

Episode 22 – Cancer & Vaccines

With Dr. Sanjay Juneja

Diane (00:00):

Are vaccines and cancer related? Learn the answers you wish you had known before, on this episode of Vax Matters.

Clay (00:15):

Hi, folks. Today's episode covers a relevant but serious subject, cancer, and its relation to vaccines. Is there a connection? And do vaccines help prevent cancer in any way? These questions and more will be answered by Dr. Sanjay Juneja. He currently serves as Baton Rouge General's Chief of Oncology Service Line and is triple board certified in hematology, medical oncology, and internal medicine by the American Board of Internal Medicine. Welcome to the show, Dr. Juneja.

Dr. Juneja (00:49):

Thank you for having me. I'm excited to hope ... you know, talk about these things and hopefully debunk some of the kinda semantics that are, you know, uh, revolve around vaccines and cancer and immunity and all that stuff.

Clay (01:00):

I think it's- it's- it's amazing. Let's jump right in. How do cancer and cancer treatments affect someone's immune system?

Dr. Juneja (01:09):

Yeah. So, you know, the coolest thing, not really cool, I guess, but the most important to kinda sit back and realize is cancer is cancer, becomes cancer, because the immune system wasn't able to attack it. So our immune system's always, always, throughout our lives, killing cells that are either about to become cancer or, in a way, would've been cancer if they didn't recognize it. So vaccines, in some way, and there's all different kinds, they do something, right, to the immune system, ideally help it. So when you're talking about infections and all, you're trying to basically give your body and immune system the ability to attack this infection that may be coming and just kind of, you know, basically like the National Guard, like bring- bring someone in so you can take care of a situation.

Dr. Juneja (01:54):

When it comes to cancer treatment, um, that's the big concern. Right? Like, gosh, you know, what's it gonna do? It's gonna hurt my immune system. So if I may for a second, 'cause it's gonna make everything make a lot more sense throughout this episode, and that's basically that the immune system, you want to think about it in two ways, two buckets. Okay? There's one side that's lymphocytes, antibodies, um, stuff that, uh, revolve around basically viruses. You need antibodies to kill viruses. Right? And- and that's called a lymphocyte or antibody process. Okay? That also relates to lymphomas. And it relates, as you'll learn, to a lot of stuff that has to do with autoimmune disease: Lupus, you know, Sjogren's, anything where you need rituximab and stuff.

Dr. Juneja (02:36):

The other side of the immune system is what's called ... or what are called neutrophils. Now, that's what usually people think about with cancer treatments and being "immune compromised." Because

when you're giving standard chemo, which is the kind of chemo you hear about and you're- you're scared of, you know, and rightfully so, we've been using it for decades, it's a poison to a degree, those lower your neutrophils, which make you at more increased risk of, you know, abscesses and bacterial stuff and everything like that. But usually that clears up because once the chemo hits you the hardest, usually about a week out, um, then your immune system starts to recover. But that's why we say sometimes, you know, don't- don't do, you know, fruits and vegetables that have been out. Make sure everything's been boiled. 'Cause that's all bacterial stuff.

Dr. Juneja (03:19):

Then you have treatments that are towards lymphomas and also a lot of autoimmune disease that wipe out or target antibodies and lymphocytes. That's a big problem when it comes to stuff like COVID because you need those antibodies to be able to have the memory to say, "Oh, I recognize this person. I need to go kill it." So those are two different buckets. And it's really important to know as a patient or as a family member what kind of cancer is it. Is it a lymphoma or is it a solid tumor like breast and stuff? And are the treatments attacking specifically the antibody side and the lymphocyte side? Or is it attacking, basically, uh, you know, in a general chemo way where it's mostly neutrophils and stuff that you worry about with bacteria. I hope that makes sense. But the answer is they both definitely affect the immune system. But understanding those two buckets can really help navigate like what to be, you know, more wary and cautious of and vigilant, and some things that may be kind of erroneously getting lumped into the same kind of, you know, picture.

Clay (04:13):

What's your approach in explaining what you just did to a cancer patient? Because I can imagine there is a rush of information that they have to consume whe- when they find out that they- they have that diagnosis for whatever type of cancer they have. What's your approach to making them understand, at least on the basic level, what's happening with their body and what they then need to do?

Dr. Juneja (04:37):

Yeah. So that's ... it's an important thing because, you know, especially a lot of the stage four or currently incurable cancers where people, fortunately, are still living years, sometimes I find out later, and now I try to unearth it really early, that their, basically, like family's so concerned and love their family member so much, right, it's like, "You're not going to your grandkids. You're not going out. You're not," whatever. So you're- you're on top of ... you're valiantly beating this cancer, but like you're basically not able to live life. And so that's unfortunate too. So I think the way to really debunk that, and that's why I think I do a lot of that on social media, you know, as the Onc Doc, is to really teach people that difference. And the way I teach them is if you're on chemo, you know, that's why I check your counts every week. That's why we see each other every two weeks. When that's low, yeah, use a little more caution. You know, don't eat the steak. Don't eat, you know, at a fresh food, you know, market, which is fun to do out downtown. Like avoid it for a little while. But then when they come up, you can be less worried.

Dr. Juneja (05:26):

And then when it comes to, in this era, especially, and I hope anyone listening like can really appreciate this, when it comes to the COVID stuff, which is, unfortunately, really ablaze right now, that antibody stuff is very important. So if you're going to a rheumatologist or an oncologist and you're getting rituximab or these ibs and mabs and stuff that attack antibodies, that stuff is viral stuff. And as- as I'm sure we'll get to, that uses a different kind of ... I mean, you should always be

cautious, but that's a different kind of caution because the viruses really can- can sometimes go with their free will. And steroids, by the way, steroids, when they say, "Why does it make you immune compromised," it knocks down your antibodies, big time, your lymphocytes. You give somebody steroids, you- you see their lymphocytes go down dramatically. That's the same kind of ... In your mind, it should be the same world as antibodies and stuff. You know, that's why they check antibodies in- in- in Lupus and stuff. "I have anti whatever or ANA," all those are antibodies that are attacking your own body. So we're like, "No, go away, antibodies." And you give treatments, and you give steroids. You make those antibodies go away. Symptoms get better with rheumata-rheumatologic autoimmune stuff, and you're like, "Ah-ha, this is great," until you need an ... other antibodies. You know, you need that troop for these things that are circulating.

