT measurements and there's automated scans that can be done.

So there is that. Then there're coronary calcium scores. When you have a plaque in your artery that heals, I kind of think of this like you've got this angry mass of plaque and the body says, you know what?

I recognize something is going on. I don't want this anger hot mess to digest through the artery, which is essentially what's happening is you're secreting and these inflammation gone bad cells are secreting enzyme foam cells and macrophages are just inflamed angry heated messes.

And you have to build a wall around the prisoners, so to speak. So that's a healing response. It's called epithelial to mesenchymal transformation, EMT, where these circulating stem cells inside the media of the blood vessel actually transform from stem cell into similar cells to the ones that create bone, to osteoblasts.

And so now they kind of build a shell of calcium in three-dimensional space around that angry plaque, and that's actually healing. That's considered plaque healing- Just like stabilizing the plaque.

It's stabilising the unstable area. And when we do a coronary calcium score, there's a unit called an Agustin unit.

CIMT, Calcium Scores, and CLEARLY Scan Explained

So you're measuring in how many units of Calcium you have in the arteries. a great tool back in the 1980s and 90s to be used to establish at a low level of radiation.

So it is a CT scan. There's x-ray involved, but it's a lower level than most scans. In your arteries, this is what we see. And so the power of that is I can say, again, let's go back to Bob.

Bob, in your artery, the Widowmaker has plaque in it, and the left artery has this, So, you can use that, we're talking about agency and motivating patients.

You can say, so this is what your heart looks like, dude. We need to be aggressive about fixing things and this, that and the other, right? And we need be agressive about getting on meds and diet and lifestyle and all of these things.

And so it was a really great scan. I say it wasn't great skin because I think at the time that it came out as pretty revolutionary, papers were written about it, scanners popped up all over the universe, but now it's almost like a black and white television relative to the next generation of scanning that we have, which are these coronary CT scans.

Now, a coronery CT is a dedicated CAT scan of the arteries that allows us to image the heart arteries themselves. And so now we're not just saying you have calcium, but we can say, oh, you've got a narrowing here of 30% or 20% 50% whatever in a traditional CT angiogram, became very popular.

And the cool thing about that is now that gives us insight not into what's just called the lumen, which is the opening of the blood vessel where the water flows in the pipe, so to speak, but we can actually, Which is what we see on a conventional angiogram, And if there's thickening of the vessel, which is not something that you can see on a calcium score, nor can you really see that on the conventional angiogram.

And now we've taken that one step further with this AI technology called CLEERLY, C-L-E- E-R- L-Y, Which is I think the one test that as cardiologists, we have needed, or not just as humans, right?

That we need forever because now not only are we seeing the calcified plaque, which is important, but in the mind of an interventional cardiologist, a little bit less important because it's less like interrupter.

But what we can do is quantify the soft plaque and we actually see, you know, how much plaque do you have? Where is it located? Is it all in one spot?

And I think of it like a, and eventually it'll rupture, right? Well, you can look at plaque size and you could look it lesion size, and look calcification, like where it is in the spectrum and assess how significant it.

And this is what a lot of people don't understand about calcium scores. You can have a zero calcium score and still have ton of plaque, because the plaque could just be non-calcified.

It could be what we call, quote unquote, soft plaque. So now with a scan, clearly you're not only getting an assessment of calcium, which again, I would posit is less important, but more importantly, we're able to quantify the amount of soft plaque, get an idea of vascular health, and now engage in either, you know, conventional medical approaches or diet and lifestyle approaches.

And we can actually see regression of the soft plaque, which is, I think is the important actionable part, right? Is that, that through diet, aggressive diet lifestyle interventions through, for people who need them and not everybody needs them, but four people need cholesterol modifying medications.

You can see an improvement. This is where, when we talk about cardiovascular medicine and longevity medicine, You know I say cardiologists are like the OG longevity, medicine docs, because most people die of heart events, of cardiac events.

So if you are stopping cardiac event, by definition, you're going to improve longevity. Once you've talked about longevity, then you can talk about health span and making days better and all of this stuff.

This is, I think, a revolution in testing that I love. Now, the downside to it is that you do need to have what's called

IV contrast infused. You have to get an IV and they have an iodinated contrast in you.

And so for some people, you can have a reaction to that. Some people if you have kind of poor kidney function, that can affect you and there is a lot more x-ray, there's a lots more radiation.

So this isn't a test that you're going to want to have once a year. I mean, I think that there are guidelines on this depending on the amount of plaque that have and the distribution when to repeat a study.

But I definitely think as an initial scan, the bark is worth a bite here. Just to be able to get a better insight is so much better. I recently started a telehealth practice, and so I've got patients.

And so, I had a patient who on the outside He was probably about 150 to 200 pounds overweight, was telling me I have symptoms when I walk up a flight of stairs, I get really short of breath and I'm having a hard time with breathing and activity and all these things.

And in my mind, and prepping for the heart bypass talk and a lot of patients might not realize that it's very emotionally disturbing for a cardiologist to have to, or at least for me to that talk.

It's an upheaval for be, right? Like because I become friends with my patients and just, don't want anything bad to happen. is quite emotionally draining.

And so I said, all right, but let's call him Fred. His name's not Fred, we've got Bob and Fred so Fred let us get a clearly test for you and so that I can better define the anatomy.

Again, this is a guy who on the outside looks like the poster child for cardiovascular disease. We did the scan and lo and behold on inside he had like a 14% lesion in one of his arteries and everything else looked okay.

And I was like, wow, that's amazing. Now I can just focus on your blood pressure and focus in your cardio metabolics and plug you into the diet lifestyle program and really see some change.

