



EVERYDAY IMMUNE RESILIENCE

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[NOTE: In the lecture Dr. Kharrazian used the term “parvovirus” numerous times to refer to coronavirus. This was because he’d spent the previous day reading about parvovirus. He corrected himself partway through the lecture. For this transcript, all those references have been corrected.]

Okay, fantastic. I think the sound is working. We've had some technical difficulties. Thank you all for hanging in there. You can hear me? Okay, great.

What I want to share with you guys is some of my experience working with patients suffering from Hashimoto's and what happens with viruses. So one of the biggest things that we know is taking place is a lot of people are very worried and very concerned that are they immune compromised because they have Hashimoto's. And this is something that we really need to discuss and I want to share with you some of the clinical perspectives. So for me, my background is I have a PhD in health science. My concentration was in immunology and I'm a member of the American Association of Immunologists (where you have to have immunology in a doctoral program and publish papers to be accepted as an immunologist).

I have some experience, however I'm not a virologist and I can't really give you the depth that you can get from experts at the CDC regarding virology aspects. And I don't have an expertise in coronavirus. I don't think anyone really does at this point. It's a new virus. So I can't really give too much information about coronavirus specifically to Hashimoto's because we really just don't know. But I am going to talk to you guys about how viruses in general impact autoimmune Hashimoto's so you can have some general ideas. Now the first question that comes up with a lot of people that are Hashimoto's is: Are they at risk? Are they immune compromised?

So let me explain a few things. When you're looking at autoimmunity, one of the first things to understand is that every person who has autoimmunity has different degrees of immune integrity and immune status. So one of the things that we routinely do with patients who have Hashimoto's is run to complete blood profile and look at the basics of what's happening to their overall metabolism and the immune function.

If you've had some of your own blood work, you can look at your red blood cell, white blood cell section, the CBC and just look at your total white blood cell count. And if that total white blood cell count is within normal reference range, then you have an immune system that, despite the fact you have autoimmunity (there's antibodies attacking your tissue), then you have the immune system that is fit, that is healthy, that it's not immune compromised.

So from a clinical standard definition of immune compromised, the most accepted area to look at is your total white blood cell count. Now some patients with autoimmunity have a total white blood cell count that's low, and some patients with autoimmunity have a total white blood cell count that's above the normal reference range. It's pretty rare to see a total white blood cell count outside the lab range unless the person actually has an infection of some kind.

So that being said ... they express immune compromise. Their autoimmunity is so progressed and you look at the white blood cell count and you see the white blood count is like 2.8. and that person will be at risk for infections of all kinds and their immune system is totally compromised from their autoimmunity. Now the good news is it's not common to see that. With many patients without immunity, you actually do see the white blood cell counts within the normal system, within normal range.

Now the other thing to know is that when people have autoimmunity, there's some people that come in with histories, one version of a common history is, "Since I got diagnosed with autoimmunity, I haven't caught a common cold or the flu for the past five, 10 years."

And in some cases when people have autoimmunity their immune system is so overzealous that the T-cells are so active and so aggressive that they just don't get common infections. As a matter of fact, when people are fighting one virus, like if they had influenza virus, it's pretty unlikely that they can get another virus on top of it. So many expert virologists, which I'm not, but many expert virologists find that if you already are suffering from, let's say influenza, it's less likely you would get something like coronavirus during the time of your infection because your immune system is already elevated.

So when you look at the autoimmunity and the risk for getting infections, one of the key things is, every person with autoimmunity has a different immune status. So having Hashimoto's is not specific enough. Every person with Hashimoto's has different immune integrity. So you want to take a look at your total white blood cell count and your past lab records, lab tests, and see where you are.

Okay.... when you're looking at how do you optimize your immune system, what kind of things do you do and look at autoimmunity and where does coronavirus come in and how does this work?

Well, let me teach you guys some general concepts about viruses first. When you look at a virus, each virus has its own gene type and then each person, the host, has their own gene type. So the combination of certain viral strains with a combination of certain gene types can really have an impact on how the person will react to the virus.