Dr. Juneja (06:35):

And I'm just gonna go ahead and, you know, get to this part, and I know y'all are gonna ask, but that's why it's so important to ... about this vac- vaccine, not the ones that- that we've been using with Pfizer and all these other things, but there's something called e ... uh, Evusheld, uh, Evusheld, E-V-U-S-H-E-L-D. 20% ... I had a big, uh, this podcast with someone from the White House that's very kind of ... He has cancer himself. He has a lymphocyte cancer. And he was really saying, you know, disappointed, he's like, "Only 20% of this is being used." This is for people, this vaccine, that can't make the antibodies. If you give vaccines, you're trying to teach the antibodies to attack when you see the virus. Well, if you're wiping out part of the treatment, either for autoimmune disease or for cancer, if you're wiping out the antibodies, how are you gonna get that memory? You could boost all day. Like boost all day. You know, there's nothing there to be able to like learn.

Dr. Juneja (07:23):

So Evusheld is something that was like emergently approved to give you those antibodies and not rely on your own antibodies to learn. And it's literally life-saving. And that's why, unfortunately, you know, some patients, "He didn't look sick. He wasn't like," you know, whatever, or, "She wasn't, you know, immune compromised, doing really well in treatments. Wasn't even chemo." That's why. It's because maybe it was an antibody-directed thing. And so Evusheld needs to be used more. Is completely approved in like anyone, I think, over 12 or something that has these kind of immune compromises on the lymphocyte side.

Dr. Juneja (07:51):

Um, whereas if you have your antibodies and troops, then, you know, that's why we use the other ones. Because we're saying like in the off chance ... Who knows? I don't know. You know, I don't know ... Like obviously nobody knows who does well and who doesn't and for what reason. Like we're trying to know. But the memory, or having that National Guard called in, is what a vaccine is. And unfortunately, and rightfully so, I do admit, there's this kind of like, you know, feeling of sketchiness when it came out to all this vaccine stuff, but please understand, vaccine's the same like a blood pressure med. Blood pressure meds are all in different types and flavors. And some are, you know, obviously more problematic than not. Vaccines, it's a very broad category, as we'll get into, about a whole bunch of different pathways and everything. So I think learning stuff like this, and that's why I'm really proud and just, you know, humbled when people like say like, "I'm gonna learn more about it." That's actually gonna give a lot of comfort, I think, um, and also disillusion some of the kind of blanket statements revolving around this stuff.

Diane (08:41):

It seems like it. You said vaccines are all kinda lumped together.

Dr. Juneja (08:45):

Mm-hmm.

Diane (08:45):

And it's hard, when you're talking about the National Guard coming in, that really does give people ... it's a word picture. And as-

Dr. Juneja (08:52):

Right.

Diane (08:53):

... Clay said, it's really hard to figure out and how to explain it because your brain is going in so many different directions when you hear this. And you're trying to figure out what is right for your body. And you have so many people, you have your family, you have the professionals, you have the doctors, telling you what you need. You're bombarded. You're just absolutely bombarded with so much information. You want to know what's right for you.

Diane (09:16):

So my question then too, when you're talking about, you know, again, vaccines, in- in general with, uh, the umbrella statement, what vaccines are cancer patients, or should cancer patients, not take? Are there some that they should not ever have? Or is that even a relative question?

Dr. Juneja (09:36):

No. Yeah. I wouldn't ... I would not say like not ever have. Um, for the most part ... So vaccines work two ways. Right? What a vaccine is doing is basically teaching. Like if you had like this general kinda ... you know, the pawns on a chessboard. You just had these general people that say, "Hey, attack anything that comes in," that's a generic way of attacking something. So all of us have that ability. But if you want to go to the sniper, or you want to go to, you know, the next level, this kind of like, you know, very elite, targeted, uh, kind of defense mechanism, that's what vaccines and antibodies do. You make that whether you have a vaccine or whether you have the infection. It doesn't matter. Like that's why with chickenpox thing, right, it's like either way, that identification of saying, "Hey, you robo cops, this person that comes in with an orange suit and a brown tie and sunglasses that's six-foot tall, if you see that, I'm gonna just put a ... put a couple of players out in the system, if you see that, call in all the other guys to like, uh, and- and women to come and attack it." That's- that- that's the purpose. So you get that memory, whether you got the infection or you got a vaccine.

Dr. Juneja (10:40):

But if you haven't seen the infection before, the problem is it takes two weeks to make the robo cops. You can't ... you can't start say ... you can't start selecting to make sure it was the most targeted until you call in the troops. Now you're flying in the guard. It takes a while. But if you dispatch 'em, and most of 'em are able to still have civilian life, but they're like living in that area, then you have a couple of people looking for it. That's- that's the memory. That's the vaccine. And then they can call someone much more rapid.

Dr. Juneja (11:07):

So the question, you know, that always gets me, and it's a fair question, when somebody says, "Well, they got the vaccine and they still got COVID." You know. How would you be able to call the

troops if you don't even have the troops in your body? Like you have to be infected with something to recognize it to then get it. It's not this like wall before you even come into your skin. Like it's ... You don't ... you don't radiate a repellent to COVID. You have to have the infection. You gotta have the people recognize it. And instead of taking two weeks to come and attack it, it can happen much sooner. The longer you go from exposure to something, which is why we boost for shingles. Right? Like everyone either gets the chickenpox vaccine before or they had chickenpox, but then why'd they break out in shingles? Why is it in the 50s, and 60s, and 70s? Because the people that are looking for that memory thing start to just go away. They start to chill. They start to get lazy. Like, you know, when we deployed people in Panama, um, you know, the country and stuff and they actually never had war, like eventually things just got more lax. That's what happens. So you want to re-jog the memory. That's the concept of boosters.

Dr. Juneja (12:03):

So forgive me. But all that to say, that's why with cancer, you know, for the most part, if it's not a live memory ... So you can give somebody, "Hey, recognize this person." And you can give them a piece. You can just throw that brown suit. I don't remember if I said brown suit or brown tie. But whatever that feature is, you can give 'em a part of it, or you can give 'em a basically a synthetic, [inaudible 00:12:23] 3D pin- printer [inaudible 00:12:24]. So that's a non-live. A non-live vaccine means it doesn't have any like- like toxins or- or ability to actually hurt you. Live vaccines are a little scarier, and, um, there's a couple of those that we still give. Right? Like MMR, um, is one of 'em, when you're a kid. And- and, uh ... and some of the flu ones. But now we're staying away from that. Those live vaccines, varicella, rota, that's- that's still live. That's still a component that can hurt you. So you shouldn't get that like right out the gates if you're immune compromised or getting heavy chemo.

Diane (12:51):

So you should not get those?

Dr. Juneja (12:55):

But non-live ... What's that?

Diane (12:55):

You should not get those? Is that correct? Is that what you said?

Dr. Juneja (12:56):

Right, right.

Diane (12:56):

Okay.

Dr. Juneja (12:58):

Like after an aut ... uh, like a transplant. Right? Bone marrow transplant.

Diane (12:58):

I see. Okay.