But you know, it really gave me such like the opposite insight that I thought I'd learn how bad his heart was, but instead I learned how good his was.

And that was very optimistic for him, right? Kind of changed his mindset. So he's like wow. I don't need to be so scared. I mean, that's not to say I don't need to change, but that fear of God kind of left him.

Now he's like, he became motivated and positive to, say, hey, you know what? This scared me. This was my awakening. And now I can really work on diet lifestyle with you, Dr.

B, and get things moving. He's done great, right? So, so you don' t judge a book by a cover. Similarly, like with, with cardiovascular disease, I've been humbled so many times by stories like this, where I think, Oh, someone's actually going to be okay.

And they have needing bypass, or I thinks someone is going need bypass or stenting and they don't. So it's just, it is another great tool to not just look at your risk today, but also then to stratify what your risks looks like five, 10 years down the line, so that we can do appropriate diet, diet and lifestyle interventions that are based in science and have some credence, you know, not some crazy nonsense trend or fad or whatever the new Instagram TikTok reel is, right?

But do things that can actually have effect and make a difference. So you had said earlier that the CIMT bears some relationship to what's happening in the heart, but it's not a direct relationship.

Conversely, for someone like that who had a pretty clear, clearly scan, you would be able to extrapolate that to carotid arteries or would you also be doing a C-I-M-T at that point?

Well, I mean, yeah. I need to look at the reason for the outcome, right? If he was having neurologic symptoms, then I would have probably just gone straight to carotid, but really we're looking through cardiovascular.

And again, he's got a 14% lesion, so he doesn't have nothing. He just doesn' have eyes popping out of my head like in the cartoon's findings. So I think that because he presented with cardiovascular symptoms that's why I went straight a cardiac test because really, like I said, of the outside listening to the story, I was worried about the bypass.

And in fact, almost I wanted him to get an angiogram, but he insisted on the clearly. So I say, okay, it's just because I wasn't able to schedule them quickly.

But if someone comes in, what we call a primary prevention patient, my dad had a heart attack at 52, 48. I just want to make sure I'm okay. read to blind kids, I do everything good in life, you know, and I just want to get a sense of what's going on.

Then, then I might start with a less invasive test. I tend to not want it irradiate people and particularly women because you're reading the chest area and breast tissue is sensitive.

So I really use x-ray sparingly, but that's where I'm saying sometimes the bark is worth a bite, right? Or the bite is whatever. that sometimes you just kind of push through the risks because you know that you're going to get such important information for him, for Fred.

It was such a great example of having the right technology for the test so that I could connect him with the best plan to move forward. Is there an age you think that, like in many different things, different aspects of health, it can be helpful to have a baseline from when you're healthy, not wait till you have symptoms or you are sick.

Is their an anage where you thing that probably for most people it would be a good idea to get that clearly scan done, to got a base line and then leave it alone.

Like if it's clean. Yeah, then shelve it for a while. So yeah, I mean I think when we look at longevity, right? In the longevity space, there's two ages that kind of pop out in the literature, 44 and 60. Right?

These are, these are two years where we just see kind big shifts. And so I think right around then, and, you know, if you think about the average life expectancy in The United States, I looked it up a few days ago at 79.2 years.

So yeah, so middle age is like 39. Well, that's kind of sobering. Sorry for the listeners, but that just numbers, right? That's the math is math thing here.

So I think, you know, maybe not necessarily a scan, But certainly a clinical evaluation around 45. I Think it's a great 45th birthday. In fact, That was the first time I went to see a doctor for me.

And when I kind made my own life changes was I kinda felt like 45 was The official birthday of more yesterdays than tomorrow. uh, tomorrow's right. So I said, you know, I need to kind of take my health serious now.

And, and for a lot of people right in the world, that's where you're like mid-career, or you are maxing out your earning potential. You've got your family, You got you kids, your, doing all these things.

That's also kind a time where stand to have the most to lose, right? If something bad were to happen. So, for me, I loved getting the patient in their mid-40s as a cardiologist that says, you know what?

Nothing is wrong, but I want to keep things moving, right? And I wanna keep this going. And that's where you can do things like, like you don't necessarily have to jump to a scan.

I think a carotid is a great test in that sort of a population. But doing things, and I don' even call them advanced lipids anymore, about comprehensive lipid, doing a cardio metabolic analysis, looking at LP little a.

looking at markers of vascular inflammation. I think that's where that well exam comes into play because if you can make those little one or two percent lifestyle changes at 45, then 65 is going to look a whole lot different for you than it would otherwise if he'd stayed on the path that you were on.

I like those mid forties patients to come in and say, you know what? I just, I want to live forever. I mean, not live for ever. Right. But I wanna live like really well.

What do I need to do? And I think that's a great time. And then, with those patients, might see them once every other year, once, every three years, but keeping them on that straight narrow path, because I that one of the main differences between the conventional model and the functional model, right?

Is the convention model says, we're not gonna see you until you're broken. Yeah. No, a hundred percent. We're going to just be 100% crisis management.

And that was when I saw a lot of patients come in in their 50s with heart attack and mostly guys. I'd say, when was the last time you saw your doctor?

And they'd be like, oh, and I got my high school football physical filled out. There was a long time in between. So I loved getting those kind of patients and you might not do a lot of interventions in the sense of balloons and stents and things, but you can keep people on the proper path and integrative cardiac Sanjay can put, put you know, interventional Sanjaya out of business that way.

But that is just, that's just the smarter way to approach this. What about women? Because when women go through menopause, things start to shift. All of a sudden, we get a lot closer to being small men than pre-menopausal, right?