So one of the most well-known viruses is hepatitis C. With hepatitis C when someone gets the infection some of the hepatitis C variants will cause a person with a certain genotype, their own genetic makeup, the host genetic makeup, to end up with liver failure. And in other people that actually had no symptoms but just abnormal antibody count. So one of the things you have to understand is we don't really know with coronavirus. What we know is there's a couple strains, there's a European strain and a Chinese strain so far and there hasn't been much difference in pathogenicity of those two viruses that have really been established yet. But we know that there's some people who will get really sick and some people who don't, and it may not all just be immune compromised.

So sometimes the genotype of the person plus the virus is really what determines how aggressive the virus can become. We know there's risk factors with most viruses, just being elderly having a compromised immune system, that's one of the variables but gene are another one. So that's one thing too keep in mind.

Now when people get chronic infections like hepatitis C, one of the things that happens to them is they'll get a viral genotype test to see which type of Hep C genotype they have, and then they can compare it with the risk of how much fibrosis they get and they get a big clue if that's happened to that response.

Now with coronavirus over time the genotype may change. There could be different strains as we get worldwide immunity. It may completely resolve. We don't know what that's happening. So in general, when we get a new virus that impacts your human species in general, one of the things that we're looking at is how quickly that virus can mutate and change.

Influenza is one of these viruses that quickly mutates and changes, the general strains of influenza we get every year because this virus is mutating and this is why we deal with it, every year we have flu season. Some viruses have very little mutations and change. And once we get immunity to it, we don't really have any significant reactions.

Now, one of the viruses for example, that has been shown to be a trigger for Hashimoto's is cytomegalovirus. And when you test cytomegalovirus in the worldwide population, virtually everyone has antibodies to cytomegalovirus. And even Epstein-Barr, 90% of the population has antibodies to Epstein-Barr virus. So we have these viruses that we get exposed to but our immune systems every time become fit to not let them express and it would only take something, like a significant immune trigger to let these dormant viruses become active. So we're not really sure what happens with what coronavirus is going to do and how it's going to impact our autoimmunity. That's one of the first things.

And when you also look at viruses and you look at what it does to autoimmunity, there's a couple of concepts I should really share with you before I go into some questions. One of the main concepts is something called molecular mimicry. And we know that Epstein-Barr virus, cytomegalovirus, hepatitis C virus, herpes virus, can all have some molecular mimicry reactions with Hashimoto's. What that means is when you get exposed to a virus, you make antibodies and then those antibodies bind to a protein sequence, an amino acid sequence, of the virus. And that antibody allows the immune system to find that virus and destroy it.

So in some cases, there's something called molecular mimicry where the antibody made for the virus, those antibody sequences of the proteins they attached to are similar to self-tissue. So when you make antibodies against the virus, it can actually bind to the person's own tissue and cause a reaction. A great example of that in the literature is hepatitis C virus. So if a person gets hepatitis C virus, they can make antibodies to hepatitis C, but those antibodies for hepatitis C not only attach to the virus, but they've been also shown to attach to the thyroid gland. So some people when their hepatitis C flares up, their Hashimoto's thyroiditis flares up.

So we don't really know if this new virus is going to have molecular mimicry with any autoimmune tissues or any autoimmune glands. It's always a possibility for some viruses to have what's called molecular mimicry, time will tell.

And then when you're looking at other mechanisms of how viruses can trigger autoimmunity besides molecular mimicry, another one is called epitope spreading. This is a concept in immunology where the virus infection gets into the tissue and then it starts to cause an inflammatory response. That inflammatory response to the tissue causes tissues to break down, which then creates new autoimmune target sites.

So for example with Hashimoto's, you have antibodies to the enzyme TPO, and you also have it to potentially thyroglobulin. However, if the inflammation, the virus gets into the thyroid gland itself, that tissue breakdown can then cause antibodies to actual follicular thyroid sites, or it can actually cause autoimmunity to actual T3 and T4 [thyroid hormones]. That's called epitope spreading.

What we don't know about this virus, coronavirus for example, does it actually get into the thyroid gland? If it does, it would probably cause a lot of painful thyroiditis symptoms, which would be pain and swollen thyroid. There's no reports of that yet. So it's unlikely that this current virus is getting into any kind of glands like the thyroid.

So it may just be a systemic issue. More than likely there's no molecular mimicry. There's no bystander activation, there's no epitope spreading. But those are things that are there.

Let me get into some basic questions here. So thank you everyone for your nice welcomes.