Dr. Juneja (12:59):

Like we don't ... We wait to give it because like we don't want it to take off because things are sluggish. But in adults, for the most part, we- we're not really taking live viruses. So a not live virus, it's pretty benign. You're not ... It's literally not alive. There's nothing to use to propagate an infection. What really is the problem is cancer patients, especially those attacking the antibody stuff, which now everyone's, "Ah-ha, I know why," because those are the people that actually like are the smarter ones that go and get it. It just probably wouldn't be effective. That's the problem. And that's- that's what we learned.

Dr. Juneja (13:27):

So on high-dose steroids, on Rituxan, on those, it's- it's not so much you shouldn't get it, it's that, will it do anything? And of course, vaccines or anything, any blood pressure med, any Advil, anything you take is a risk, of course. One in 100,000, one in a million, whatever it is. So then the question becomes like, "Okay, is it worth it?" But like ev- evu- Evusheld, I don't even know if I'm pronouncing that right, but that one is not ... doesn't rely on your immune system. So like the people that have depressed antibodies for any reason should get that one.

Dr. Juneja (13:54):

Um, but yeah, other than live ones, which your oncologist will guide you, um, for the most part, it's either like, yeah, we should get any, you know, obviously, support we can, because we'll have periods of being immune compromised. But the question is, will it work or not?

Clay (14:08):

Are there any vaccines that you would recommend, as Di- Diane was asking about ones to avoid, are there any that you say, "I encourage you to have this," uh, as it relates to either a diagnosis or some kind of preventative treatment?

Dr. Juneja (14:22):

For cancer or for virus?

Clay (14:23):

Uh, for cancer.

Dr. Juneja (14:25):

I love that question. So this is one ... this is one of the coolest things. Right? Everyone dreads cancer, rightfully so. Um, and unfortunately, a lot of things aren't actionable. They're like, "Eat healthy," you know, "Exercise," you know, "Try not to be overweight." It's like give me some more, you know ... give me some more concrete advice, not these general blanket statements. 'Cause like everyone fears it for- for good reason. Fortunately, there's at least a couple we can knock out or significantly increase the chance of. And they're scary ones. Cervical is one that is almost ... That's the one where everyone says it should never be a stage four cervical. Everyone should be either cured or prevented for cervical. It's like that's the general statement. Why is that? Because we've isolated. There's not many where we can say, "These are the things that cause cervical cancer." We isolated this human papillomavirus, these couple of strains, you know, five or six, that constitute 90% of any cervical cancer happening. Meaning you can't invite a cancer on the cervix, you know, the female cervix, you can't invite it unless you get this virus embedded in your DNA to then start replicating uncontrolled where your immune system can't do anything about it. That virus prevents

up to 90% of all cervical cancers, nine out of 10. Cervical cancer's not common, but 90% is a huge number of not- not common or common number. So that's very important.

Dr. Juneja (15:43):

The second one ... And then if you get your PAP smears for that 10%, there are cancers like colon, for the most part, and cervical, that take years and years to become a cancer, like a true full-blown cancer. Because any cancer, almost always, is a series of mutations over time. Just bad luck, over a year, two years, three years. That's why colonoscopies are five to 10 years. Because we know for the most part, if we take out a polyp, we can look at the features. We know that they're at second or third base, and they're only one or two away from going, you know, home run should be positive, but imagine it's bad. They're only a few steps away. So you take that whole- whole thing out on a colonoscopy, and you're like, "You're good." But five years, because there might be some tissue that will get those mutations. We know about how long it takes. And that's what cervical cancer is as well. So if you get your PAP smears on a timeline, you can catch it way before. This whole, "I have ASCUS. I need a cone. I need a P," that's all stuff taken out before it gets into that next stage.

Dr. Juneja (16:29):

The other one ... and- and the other one is oropharyngeal cancer, head and neck cancer, um, you know, there's been a lot of kind of celebrities talking about it. That 70% or so about that is from HPV. So, you know, unfortunately ... And HPV's extremely common. It's like if you've had one or two sexual partners ever, it's like 90%, don't quote me on that, but it's very high. It's just a community thing like- like- like, uh, chickenpox was or mono or anything else. Like everyone's got that. It just is common. But 70% of head and neck, or oropharyngeal cancers, in men especially, are from HPV-positive. So all that to say, the Gardasil shot, they didn't have that when I was younger, or when I was like right in that age. Now they keep broadening the guidelines, letting you get it earlier, because you want to have, again, the National Guard. If anyone plans on having sexual activity life in their adult life or- or even, you know, older teenage life, you already have the people to clear it so it doesn't embed into something in your orophar- oropharynx, in your, you know, head and neck area, or in your cervix. You could just clear it before it gets there. And so those are very preventative.

Dr. Juneja (17:26):

And then the third one is hepatitis B. We know hepatitis B caused hepatocellular carcinoma. And liver cancer, you know, we're pretty behind on. We don't have a lot of good treatments. So, um, to not have hep B, which is a known-

Diane (17:38):

Mm-hmm.

Dr. Juneja (17:38):

... you know, uh- uh, incriminated in getting HCC. Now, you can get hepatocellular carcinoma for other reasons. But at least hep- hepatitis B won't be one of them. So the Gardasil vaccine is for the HPV, hum- huma- human papillomavirus, which causes 90-ish percent of cervical cancer and 70-ish of oropharyngeal cancer, which is not pretty to treat. Usually takes radiation, chemo, you know, a gastric tube. That prevents those viruses. The viruses are ... they're actually still like under, not appreciated, but under like respected. They're- they're nasty things, can be. They embed into your tumor and then start proliferating. Remember that for later. They embed in your normal cells and then like ... and basically cause calamity to all of a sudden make it grow. So you want to clear it

before it embeds. That's what HPV does, the vaccine. Uh, excuse me, the Gardasil vaccine, which just like, you know, covers five or six. You know, when I was in internal medicine, it was five. I don't know if they've updated that. But it covers all the strains we know that do that.

Dr. Juneja (18:34):

Hepatitis B, because hepatitis B infection, chronic, causes liver cancer amongst other things, but hepatitis B we know is one of the causes. And then the third one, um, Gardasil, hep B, yeah, those two.

Diane (18:47):

Remind me, how long have they been available? How ... We started hearing so much about, uh, the vaccines. And of course, it's on the foremost of everyone's mind right now because of what we're going through with COVID. But there have been huge strides in medicine, as you said, with the cervical cancer, et cetera. What ... How long ago did all this start, doctor? Just remind me. Refresh memories out there for our listeners.

Dr. Juneja (19:10):

So I'm not ... It's- it's been around a long time. Like hep- hep ... Like HPV ... So let's see. I'm 35. So it was just starting to come up like in my ... when I was like 15 or 16, so 20 years ago.