Like our cardiovascular disease risk goes up. And are you making a distinction? Cause you mentioned hormones earlier. Would you make a distinctions between a woman who is, and we don't need to argue the benefits, you know, whether people should or shouldn't do a hormone replacement.

there, I would imagine there's a distinction between the woman who's on hormone replacement and the women who isn't. Oh, for sure. Would we, would we add a, maybe another goalpost for women post menopause to see where they're at?

Cause things can shift pretty fast. And, and I think post-menopausal is even a little bit later than I'd like. Um, in pre-metapause or perimenopoise, which is a very difficult time to define, unless you're a cardiologist, um, because we see this all the time, right?

You get your labs done and your LDL, right? And the primary care doc, or if you're seeing a cardiologist says, oh, you must be doing something differently.

You must have some dietary discretion or you might be exercising more. But really when you see that jump to go from 80 to 100 is a 25% increase, right, if my math is right.

And really what we're saying there is not the only thing you are doing is forming enough estrogen so you get that I mean, that's the, you get this, I know, how dare you, right?

How dare. And so when you see that initial estrogen drop that is part of the pre menopause, do you this LDL bump? And, and as I look back in time, You know you always facepalm about, Oh my gosh, all the things I wish I knew then that I didn't know now, but that.

I think one of earliest signs of perimenopausal premenopasal is that LDl bump that we see, it's almost never enough to elicit therapy like it's never enough where I would say conventional Sanjay would, say, Oh, you know what, You need to go on a statin for this, but it is enough that you see a percentage jump.

And so that's the time when this is where conventional cardiologists probably, there might be one on earth that would do this, need to have the discussion with these premenopausal women about now might the time to start doing comprehensive hormone panels and potentially adding in estrogen because as I see it, and I've had several talks with hormone people is that estrogen is as important for hot flashes and all that crap.

Yeah, there's some benefit to that. But when you look at bone health or cardiovascular health, it becomes hugely important. Estrogen is protective against cardiovascular events.

And so that's why, as you mentioned, that drop off in estrogen, women become little men, meaning that their cardiovascular risk jumps up precipitously because they don't no longer have that protective effect of estrogen.

And so we were right at the front line of seeing this and I just didn't know how to read the tea leaves correctly there was right when that happens, you're like, okay, let's either meet with an OBGYN or someone who's like a BHRT specialist or something who can start to have And, and you're going to see so much improvement, not just in cardiovascular outcomes, hypertension, lipids, atherosclerosis, all of these things, but you know, bone health and longevity and brain health.

I mean, every receptor in the body has, or every cell in body, has sex hormone receptors, right? Essentially, with the exception of maybe red blood cells.

But these are important things for longevity, but also for health span as well. And so I think cardiologists have been frontline unknowingly at that transition without realizing that it was within our power to interpret this and act on it.

Yeah. Well, you would hope that somewhere someone is listening who runs a school like the cardiology program and saying, holy shit, we need another module for women, for your women patients who are coming.

But this is the thing, if you weren't taught it in school, know, we're all victims of our training, right? And when you look at historically in the cardiovascular literature, there's just famously, I think it's so funny, is that probably about a year and a half, two years ago now in The Journal of the American College of Cardiology, they had a review article about the differential effect of stress in women.

And it was like the first time that they acknowledged that women are different than men, you know, in cardiology. Now you're looking at cardiovascular trials, they're including more women and all of these things.

But when you look at all the data, all this science that our current fund of knowledge in the conventional world is based on, those trials were like 80%, if not more men.

Right. And, and I mean, I hate to say it this way, but women aren't just men without penises, right? Or whatever, like, it's a completely different physiology.

Um, And so, you know, this whole realm of, uh, if you talk to old crotch, the cardiologists, they will still do this. They say, Oh, why do we need women's, women, cardiologist's?

You know? Women are the same as men. I'm like no, not like like they're so different, dude. Like, come on. Are you serious? Like the reason why women were excluded from research is because they are so Otherwise, they wouldn't have been excluded.

Yeah, I mean, it's four different women a month. And it, so complex, right? And if you talk about the life cycle of a woman, you know, there's pre pubertal puberty, fertility age, pre menopausal, perimenopause, menapausals, postmenoposal.

I, mean it a wild ride to be a women, but I like, We know that you know, because you're surrounded by them. I've got three daughters and my wife, so I have a frontline to this all the time, but we need to look at hormones a little bit differently.

And I think of it like vitamin D. Vitamin D, you have low level, we supplement it for the potential health benefits, bone health and hormone health, and all of these things.

Similarly, with estrogen, I think there is still this WHI Women's Health Initiative cloud that hangs over that says, unless you're having really bad symptoms of hot flashes or whatever, there's no reason for hormone replacement.

But in fact, vitamin D, you are treating a number for all these other benefits. is low and you're already seeing an LDL bump, well, the easiest way to treat that LDl bump is to give back semestrogen, right?

And there's all these other health benefits, brain health, bone health. I mean, you could probably talk my ear off about all of these things, and so we have to frame that conversation differently, frame the mindset of cardiologists differently and realize that, again, we are frontline to a battle that we didn't even realize we were at the front lines of, but we also have such a powerful ability to heal.

And, you know, and that's why, I'm working with some other cardiologists to create like a functional cardiology curriculum and training pathway. Because, we see these things and we need them.

Of course, to hammer all the world's looks like nails. So to a cardiologist, the single specialty that I think would really move the needle the most for humanity, if we had a more functional mindset, is cardiovascular disease, right?

It's cardiological. I love it. That might just be me justifying my own existence, I don't know. No, it's me. I was hoping you were going to say at some point that you are going be spreading this wealth of knowledge to other people in the field.