Diane (19:21):

So the past 20 years.

Dr. Juneja (19:21):

Oh my gosh.

Diane (19:21):

Okay.

Dr. Juneja (19:21):

That makes me feel old. Um-

Diane (19:21):

Oh, stop.

Clay (19:21):

(laughs)

Dr. Juneja (19:21):

But it's been around for-

Diane (19:21):

Stop it right now. (laughs)

Dr. Juneja (19:28):

I mean, I just ... that- that's crazy. Uh, even- even when I was in college.

Diane (19:31):

Yeah.

Dr. Juneja (19:31):

So maybe 15 years or so. But- but don't quote me on that one. And then, um, hepatitis B has been around for a while too.

Diane (19:37):

Yeah.

Dr. Juneja (19:37):

I mean, you know, the- these are ... these are ones that have been ... Think about it. When you work, right, if anyone's medical, they're always like, "I need hep B vaccine proof." I mean, that's been, you know, for, I want to say decades too. But-

Diane (19:47):

Mm-hmm. Well, it's within recent memory.

Clay (19:49):

Right.

Diane (19:50):

So people can know and they can appreciate what's happened in medicine, and that, you know, vaccines ... I think that a lot of people, Clay, think that with the, uh, what's happening now with COVID, that all of a sudden, you know, we've got this. You know that we've just started doing these trials. We've just found-

Clay (20:06):

Yeah.

Diane (20:06):

... out something the past few months or in the past year. This has been going on for a number of years, thank goodness, getting us ready, getting us up to date for things like this to try to figure out what's happening. This has been clinical tests and trials for a long time. Isn't that right, doctor?

Dr. Juneja (20:24):

Yeah, for sure. I mean, you know, the mRNA vaccines, so this beautiful delivery ... When I talked about remember the embedding of virus stuff into your own like, you know, cell and its like DNA, that's what mRNA vaccines like kind of do too, but they're for you instead of against you. You want to embed or encode things that can potentially, uh, prime you to be able to fight things. And later, we're gonna talk about how it maybe prevent cancer. But that- that's to come.

Diane (20:50):

Wow.

Dr. Juneja (20:51):

So when you're doing these mRNA, again, vaccines, it's just ... it's just dense, unfortunately, and rightfully so, if you're not in, you know, medicine, especially vaccine stuff, you wouldn't know. But to just call vaccines vaccines are just so ... it's just so ... it's too random. It's like saying America's America, but obviously Louisianans are the best, right?

Diane (21:08):

(laughs)

Dr. Juneja (21:08):

And obviously Texas isn't that great.

Diane (21:09):

Well said.

Dr. Juneja (21:09):

It's the same thing.

Clay (21:10):

There you go.

Dr. Juneja (21:11):

That's just ... it's just-

Clay (21:11):

See, I knew I liked you for a reason. There it is.

Dr. Juneja (21:15):

(laughing) Uh, it's the same- same concept. So these mRNA vaccines are totally different, obviously, than the ones that have been around like MMR and stuff. And, uh ... and they were borrowed from cancer treatment, um- uh, trials and- and data. Like that's what, you know, the cancer world was doing. It's like, "Dude, can we please do this for- for something else? Because this just seems like a big problem."

Dr. Juneja (21:33):

Um, so they've been studied for a while. And it's so much safer, you know, in that way, which is what you kept hearing. And I know, at some point, they were like, "I don't believe it." And again, rightfully so, because just the whole thing's a mess. But they're so much safer because they actually are u ... they're basically just giving the sequencing of a piece of- of protein that's harmless about a virus so that your body can recognize it. That's how it works. It's like these mRNAs, that means like I'm just gonna synthesize literally the fingernail. Right? Nobody's gonna, you know, kill somebody ... You can go on airplanes with fingernails. Nobody's gonna hurt somebody with a fingernail. But then you let the body ... You let those ... like those people that are the snipers or the robo cops recognize it and all of a sudden be able to attack it when it comes in.

Dr. Juneja (22:11):

Now, people say, "Well, then how come it's still not fixed? How come COVID's coming back again?" Well, what happens if the fingernail changes? What happens if that brown tie or brown suit, I really wish I remember which one it was, whatever color it was, if they went to the store and got a different one? Because as viruses like come and go and they die, they- they get turnover. They get mutations. It's the same way cancer happens. Your regular cells ... That's why cancers, as you get older, enough times you turn, you get these little mutations that basically escape the immune system, and then all of a sudden, now clone that. They'll ... All of these new what were normal cells have a mutation that it wasn't supposed to have, and they just keep cloning, and then you get another one. Viruses do the same thing. Viruses' goal is not to like, you know, kill people. Viruses' goal is to be alive, is to be infectious. The more infectious you are, without completely destroying a host, the more replication, the more nasty and- and crazy your mutations can get because you can just grow and replicate and just get, you know, nastier.

Dr. Juneja (23:01):

So what happens when they change their suit in that process? Well, all of a sudden, the thing you coded for, that fingernail or that bla- brown tie or brown suit, it's changed so then it can become less effective. That's why the flu vaccine is tricky. You're trying to predict what the clothes are gonna be about the flu vaccine the next year, because it takes forever to make 'em. Right? So that's like how do you ... how do you make something ... How do you, first of all, know which one it's gonna be? And how do you all of a sudden synthesize all the flu vaccines and stuff? So you hope you get it. And any infectious disease specialist will say like, "Oh, we really nailed it this year," and be like, "Man, we missed the mark this year." So that- that's the prediction aspect.

Dr. Juneja (23:31):

But then everything's been against the M spike. What happens when COVID changes? Or the M protein. What happens when the, uh, M ... you know, it changes the M protein so much that we recognize the old version but now this new version you just can't even see? It's like totally wearing another outfit. And that's- that's what gets so tricky. And these things replicate billions ... Like your body replicates billions of times like in a sh ... very short amount of time, these cells. So do viruses.

Clay (23:54):

Are there any vaccines out there now that are meant to prevent cancer or certain forms of cancer?

Dr. Juneja (24:04):

Um, prevent cancer is the Gardasil and hep B.

Clay (24:06):

Okay.

Dr. Juneja (24:07):

Um, now, to treat cancer, and this is interesting, and I think, you know, at the VA, when I, uh, worked there up in Shreveport, we ... It's- it's more commonly given there. But Provenge, or sipuleucel, uh, T, is used in the treatment of prostate cancer. And again, it's not a blanket vaccine, you know, thing. It's not like live or not or mRNA. They all work differently. But this, uh, actually really works well in, uh, prostate cancer. It increases like survival. It, uh ... it has a good response rate above 40%, which, yes, unfortunately, is good in- in, uh ... in our world. So it's- it's been used in prostate cancer

for a long time. Um, and it's a vaccine, believe it or not. It's for metastatic, uh, prostate cancer that no longer responds to killing the testosterone.