So let's talk about another topic that is wildly controversial. There are so many of them, right? But let us talk cholesterol. Yeah. Right? So the cholesterol is bad versus the You not only do you need cholesterol, but there's no high cholesterol numbers that are bad enough that you should ever do that.

You should never need a statin for and like there is these, you know, the world is polarizing, like, air is good.

Womenu2019s Heart Health and Menopause Risk

Air is bad. Fire is. Good. I was bad, right? Like, so number one, Right. Cholesterol is a necessary molecule for existence. Hormone backbone, cell membranes, all of these things.

So, yeah, brain, you know, obviously number two, the majority of your cells have the ability to synthesize their own cholesterol when needed. Right? So circulating cholesterol and cellular health, I think are two different things, right?

Okay. three, and this is what I think a lot of cardiologists don't realize, or they don t see things correctly, is when we look at the contribution of dietary cholesterol, meaning if I eat a thousand eggs, how high does my cholesterol bump?

It's actually not that much. And in fact, in the evidence, right, the literature, now they're saying it's not a big contributor. So I say, okay, if diet, which we took as the major reason for why cholesterol was elevated, right?

If diet is taken out of the equation, why do we have high cholesterol at all? Right? Like if people are eating low cholesterol diets and things are, I mean, even if they're not eating a low-cholesterol diets, if we are literally saying to people, it doesn't matter what you eat for your cholesterol, Why is LDL elevating?

And this is where I think the conventional world is right for the wrong reasons. I think that LDL, so to be clear, cholesterol is a sterile molecule. It's not soluble in water.

So it'd be like a little oil bubble floating on top of a glass of oil and water, right? So what do you need? You need particles like school buses to shuttle them around.

And that's really what LDl is, low density lipoprotein. And on the vehicle, you have these little receptors and one is called APO-B, which a lot of people are getting more familiar with.

And that's like the sticker on car that says Ford or Toyota or whatever. It tells you that this is an atherogenic particle, a particle that can cause cholesterol synthesis or cholesterol plaque formation.

You have APOB receptors and LDL receptors on various cells. And the reason that cholesterol gets transported around is that the cholesterol is generally supposed to be incorporated into the cell membranes, but you have so much cholesterol that it gets taken in and then it get damaged by reactive oxygen species and becomes oxidized and that forms plaque and all this stuff.

So in my mind, I think that there is little doubt that elevated LDL is associated with cardiovascular disease, right? That's just there. I'm going to stop you right there, because before you go on, there's another conversation about VLDL and oxidized VLDL, and there is big fluffy LDl and little bitty LD.

Just because before you keep going, I know- Yeah. So there's types of LDL and this is where advanced lipid or I call it just comprehensive lipopanels can be helpful because we get a sense of LDL particle size.

And so I called them big and bounties and small and stickies. You can have big bouncy LDLS, large buoyant LDl particles that are less atherogenic. Then you can add small dense LD L, which I am blessed to have myself.

I've got the smallest LD l particles I ever seen. And those are the ones that are more atherogenic. And the answer, the question is then why, and this is again where cardiology is right for the wrong reasons, is that when we look at particle size, when you get these small dense LDLs, that tends to happen in people that have cardiometabolic dysfunction, people who are insulin resistant, all of these things.

You get the small particles that more easily oxidized. Oxidized is rusted, basically, or damaged. What does your body do with damaged cells? Well, it tries to get them out of circulation, right?

So it pulls them into the cell. And when, unfortunately, when it happens in the arteries into media where it forms a foam cell and plaque and all these things.

So, oxidized LDL is, I think, a very important metric to kind of look at, not just for the state of what your cholesterol is but also the stage of your reactive oxygen species and what the redox status is and the imbalance looks like there, right?

So you're You're damaging these LDL particles, you're turning them into dams, right? Damage associated molecular patterns, and you are activating the immune system.

And atherosclerosis is an immune-mediated process, so we have these now advanced metrics that you can check. Oxidized LDl, oxidized phospholipids, even oxidize Lp little a is something that I've seen described now in the literature.

And what that does is it takes a bad thing and makes it really, really bad, right? And LDL, why do we focus so much on LDl? Because in 80s, that's what we could calculate, but there are total cholesterol particles, they're what are called HDL high-density lipoproteins, the quote unquote good cholesterol.

They're like the cholesterol scavengers. Then you have this entire population of LDL, which is low density, you have VLDL very low-density, IDL intermediate density lipoproteins, and all of these are atherogenic.

We just, in the 80s, didn't know that they existed. And so they didn t become part of the standard panel being total cholesterol, HDL LDl and triglycerides.

So then there is this metric now of non-HDL cholesterol that was assessed. Essentially, that's in my mind, kind of very congruent to what we think of ApoB.

cholesterol. APO-B, as I mentioned, is like a cell surface protein. It's like marker that sits, because you can't just look under a microscope and it says LDL and HDL on there, right?

You have to look at the tags that it has on the cell's surface. So when you have an APo-b particle, that means that is one of these atherogenic particles.

And so it kind of more completely describes the entire pool of LDl particles, sorry, lipid particles lipids transport particles that can be linked to athrosclerosis.

Some people, if you familial issues or genetic types of hyperlipidemias, you can actually have low LDL and high IDL in the way that the biochemistry works.

So an LDl is an imperfect assessment. You really want to look at either non-HDL, which most commercial labs will run, or APOB, a test that you could run costs about maybe 10 or 15 bucks, to get a sense of what's going on.

So in this day and age, if you're sitting with your cardiologist, you want to kind of push them a little bit and say, but can we look beyond just the LDL number or is the LDL Exactly.