Dr. Juneja (24:54):

Now, the other one that we use is actually melanoma. And melanoma's an interesting one. When we talked about immune system and all, melanoma was terrible before. Terrible. I mean, it was so difficult to treat, and the treatments were so rough before we realized, "Hey, you you know how we always say the immune system is like the key to not getting cancer and also taking care of cancers? What if we used the immune system to take care of cancers?" And all of a sudden, immunotherapy like just cha- changed entirely. It's not chemo. It's not poison. It just liberates your lymphocytes to be able to go attack the cancer.

Dr. Juneja (25:25):

And so though immunotherapy is not a vaccine, um, we do have, uh- uh ... Pardon me one second. Uh, talimo- ta ... I don't know how to pronounce it.

Clay (25:38):

(laughing)

Dr. Juneja (25:38):

But we have talimogene-

Diane (25:39):

Uh-huh.

Dr. Juneja (25:40):

... that, uh, is used to inject in the tumor itself in melanoma. And what it does, when it starts like basically un- unraveling, uh, or exciting the tumor, it says, "Hey, immune system, come on." And then the immune system starts killing everything. So in melanoma, it's really interesting, because when you liberate the immune system with immunotherapy or give these vaccines to inject the tumor, then it basically wakes up the immune system to do what it's done the whole time. The analogy I use is in Harry Potter, right, you had that invisible cloak, if anyone watched the movies or read, and you couldn't see. Well, what happens when you, uh, took the cloak off? All of a sudden, everyone can see it. That's exactly what cancer is going to.

Dr. Juneja (26:18):

It's like we know immune system works. We know it escaped it. Is there ... are there more ways to make the immune system see it again? And there are. And that's what's being studied like crazy. So these are two examples I'm using, melanoma and in prostate cancer. But now all kinds of stuff is being done where instead of giving systemic poison in your veins that circulates all around, we inject tumors. We basically make it like open up, unravel, look at the seeds inside the fruit. And then now they're naked and exposed, and the immune system's like, "Whoa, whoa, whoa, whoa. I had no idea you were here." It's like when you walk by the couch and you're somebody that dusts all the time and your house is so immaculate and somebody walks by and this huge gross dust ball comes out, and you're like, "I swear I clean my house all the time."

Diane (26:56):

(laughing) Only when you came over did that happen. (laughing)

Dr. Juneja (27:00):

Right. Exactly. And it's the same thing. So all of a sudden, the immune system just goes rampant, and even though you injected only that tumor, you didn't give IV chemo all through the body, all of the immune system because it's so smart and underappreciated all the time. We should really just include it in our prayers all the time. All of a sudden, it goes through the whole body and even does the sites that are metastatic. This is where cancer is today. Not available like yet. That's why trials are so important. If you're like, "I'm no- nervous about chemo. I can't tolerate chemo." That's why trials are important, because they're working, and then, obviously, we need data. We need years, two years, three, five-year survival. After we already see that it's amazing to be able to recommend it. Because believe it or not, I know people are skeptical, but a lot of stuff that gets approved like has to show that it works. Even-

Diane (27:38):

Absolutely. Yeah.

Dr. Juneja (27:38):

Even if in theory it's great-

Diane (27:39):

Yeah.

Dr. Juneja (27:40):

... does it improve survival or not?

Diane (27:41):

So-

Dr. Juneja (27:41):

So that's- that's how we're ... that's how we're going now with treatments is to just basically let the body do what it do, quote, unquote. You know, is- is to liberate it to do what it's always done.

Diane (27:50):

So that basically you've been talking about therapeutic or the, uh, treatment vaccines. Is that kind of th- this ... what- what you've been speaking of?

Dr. Juneja (28:00):

Right. Right.

Diane (28:00):

That you're fighting-

Dr. Juneja (28:01):

So all of that is therapy. That's after cancer. Like so you have cancer, and you're giving these things, bucil T and, uh, talimogene, um, to attack active cancers. These are cells that already went rogue in your body, already escaped the immune system.

Diane (28:14):

So bas-

Dr. Juneja (28:14):

Preventative stuff we talked about was, uh, with, uh, Gardasil and, uh, hep B.

Diane (28:20):

So basically, if I ... I think I have this correct. I don't know. Uh, they're fighting existing disease rather than immunizing against future disease. Is that-

Dr. Juneja (28:31):

Correct. These treatments are- are-

Diane (28:32):

Fighting-

Dr. Juneja (28:32):

... actual di ... Like these are ... these are active cancers-

Diane (28:35):

Okay.

Dr. Juneja (28:35):

... that escaped the immune system. So you're giving stuff, vaccines, to let the immune system basically, uh, wake up and go start killing-

Diane (28:43):

Okay.

Dr. Juneja (28:43):

... the active cancer. The preventative-

Diane (28:45):

I just wanted to make sure I had that in my ... correct in my brain. Okay. Thanks.

Dr. Juneja (28:47):

Yeah, yeah, yeah.

Diane (28:47):

Yeah.

Dr. Juneja (28:48):

And then the preventative stuff is to say we know these viruses, hepatitis virus and, uh, HPV, human papillomavirus, these multiple strains, we know that they basically, if home base is the cancer, which I just need a better analogy, but if we know these accelerate you to third base, where it would've taken 40 or 50 years to get to third without these viruses, then you're preventing getting to third base already and only needing one more to get ... to get into a bad situation. That's the preventative part. So those all prevent things that are bad. But if you want to get really technical, then looking at stuff where we know where people have what's called like Lynch syndrome. Right? We know that's a big colorectal cancer thing. People with Lynch syndrome have bad colon cancers early. They're looking at stuff, "How can I take that embedded kind of pre-programmed, like let's like get 'em already kind of clutch." It's like in- in the Matrix when like they were able to plug in and all of a sudden learn the skills, even though they hadn't done the practice in years. It's the same thing. They're like, "Let's go ahead and pre-program you to be ready."

Dr. Juneja (29:44):

They're looking for the first base. So at- at first base, if you could see the shadow on the right side, they're like, "If you see that shadow, kill that cell." So now that is a preventative of cancer. But obviously, you can't prevent a cancer that's ... because a cancer is a series of mutations in something that's your normal cell. You can't just destroy all your cells. So how do you know which one cell of billions, billions, billions, is just gonna flip one switch on a hundred switch, thousand switch mainframe computer, and what switch it'll be? How do you know that? Well, what if you were able to do the first ones that you know in something like Lynch syndrome? You know that like kind of how it works and evolves over time. Just look for the shadow at the first ... you know, in the right side of the field. Kill that cell. And all the other ones that don't have the shadows. You've reduced your chance of like having that evolve over time, like we said earlier, into a cancer and get a few more switches to now be un- unregulated and grow. And that's- that's where it's going. That's what's just absolutely wild.