And so I think that, you know, looking at the LDL particle size becomes important. I've had people that have familial hyperlipidemia. So they had familio genetic, uh, polymorphisms that led to their LDl cholesterol being in excess of 200. Uh, and they have very large, buoyant LD L particles.

those patients, I always scan them. I do it clearly or a CT angio to take a look at their arteries. Controversial, but for me, i'm trying to keep people alive for as long as possible.

So I get that baseline scan for them and lo and behold, they'd be in their forties with these large point LDL particles, like in an ungodly high number and the arteries would be okay.

They didn't have that much soft plaque because they had buoyant LDl particles. Right? I've had other patients with kind of small to normal size familial LD, you know, hyperlipidemia is with LDL and I've had to send them to bypass it.

The youngest was 31 years old, needed a five vessel heart bypass. Um, so, I think that looking at LDl alone is not, at least in 2025 when we're recording is part of the equation, but it's not the end of this story, right?

It's like when you're like my kids, they mentioned I have daughters and say, oh, i'm going out, that would never be a sufficient statement. Who are you going out with?

Where are your going? Are there guns and drugs and this involved? Does the person driving you have a criminal record? There's a ton of follow-up questions that need to be asked.

So similarly, with the LDL particle with a regular lipid panel, I think there's so much more now knowledge that we have and so many more testing that's more available for us to get a more complete picture of what's going on with our patients and our clients.

And so looking at APOB, All of these then kind of add into the tapestry and the mosaic of that person as an individual for me to be able to say, okay, you know what, your LDL is low, which is good, but your LPL is high.

So we still need to do this, right? Or the other or, or getting back to if diet isn't the source of cholesterol, where is all this cholesterol coming from?

LDL can be an acute phase reactant. So maybe there's a ton of inflammation happening somewhere. There's vascular infamy, maybe, there is glycocalyx injury, and maybe toxic exposure that you don't realize.

Maybe there are chronic mold, some ongoing smoldering, chronic bacterial infection, or viral infection that's at play

here. We have to look beyond the, if I lower LDl, people get better, which is what the conventional model kind of things.

And again, I think we're right for the wrong reasons, but we are not getting to the why, right? Why is cholesterol high? What's beyond? If diet isn't the cause, then what's the deal?

And so that's where- Well, why is the body making it? Yeah, exactly. That's why the cardio-metabolics comes into play, insulin resistance, and looking at all these other metrics.

Because once you start to improve that, of these energy blocks get unstuck and then the body works the way that it should, right? So, you know, I can't say that happens in everybody, but I certainly know in me as my N of one, as I started to improve my body composition, lift more weights, eat fewer, process foods and all that stuff.

I mean, not saying I got back to normal because genetically I'm cursed, But I was able to go on a much lower dose of statin. And yes, on the statins as a cardiologist, feel that is important for me.

It's a personal decision. But I know that I'm doing what I can do to look at my numbers, look in my risk and reduce things as much as possible. Yeah, well, I mean, so you bring up the next hot topic.

So, first of all, just to recap a little bit, when it comes to cholesterol numbers, what you're looking at, Matt, it's the details, the devil's in the detail.

Exactly. On the cholesterol number. You've mentioned LP little a couple of times, maybe explain to the audience who are not familiar with LP, little eight, What it is and what it means.

Cholesterol, ApoB, Lp(a), and Statins

And then we're going to dovetail into the dreaded statin discussion because it Well, you know what I mean? It's emotionally charged. So Lp little a, yeah.

We can hit that one pretty quickly. As I mentioned, on the surface of these LDL particles, we have a ton of cell surface proteins. They're receptor ligands for LDl receptor and APOB and all these things.

One of them can be this lipoprotein little A it's called. And essentially what that is, it's a structural protein. I mean, imagine this is just a blob of jelly floating around, so you have to have proteins to give these cells structure.

So it is a structure protein, but it significantly increases the atherogenic risk of that particle. So it's like taking something bad and making it worse.

Right. It's kind of like that for these LDL particles. It's something that's been around in the literature for a while. It has probably been known about for 20 years or so, but just now we have these commercial assays available.

And the remarkable thing is that it's a genetic mark of cardiovascular risk. So you can have somebody with a low LDL but has a high Lp little a, and they're still at risk, famously that personal trainer on The Biggest Loser, I can't remember his name, had a heart attack.

This is someone in the prime and working out and all this stuff, but he ended up having a high LP little a knowingly, right? So now we're seeing about 20% of people in a general population will have an elevated LP delay in African American populations.

It's about 50. So specific to their group. know, I think it's an important marker to assess. Generally speaking, it is a one and done. So you just check it once and it will be elevated.

There are some medications now out. Well, probably phase three or phase four clinical trials. A couple were reported at the American Heart Association meeting last year that show a reduction in Lp little a, so a therapeutic

for it.

What are they called? They're like these antibody medications. I can't remember the name off the top of my head. It's not the SGLT. SglT2 is a different medication.

Yeah, that's for diabetes and stuff. Or you may be thinking of the PCKS9 inhibitors. Those are injectable, those work to help prevent the degradation of LDL receptor so you have more of these hungry, hungry hippos on your cells.

That's a difference mechanism than this. Um, but the, the point of that being is that, um, is, that there are therapeutics we don't know completely. We're not sure with the outcomes data, uh, where it would be, you know, okay.

The first step of any cholesterol medications, like the PCKS nine. So it's number one, does it change the biomarker that you're looking for? So does drop your LDL for PCKS nine?

Does it drop the LP delay for these medicines? And number two, does dropping that medication or dropping the biomarker have the intended effect, right?

Because we learned, I think it was in the 1990s or so, there was this April A. Milano. It was some Italian village outside of Milan. These people lived forever.

And so they learned that, oh, they've got this special protein. Let's just isolate it. and give people a ton of it and see what happens. It turns out you increase their APOA melano level, which is what you're looking for, but they also died faster, that clinical trial stopped, right?

So not good. So now the outcome trials will come out. There may be some benefit. The PCKS9 inhibitors, the injectable cholesterol medications, do show a modest drop in Lp to the A levels as well.

So the point of that being is that for most people, by and large, you just check it once and you're done. If you do have some elevation, and that may include being on a statin drug to reduce your statins, I think diet and lifestyle is certainly a big part of it.

And then wait to see what these new medications. Yeah. So going back to the cholesterol thing, one of the big fights is there are people who just simply will not, there was a study I read a long time ago that talked about in elderly populations where the cholesterols were too low, which they seem to be getting driven down constantly, like being driven by the pharma companies.

I mean, I don't know who, but whatever. companies, keep dropping what the threshold should be. But in people over the age of, I can't remember if it was maybe 80, people with the lowest cholesterol rates had the higher rates of depression and maybe even cognitive decline.

And so based on that, you have a big population of biohackers who are like, need to keep our cholesterol numbers high. And then you've got the other guys who are like, are you insane?

You're going to die. We need drop them down. So where do you think the nuance was? Yeah. I mean, this is a classic case of cardiologists are from Mars and everybody else is on Venus because when we look at these LDL trials and driving these rates down, we're looking at what's called MACE, major adverse cardiac events.

Right? So we are looking if I drop your cholesterol to negative six, right? Are you going to have a heart attack? And the answer is unsurprisingly. And again, like I said, I don't think there's a lot of discussion to be had about LDL and cardiovascular correlations, at least in my mind.

So these outcome studies are looking at driving these LDl targets lower and lower in reducing cardiovascular events. And, you know, they're seeing it a reduction.

And so, that is what the guidelines and societies are putting forth. But what we're not looking at are other outcomes, right? Like the signal for insulin resistance and brain and kind of all these things.

As you mentioned, the brain is like 80% cholesterol or some crazy, crazy amount, or looking out hormones. If you've got hormones all have a cholesterol backbone and now I'm dropping the cholesterol particles super low, what's going to happen?

Now, again, as I mentioned, most cells have the ability to synthesize cholesterol and are able to make the hormones that they need. So it's not that big of a deal.

But I will say, is I think that cardiologists and the medical establishment in particular doesn't understand maybe not the… We have a good understanding of the major adverse cardiac events that happen, but we don't like the nuisance things that happened to patients, right?

And the literature doesn't really point to that too much. So there may be a concern about memory loss, right? And so there was a database looking at, I think it was the All Hat patient database, looking brain outcomes in these patients on statin drugs.

And they saw, you know, no statistically significant difference, right, is what they say. So therefore, there's no point, it doesn't make sense that statins cause mental decline, but no, statistically, significant, difference doesn t mean there s no difference.

And this is what the nuance of statistics is that population-based statistics can't be applied to an individual. So if having an LDL of 160 puts somebody at a 63, and I'm making that number up, 63% risk of a heart attack, that doesn't mean I have a 62% heart attacks.

I am binary. Right? I either 100% or zero for my cardiovascular outcome. And so this where we have to be kinder and gentler as we look at clinical trials is to say, okay, maybe an aggregate people do okay, but there's never been a hundred percent zero outcome of any clinical trial, as far as I've known, meaning that if you don't do an intervention, X, Y, Z, a 100% of people get it.

And if do the intervention zero percent of get right. So now what we're doing is throwing the baby out with the bath water. We're taking people who are potentially seriously suffering.

from whatever outcome, back pain, shoulder pain brain fog. I remember when I took a statin called Simba staten or so core, I got weird trippy dreams, right?

And so we're not taking that into account for people and saying, okay, you know what? This can, this is real. This could happen. And you there's this famous trial that a study that was done that people were put on a satin versus placebo and the placebo arm was higher in terms of ad reported adverse reactions than the staton arm.

And, and so that was taken by most cardiologists to say, Oh, people are just making this up. Come on, like a patient doesn't have something better to do than complain about something they're worried about.

And if they are worried something and it's not your drug, you still got to figure it out, dude. You can't just be like, go to hell. I mean, like it's nonsense.

Doesn't fit the narrative. Yeah, exactly. You don't my algorithm what should happen. Therefore, you're wrong. No, it doesn't make sense. And so in this world of statins, yeah, there are camps of people who will have LDLs of 200 and say, I will never go on a statin.

There are people who have LDLs of like 30 and say I'm taking a statin every day. In fact, I've just, you know, crushing up the tablet and storming lines of stat and I love it so much.

Right. So yeah, these two camps. And I don't think, and, honestly, it's not a compound answer, but I think what we

have to do is take into account the belief system of the patients, taking into count where they're coming from, why they are saying these things, help them understand the science a little bit more.

So if someone is like, I want to get my cholesterol down to negative 10, okay, understand you are an extremist in that standpoint, let's talk about what this actually means.

Or if you're a, you know, a sneeze and a blob of cholesterol comes out of my nose, but I still don't want go on because my levels are so high and I don t want on a statin.

Okay, so why are you coming at that? help people understand the risk. I think either way you optimize diet and lifestyle, right? Nobody can argue that.

Um, and then, you know, see, is it a block of being on a medication in general? Is there something about a statin? Because now we have several lovely stat and alternative drugs injectable and oral and otherwise that can be used.

So, is it just the depletion of coenzyme Q10 that you're worried about, the back pain, and the muscle? And I'm a power lifter, so there is a study that shows that being on statins can lead to a 10 to 12% decrease in muscle function.