Dr. Juneja (30:35):

The White House is right now being very aggressive with like their funding and stuff to say, "Do ... Can we get there? Let's get there. Let's get there. Let's get there." Because it's- it's proactive rather than, you know, reactive where all of a sudden you have a cancer that's stubborn and so smart that it's out- outdone your immune system."

Clay (30:51):

Uh, you know, it- it fascinates me, your analogy or- or the metaphor about being able to isolate a specific thing that you want to eliminate, the- the brown suit with the orange tie I think it was.

Dr. Juneja (31:03):

Right.

Clay (31:03):

I can't remember either. But, uh, I think, with that logic, why aren't we further along? If- if-

Dr. Juneja (31:13):

With cancer, or ...

Clay (31:13):

Well- well, yeah. Because your premise of how we can eliminate what we don't want in the body by either- either training the body or in do- doing something to the immune system to make it isolate what you don't need, why haven't there been, uh, more breakthroughs in- in ways to fight cancer? Or- or am I under selling what we have accomplished?

Dr. Juneja (31:36):

Yeah. So the amount of translation research to have to even be able to do it ... And again, I know people, you know, believe it less now than ever. But to do it safely, like that's ... these are like super high science tech stuff. Right? Like you're actually like somehow injecting a cell and opening and unraveling. And you have to study the proteins and biochemical little things that spit out and in. And how do I just jump on that train without somebody seeing, and get inside the cell, and open it up? That's on a very, you know, extremely like physiological, biochemical crazy level.

Dr. Juneja (32:05):

To your point though that I get really excited about, and that's what I talk about on my podcast Target Cancer, um, is targets. Exactly what you said. So the easiest way to understand targets to attack cancer now, which isn't really vaccines and immune system, but if you could recognize the thing that drives it, the- the gas pedal, and attack it and take it away, it starts dying. That's why we use, what, hormone blockers in hormone-positive breast cancer. Because we know if you're hormone-positive, we know the cancer loves to eat estrogen, and so we block it. Unfortunately, that's a got a whole slew of side effects. If you're triple negative, we don't use hormone blockers. Why? Because it doesn't feed on- on estrogen. Why do we stop testosterone in- in prostate cancer like completely? Because we know at first that's what it needs to drive. That's its fuel. It's like stuttering out if you ... if you make ... if you rob it of it.

Dr. Juneja (32:51):

What happens though is, over time, and that's what happens with viruses and with cancer cells, they're so smart and tout, if in their desperation, as they die, they're just throwing away, like throwing mutations, flipping switches in the mainframe to say, "Oh my gosh, I gotta do something 'cause it's working." And then eventually, they do the right ones, and they populate so fast that they're like, "Ah-ha, thank gosh." And it comes back up and says, "I don't need that hormone anymore." Right? And so that's the simplest way.

Dr. Juneja (33:17):

HER2-positive breast cancer was a diagnosis you cried about in the '90s. It was ... it's extremely aggressive. It grows super-fast. It was like, "Please don't be HER2. Please don't be HER2." Let me tell you something. Now you're like, "I hope I have HER2 positivity, if it's metastatic." Why? Because we discovered ... We knew HER2 was there. But now we discovered a way to target it. And so when you can target, when you got ... you go from the thing that made it the worst to all of a sudden saying that is the Achilles' heel, that's why people with HER2 now are living longer and longer and longer, way more than the '90s.

Diane (33:47):

That's incredible.

Dr. Juneja (33:48):

And that is targeted therapy. Yeah. And- and- and mutational. That's all-

Diane (33:51):

Oh my gosh.

Dr. Juneja (33:51):

When you hear sequencing, neogenomics ... Or not ... Sorry, not neogenomics. When you hear sequencing and mutational and targeted therapy and precision therapy, that's what I'm trying to dispel like on social media is like it is not ... cancer is not what it used to be. Which they're all heroes and should be like remembered for what they went through with just like standard chemo, one after the other. We're switching from generalized poison, which I have to say is natural ... Everyone's like, "I'm gonna go natural." I've seen people nicked and dined in a desperate situation, all the time, leaving families with debts on promises about natural stuff, and then they- they died years before they would have, and they ... and they did it all out of pocket.

Dr. Juneja (34:26):

Chemo is mo ... A lot of 'em are natural. They're found in bark and all that stuff or whatever, their properties or whatever. But all that to say, it still works. It'll always work, especially in a curative way. It's- it's- it's the most assured. Forget targets. Forget if it mutates. I'm just gonna give a poison 'cause I want to take care of all of it. So that's why you do chemo still. But then target and precision therapy is a whole different way of- of- of attacking cancer that we're doing now.

Diane (34:47):

You know, it really is incredible when we stop to think about it, everything that has happened in our lifetime. And again, you know, doctor, you're a whole lot younger than I am, but I have known different friends and different, you know, not so much my family, thank goodness, that have had just really, really challenging times with cancer. And I am so encouraged to hear this; for their children and for their grandchildren, it doesn't have to be what their grandmother or their aunt or their uncle went through.

Clay (35:21):

Right.

Diane (35:21):

I'll tell you what, your enthusiasm is infectious.

Clay (35:23):

Oh my goodness. I was gonna com-

Diane (35:24):

My gosh.

Clay (35:25):

I was gonna comment on that. I'd say everyone should have the passion for what they do-

Diane (35:28):

No kidding.

Clay (35:29):

... that you exhibit. But to Diane's point that ... and- and I think it's a ... it's a ... it's a very good point. A diagnosis of cancer or other diseases in years gone by was almost always seen as a death sentence.

Diane (35:43):

A death sentence. Absolutely. Yes.

Clay (35:45):

And now because of the availability of practical knowledge, people at least give themselves a chance to hope. And I was gonna ask you this question, doc. One of the positives, if you could say that, of what we've been going through the last couple of years, is that there is so much more conversation about vaccines and antibodies and the immune system and what is going on. What sources do you encourage people to look into if they want to get more information? Because you- you- you've given us a lot here. But if people really want to take it further. 'Cause I enjoy reading about anything that will take the body function, uh, effectively. Are there sources you recommend?

Dr. Juneja (36:24):

Um, so I'm not too like sure about the sources, to be honest. 'Cause usually I see people, obviously, at least relating to cancer, like after the diagnosis, unfortunately.

Clay (36:33):

Sure. Yeah.

Dr. Juneja (36:37):

But I- I'll say this. To truly understand and feel comfortable, which is why, you know, my whole social media thing is like it's all under the premise of ... with education is empowerment. You will be more-

Diane (36:46):

Mm-hmm.

Dr. Juneja (36:47):

... empowered and more confident and feel more comfortable discussing things without blanket statements.

Clay (36:51):

Okay.

Dr. Juneja (36:52):

My- my- my recommendation is, the immune system and vaccines are extremely complicated. That's one. So the way to do it is exactly what anyone that's still listening here has already done leaps and bounds. They're ... I- I hope that somebody can listen [inaudible 00:37:09] and say, "I actually understand this way differently and better than I ... than I thought yesterday." And I have been talking about vaccines for the last 2 to 3, 3 years and "I had no idea even to think about neutrophils and

lymphocytes and all this stuff. And alive and not and how they're all different, and mRNA embedding versus a piece of it," all this stuff. So you've already done so much. But if you could start building that first, then that's where, if you want to understand the mechanisms of things, uh, you could have a big benefit.

Dr. Juneja (37:33):

Now, if you don't have the time to go through all that kind of fundamental thinking, the- the se ... the- the other piece is everything almost relating to vaccines revolves around statistics. And statistics people hate. It's not a fun ... You know, it's not a fun class. So my dad actually was a [inaudible 00:37:52]. So I had to learn stats at a young age, the concept of 'em. But when you even learn the ... like understand or can appreciate like ... And it sounds so silly, but truly, the percentages and what the number one [inaudible 00:38:03] and all that stuff, I not only have to believe but that all of a sudden can make you interpret things like better, make your own, you know ... like make your own conclusions. I want people to make their own conclusions. But you have to, one, believe data that's like ... that's- that's been robustly like found. Anyone can ... Unfortunately, the internet is completely unregulated, completely. I could say there's a one and a hundred death, you know, with COVID. That doesn't go down. Like it just could be, with the COVID vaccine.

Dr. Juneja (38:32):

And there was this thing ... there was this ... there was this, uh, you know, thing for a while where they said, oh, look, this is the national government site about like, uh, where things that are reported in relation to COVID vaccine. Look how many people have died. That was scary to me. I was like, "Oh my gosh, that is scary. We've been telling people the medical community has to get it." And then you find out it means any form of death that was within like x amount of time. Like it doesn't matter if it was a heart attack, whatever. And- and then you looked at it compared to people without, and then you saw that like there was this huge percentage that were dying in the same frequency of the same thing. You know, all that. It's- it's complicated, but you learn about statistics, all that stuff.

Dr. Juneja (39:03):

And then finally, um, to learn about ... You know, you find ... You just ... Uh, what I do when I need to know stuff is literally just go to prominent infectious disease specialists and virologists and look at their videos on YouTube and all ... It's an amazing resource. Um, but that's where you start I try ... I do try to avoid company sites. Right? Like if there's a product, this goes for cancer treatments too. They're great for ... in summary. And if they're recommended in national guidelines, I'll go to the site 'cause it has it right there. But if you could go with unbiased sites that aren't ... that aren't companies either for the vaccine or for any kind of treatment, but also not biased in the sense of, you know, sitting on one side of a political line and stuff. Just go to data. NC ... NC, uh ... NCBI. Hold on one second. Am I saying that right? NC ... Yeah. NCBI. Um, and these sites, NCBI.gov, are where you can actually see data that can't even be on there unless it went through these like rigamaroles, all that, you know, statistical stuff that has to be done.

Dr. Juneja (40:04):

But sorry, to answer your question, I don't know [inaudible 00:40:07].

Diane (40:06):

(laughs)

Clay (40:08):

You did.

Diane (40:08):

Yeah.

Clay (40:08):

It was in there. (laughing)

Diane (40:11):

In our closing minutes today of our podcast, doctor, is there anything that you can think of that possibly we didn't cover that you would like to talk about to- to leave our audience with this morning?

Dr. Juneja (40:23):

Yeah. I think, um, the one thing that I was gonna mention was, you know, we talked about preventing cancers with vaccines. But ... And that's amazing. And hopefully we find more. I hope people can appreciate why- why- why can't I prevent cancer with vaccine. Now, after listening to this, because you don't know which one in the mainframe of a thousand switches could be switched, when it'll be switched. And all your cells look regular today, so how would you know? So you want to recognize a couple of switches that you know that eventually go to cancer. Those are the first, second, third bases. But then we only know about the bases that we know about. So like that's the whole point of research and everything. And trials help like find that. So those are two takeaways.

Dr. Juneja (40:55):

But the biggest way to prevent cancer, easily, is ... Or not prevent cancer but to be cured of cancer, is to catch it early enough. Because that one cell turns into two, into four, into six, into eight.

Diane (41:06):

Yep.

Dr. Juneja (41:07):

If you get CT imaging and it says it's clear, there's no masses, it's clear meaning there are not more than about 600,000 to 700,000 cancer cells in one place right now. Because you need ... If you have 100,000, you cannot see it on a CT, even today, because it's so small. I mean, you have to appreciate how small a cell is. So that's why screening is so important. Because one, if the CT sees it, it hasn't yet, hopefully, left the lymph nodes and gone to the blood and spread. Anything below stage four, usually, is curable because it hasn't started to leave. When it leaves, the clones are elsewhere, and then all of a sudden, you can't just start removing it because you can't even see the ones that are circulating. So that's where screening helps. That's where mammogram helps. PAP smears are huge. You should never get, uh, cervical cancer, almost never, if you get 'em regularly.

Dr. Juneja (41:52):

And then the big one, and this is a travesty, travesty, CT lung cancer screening in smokers. The- the ... Like it literally will save one in five people that smoke. And it's ordered about 8% of the time when- when it's appropriate, by- by providers, or asked about it, or the history's appropriate. 92% of the time people that qualify, to catch a lung cancer, which is super deadly, mostly because it's caught too late because you don't get symptoms until it's somewhere where it's a problem. So lethal, so hard to treat. It's not being ordered. If you smoked for 25 years one pack a day or, you know, two

packs a day but for- for 12 years ... You just multiply the years times the ... times the number of, uh, packs a day, and you're over 45 or 50 ... Forget the guideline. I think they just changed it. You need one every year. That is your best chance of curing [inaudible 00:42:41]. I just had one. It was a stage one. Purely because of the screening. And I just like called their primary doctor. I was like, "I'm so excited you did this. You saved his life."

Diane (42:47):

Mm-hmm.

Dr. Juneja (42:47):

"You saved his life." He had no symptoms. And sure enough, it was cancer. So that's a big one that's missed all the time. So talk to your doctor about that. That should be annual. And then, um ... and screen.