So for most people, it's not a big deal. But when I am squatting 400 pounds, that's a difference between 360 and 400, which is huge deal, right? So is that what the block is?

Where are we coming at this from? you're never going to win a debate. When people are so zealous about whatever side they're on, there's very little that I can say that's going change their mind.

But you have to kind of let them know, okay, I see where you are coming from. This is where I'm coming. Does it make sense to you? And I will say this, people might think, oh, Sanjay is pro statin.

I am not pro-statin, just anti-stupid, really is what it is. Because on the flip side, is that we use too much stat medication. So in our universe, in the statistical approach to medicine and literature, there's this number that, we calculated, called the number needed to treat one over absolute risk reduction.

Basically, what that is, is how many people do you need to very altruistic and great metric, right? And so when we look at heart failure and medications for heart-failure, it's like one in 30 people.

When we looked at dialysis, which is the benchmark, I think it was one-in-25. You do 25 patients on dialyses to save one, that was the Medicare benchmark.

But when you look primary prevention for stat medications, oftentimes that number, depending on the study and the population, is anywhere from one to 90 to one and 200. which, you know, sounds less efficacious, but then when you flip that statistic and say, all right, so that means 89 out of 90 people who are on this medication will never get a benefit, right?

That just means that we have to be smarter about our decision making, or, like, and so, I think that, we had to look at this appropriately and, say okay, i get that you don't wanna be in a statin, as cardiologists and as vascular specialists and Dr.

B have, to say and you I never, I didn't think that you would ever get a benefit from a statin, right? Or you may never get to benefit with statins, but let's do a clearly scan.

Let's see if you have soft plaque, let us look at your cardio metabolics. This is your insulin level. It's popular in a CGM. Um, and see, you know, are you an overabsorber or are, or you and over producer and change things that way?

You know? I mean, there's so much more that can be done. So, uh, I guess I'm, like I said, very much pro using all

the tools at our disposal to have a much sharper indication for cholesterol medication.

And I will say that now, unless it's in a, what's called a secondary prevention setting where somebody has had a heart attack or had stroke or head heart bypass.

or I've had to fix their lower extremity arteries or something, I'm much more deliberate about that statin conversation. And in fact, there's a great tool put out by this really funky place you may never heard of called the Mayo Clinic.

It's called the Mayo Clinic Stat decision tool or aid or something. Just Google it and you can plug in your numbers and it'll show you a real pictograph of what your benefit would be.

And it will say, I mean, most of the time when I plug it in, show it to patients, it say given your age, your gender, at your blood pressure and your cholesterol numbers, four out of a hundred people may get a benefit out of this.

And so then it's up to that patient to decide or me to have that discussion with them. Do you think that you're one of those four people or one So then you dig deeper.

And my favorite thing to do is I worked in a healthcare system where we had all their x-rays and CAT scans available. I'd pull up an old scan that they may have already had and look up and down the vessels and say, hey, you know what?

On the scan you had two years ago for your belly pain, which you probably didn't need to scan for belly, but that's a whole other thing, is that I see evidence of calcification in your abdominal aorta.

You know, that puts you at a higher risk. So we don't to use more testing. We can just use the testing that we've had to further risk stratify. Yeah, yeah, no, I think that's so interesting.

Okay, a couple of questions. I know you, you got to go your presentation and then there's 20 questions I want to ask you. Quickly, i'm not gonna ask all 20. You mentioned that there are better statins.

Do you want To just rattle off like the statens that people maybe should ask their doctor? Yeah. I think the two that are probably the ones that should be used the most right now, Atorvastatin, used to be brand name Blipitor, and Rosuvastatin, brand named Crestor, both of these are available as generic.

For people who are on a lot of medications or have had muscle aches and pains, still around is something called Pravistatin. It used be called Pravacol.

Its metabolized a little bit differently, more through the kidney, it's more water soluble. So it tends to that people get less of the aching pains. Now the trade off for that is that it is less potent.

You'll need a higher dose to get the same effect. but it's still around. So I think those three are really the only three that should exist in my mind.

Right. Because the, the pravastatin, would that make it more appropriate for someone who, you know, your patient who's got LP little a very active kind of an athlete?

Yeah. I mean, I would want to compromise their athletic performance. Yeah, there's a dose response to, to the side effects.

Lifestyle Habits for Heart Health

So I'd probably put people on like a low dose for suvistatin. Um, if, that's what it comes to. But again, it would depend on the numbers and so many different factors.

Okay. You know. There's options and different outcomes. There's options and there's non-statin options as I mentioned as well. Okay. Oh, shoot. Can plaque be reversed?

Actually, yeah, with aggressive LDL control, there's some studies that it can. I think that part of that is diet and lifestyle intervention. So, the funded, I'll say it this way, is the funding clinical trials show that high dose of resuvastatin and some of these injectable PCKS9 inhibitors, so three or four papers on this, can lead to reduction in plaque volume.

You can reverse it. But I suspect that diet lifestyle interventions, reducing inflammation, optimizing health, getting rid of insulin resistance can also do that.

Nobody's paying for a clinical trial of broccoli versus placebo, but I think mechanistically it makes sense. And in fact, that's what this next chapter of my career is based on.

So I hope it works. I love it. All right. If you could prescribe non-medical habits for healthy heart, what would be at the absolute top of the list? sleep seven and a half hours at least of sleep a night.

People don't realize that, right? So not so much movement, but sleep is huge for brain health, for vascular health for cardiovascular, all the things.

Yeah. And sleep quality, I would think, you know, because the other big caveat in sleep, is the mouth breathers. What actually, speaking of which, what are your thoughts on mouth breathing?