Dr. Juneja (42:55):

And now we have things where we're able to like screen with cancers with a blood test. So now you don't have to worry about that 600,000 cells. It's clear. I said it was clear. But is it clear? We're able to- to find this stuff way sooner, way sooner, by looking at just the circulating pieces of that, you know, uh, DNA, RNA stuff that came from that tumor.

Dr. Juneja (43:14):

So it's ... there's a lot- lot there, lot to be had. The biggest takeaway I always share is just ask questions. Learn.

Diane (43:21):

Mm-hmm.

Dr. Juneja (43:21):

Learn yourself, instead of somebody else's opinion. That- that was ... Sounds simple. But I didn't even understand that concept for a while. I don't read anything that's written by a news company or whatever. I just go straight to the ... I'm like, "But where's the report? Where's the report? Where's the," you know. Because that's- that's- that's what science is. And if we do that, I think all of us will have more productive conversations. We'll feel more optimistic about kind of where we're headed, and be able to speak on it, you know, knowledgeably.

Diane (43:44):

And as you said, when a patient comes to you, doctor, talk to your doctor. Don't say, "Oh, that little thing, that's not important. I'm not gonna mention that." How many times do people not mention something that is a critical key to the possibility of, like you said, something that would happen on down the line. The doctor said, "Why didn't you tell me this before? You should've told me." So no question is too small. No question is too silly. And you are so correct to have that conversation. And screening, holy cow, we are hearing more and more about that. And that is critical for men and women of all age groups. Everyone needs to be screened.

Clay (44:25):

Agreed.

Dr. Juneja (44:26):

Everyone needs to be screened. You're exactly right. Just please ... You know, my wife always kind of ... She's taught me this over time. It's like don't- don't undervalue the value of a gut feeling. If you have a gut feeling-

Diane (44:37):

Exactly. Yes.

Dr. Juneja (44:38):

But then so ... Express it.

Diane (44:39):

Mm-hmm.

Dr. Juneja (44:41):

Talk about it. Because that peace of mind is invaluable. And then ... But on top of that, address the gut feeling. Instead of just having a gut and stopping, go do things. Learn. Have those conversations. Talk to your doctor. To see if that gut changes. And if you can make a gut feeling go away, like that means that, wow, like I actually like ... now I don't have that bad feeling. Because we all, you know, have mortality. We're all gonna pass away. The thing that I've learned in cancer more than anything else is, uh, the peace of mind component of a, "I know I should have," is extremely toxic. That's a very scary thing. Avoid as many, "I should have," or, "I knew I should have," as- as you can.

Diane (45:14):

Mm-hmm.

Dr. Juneja (45:14):

And if that means having more conversations, doing something, not doing something, that's ... I think that's the key to peace of mind and happiness is just ... is just pin it. And then ... and make sure these gut feelings aren't carried around.

Diane (45:24):

Well, Clay, we've had qui ... we've had quite a podcast today.

Clay (45:27):

It's been fantastic.

Diane (45:28):

Yes.

Dr. Juneja (45:28):

Oh.

Diane (45:28):

And- and thank you again, doctor. Thank you for your compassion. Thank you for your brilliant mind.

Clay (45:34):

Oh yeah.

Diane (45:35):

Oh my gosh. For your very colorful analogies. (laughs)

Clay (45:37):

I know, right?

Diane (45:37):

Oh man.

Clay (45:37):

That- that's the-

Diane (45:39):

I love those.

Clay (45:40):

That's the best thing.

Diane (45:40):

(laughs)

Clay (45:41):

It's ... I'm always a fan of people who can communicate-

Diane (45:44):

Yes.

Clay (45:44):

... in ways that makes certain-

Diane (45:45):

Mm-hmm.

Clay (45:45):

... everyone in the room-

Diane (45:46):

Yes.

Clay (45:47):
... is on it. And that-

Diane (45:47):
Yeah.

Clay (45:48):
That's a good way of looking at it.

Diane (45:49):
Mm-hmm.

Clay (45:50):
So I don't think anybody will forget your metaphor about antibodies and the snipers in the room.

Diane (45:54):
Yeah.

Clay (45:55):
And whatever color that suit was. Uh-

Diane (45:57):
And the tie.

Clay (45:57):
You know. And the tie. Yeah.

Diane (45:58):
(laughs) And thank you for helping us learn-

Dr. Juneja (46:00):
Yeah. That was the one thing that escaped us-

Diane (46:01):
(laughs)

Dr. Juneja (46:01):
... is what color they were.

Clay (46:02):
Yeah. Right.

Dr. Juneja (46:04):

But it was ... Yeah. I'm just ... I'm very humbled to be here. I'm extremely proud of Louisiana. I only have, you know, one tattoo it's the state of Louisiana.

Diane (46:12):

(laughing) Wow. You are the man.

Dr. Juneja (46:13):

Uh, 'cause I do, you know ... I mean, I grew up here. I'm just so grateful for the people [inaudible 00:46:18]-

Diane (46:17):

Thank you for staying here.

Dr. Juneja (46:18):

Yeah. Of course.

Diane (46:18):

Yeah. Yeah.

Dr. Juneja (46:19):

And- and, you know, if you find us, God forbid if you have a blood problem [inaudible 00:46:21] my wife and I are at, uh, Mary Bird Perkins Cancer Center, you know, attached to the Baton Rouge General [inaudible 00:46:27]-

Diane (46:26):

Mm-hmm.

Dr. Juneja (46:27):

Uh, and we're available online. You know, if you ... if you have those concerns, want to talk about things. I just ... And the Onc Doc, if you want to learn more, it's The Onc, O-N-C, Doc. I just ... I talk about all this stuff, vaccines and- and cancer and all that. Because the ... I'm just very humbled by how much people want to know.

Diane (46:41):

Mm-hmm.

Dr. Juneja (46:41):

You know, really in the last couple years than before. And I think that's just the healthiest thing. And if somebody tells you it's not, then I really would look elsewhere. Like that's what any medical person should say. Learn. Like this is just-

Diane (46:50):

Yes.

Dr. Juneja (46:51):

... how we grow together, you know, as a whole.

Diane (46:52):

And-

Clay (46:53):

Yeah. Just so people caught that, it's The Onc Doc, at the O-N-C, D-O-C. If you caught that and you want to follow him-

Diane (47:00):

Mm-hmm.

Clay (47:01):

... after the, uh ... after the podcast.

Dr. Juneja (47:02):

Yeah.

Diane (47:03):

And people are hungry. They're hungry for knowledge. And they're hungry to hear-

Dr. Juneja (47:07):

I love it.

Diane (47:08):

Yes. The correct thing. The correct answers. Again, thank you so much for helping us understand about cancer and vaccines. That's all we have for you, our listeners, today. But we will be back with another episode. So don't forget to join us next time. Thank you for listening.