Yeah, so you're reducing, part of the benefit of nasal breathing is you are increasing nitric oxide, NO. NO is a potent vasodilator. You don't get that through the mouth.

I actually suggest mouth taping to people quite a bit. So you take a piece of paper tape, go up and down when you sleep and people are surprised that their blood pressure responds to that as well.

It can be a little bit, if you've been a boxer and you have a hugely deviated septum or something, then you're not going to be worried about it. But as long as you normal nasal passages, people say my nose is plugged up all the time, but when actually have to nose breathe, it opens up.

early on in my mouth taping experience, I did a Peloton with duct tape across my mouse. I didn't realize that I wouldn't be able to drink water, but I made sure I breathe through my nose and my nasal passages were never more open than they were at that time, both of them.

So don't use ducttape. Bad idea. Yeah. Particularly in a peloton, a 45 minute peloton where I was dying for thirst, but it was just one of those mental things where, I just need to give this a go, like a stupid Sufferfest nonsense.

Not like our buddy that walked across Antarctica, you know, stupid little mini Suffersfest thing. But yeah, nasal breathing is huge. And yeah. If you can do a mouth tape, You'll see blood pressure responses and all sorts of different things.

Okay, last a couple of quick fire questions and I'm going to let you go because we never got to the diet conversation, which I really wanted to get to.

Well, we'll have to come back. We'll absolutely have come and do a part two. But if there's a food to avoid, to Well, I think in terms of foods to avoid, and I hate to be generic, but any ultra-processed.

I kind of think of it in Ayurvedic terms, anything that doesn't have a prana, or anything doesn' t have life force. Anything that won't spoil basically is kind like you are adding to your life.

by taking on the life force of what you eat, right? It's kind of a weird way to think about what I eat every day, but it works for me. And so, you know, the ultra processed foods, our body doesn't know what to do.

I mean, I would think, anything that comes in a foil bag or a box is basically something, if we're looking at the worst things, Skittles have been shown the candy Skiddles to have the highest glycemic impact and they're full of, as of right now, they haven't taken out all the artificial dyes and things.

So I think that's probably the worse. Deep fried foods. Yeah, I mean, deep fried foods, grilled meats, like all of that stuff, are horrible. Anything that you can get at a county fair probably is to be avoided, right?

Like deep-fried butter sticks and all sorts of craziness like that that people get those fairs. Uh, you know, in terms of healthy things, I think it's, it stuff that your body is designed to eat.

Right. So I go to straight to like broccoli and the cruciferous vegetables. I they're not just healthy foods, but healing foods. Sulphuraphane, eating five colors at every meal, right.

Getting the phytochemicals in. I don't think that extremes of diet, and this is something we can talk about maybe in our next, but like carnivore, vegan.

I mean, I'm much more of a balanced person. We have, you know, all these different types of teeth, we have incisors and molars and all of these things, because our bodies were designed to eat different things.

And so, finding a happy medium, that's what I preach in the program that I run, is it's not all this or all that, it is some of this and some that. That's why I am not super popular online, when you are moderate, nobody cares.

You have to be, no, you've got to eat all fish eyes. You've have all liver, all this, and all that. And our bodies were just not designed to do that, right?

So yeah. So I think in terms of the single beneficial heart health thing would be the cruciferous vegetables. I love those for a lot of different reasons.

Beets are great. you have be cautious about sugar, but they do have a precursors for nitric oxide, which is another great thing. High magnesium containing foods.

Basically, it's like the stuff your grandma told you to eat, right? It's grandma wisdom, I call it, is really just going back to the natural stuff that your body was meant to I love it.

Thank you. But not excluding meat, fish and chicken. So yeah, I think that, yeah. At least in my mind. Yeah. Is that while, you know, being plant forward is, is definitely a good idea.

You don't necessarily need to be plant exclusive, right? So, so I that there's definite benefits to proteins and the right proteins. Don't sit here and eat a hot dog and tell me that meat is healthy.

Right. Um, but, uh, eating grass-fed grass finished, not, if you eat fish, watching out for the high mercury fish being cognizant of the mercury load.

even in chicken, like antibiotic free and happy chickens and all that stuff, it makes a difference because we are what our food ate. So if you're eating inflamed food, that's going to inflame you.

And I think that where a lot of these meat-based clinical trials can go wrong is that they're not looking at the proper foods to be eaten. Yeah. We're getting signs of inflammation.

That just makes sense. If you eat a bad banana, you are going It's just, like I said, I'm anti-stupid, you know? I love it. Well, Dr. Sanjay, there are…

I have a whole other list of questions for you, so clearly we're going to need a part two. Thank you so much for your time today. This has been really great and eye-opening.

Why don't you let people know where they can find you and for those who are interested, how they could learn more about your program. Absolutely. So you can follow me on Instagram, which is my primary social media route at Dr.

Sanjay MD. so D O C T O R S A N J A Y M D. In fact, it's right there on down there. And if you want to learn more about working with me, you could go to www.lagunamedicine.com.

That's my practice. I run a health and wellness program online. Anywhere around the world called Well 12, a 12 week program that really kind of focuses on mental, emotional, spiritual, diet, sleep, stress, all of the 12 elements of wellness that are outside of just lab tests, or I'm taking on private patients as well.

So if you want to work with me one-on-one and you're a state where I've licensed, we can take that on again, take them on as, well, but it's just great.

And really my purpose in life, I tell people my midlife crisis is to try to heal at scale. And really kind of doing diet, doing lifestyle interventions, so powerful.

And if there's one takeaway I wish anybody had from our time today, it's just that you can change the narrative. It's never too late and it doesn't have to be a pill.

That's what I want people to know. Thank you. that's amazing. thank you so much. This has been fantastic. Awesome. So great to