So a question from Judy, "I your white blood cell count is below the low end of the range, what can you do to improve it?" So this is also something I want to talk to you about, is this immune resilience. How do you build your immune resilience? So for my subscribers, they created a program called Everyday Immune Resilience on Dr. K News [www.drknews.com]. If you're on our email list, you'll get it. But I'm going to share with you all the concepts right now so you don't need to be deprived of any information.

Number one thing you can do if we're trying to improve your immune resilience is to really make sure that you get proper sleep. And people hear this and I think they understand that. But let me explain to you what that means. Proper sleep means first of all, adequate sleep or ideal sleep would require number one, you just wake up when you're no longer tired. That's the first thing. So if your immune compromised, your white blood cell count's low, you're worried about getting the infection, then one of the most important things, I should actually probably say the most important thing is to get proper sleep. So proper sleep would mean you just wake up when you're not tired. If your alarm clock is waking you up, if something's waking up every morning and you're not sure if you get enough sleep, that's not ideal sleep.

So you really want to make sure that you have ideal sleep. That you put yourself in a situation where your body just wakes up when it can if you're dealing with trying to improve your immunity.

Now the common mistakes people make is you just go to bed too late. I mean, they just stay up watching TV show or doing things or getting on the internet and not getting a chance to get proper amount of sleep. So they never really let their body just wake up on their own. So for a lot of people that would just mean not going to bed earlier.

So one of the things that we know about sleep is that when you're actually asleep, you are actually releasing peptides and things like melatonin and different types of immune modulator proteins that prime your immune cells. So when you're asleep, your immune cells are actually developing natural killer cell responses, their T-cells are becoming stronger. And if any of you have noticed, if you ever missed some sleep, like if you had three hours of sleep one night, it's very likely that you may get the common cold that's passing around. So it's critical night by night that you get proper sleep. Losing one night's sleep can impact your immune system and make you vulnerable for infection the next day. So that is absolutely critical.

Now with my, clinical background working with patients for example, that have chronic hepatitis C that are looking for diet, nutrition, and lifestyle approaches to keep the viral load down, I mean, we can put them on handfuls and handfuls of supplements and get them off all these inflammatory foods and give them tons of antioxidants, but nothing changes in the viral load activity when we measure it with labs until they sleep. So I'm pretty much convinced if you're dealing with a virus or having immune compromise at this point after over 20 years working with chronic autoimmune patients and chronic immune challenged patients, sleep is the most fundamental aspect.

Now a lot of people won't get proper sleep because they wake up in the middle of night to urinate. If that's the case, there's a couple of things you need to know. Number one, as you get older, your pelvic floor muscles do weaken. And if your pelvic floor muscles weaken, you're going to have an overactive bladder. There's can be pressure being put against some of the muscles of your bladder or just being in that sleep position and it's going to trigger you to have this urge to urinate frequently throughout the night. So pelvic floor exercises, even for 10 days, if you're having constant frequent urination, can be a good way to really see if that helps you.

Too much sodium intake at nighttime. If your dinner is really, really salty, they can also be the reason why you have frequent urination or wake up in the night because you're trying to get rid of all that sodium and change that sodium concentration. So be aware of those things. Those are the two most common things that you'll see with people that have sleep issues.

But the key thing is really just to make sure that you get proper sleep. You also want to get deep REM sleep. Deep REM sleep is very critical. Something that has helped a lot of people to get into deep REM sleep are white noise machines. There's a lot of good research on this.

And white noise is like a fan going around. There's different things you can get on Amazon that are machines that generate white noise. White noise isn't like rainfalls in the rainforest. That's just scattered noise. White noise is just a constant same frequency of sound that is being generated. The best example is a fan that's pretty consistent, same rhythm. There's no big pitches or spikes. So many of these audio sleep machines have like rainforest will all of a sudden a bird singing, and I just said that's not white noise, that's just scatter noise. But white noise, consistent sound is another great way to really get into deeper REM sleep.

Some people need to use sound cancellation headphones to fall asleep and some people sleep with them. Some people with earplugs. But getting proper sleep is really, really critical.

As far as melatonin goes, some people talk about taking immune supplements. Melatonin is an immune trigger. And for some people that take exogenous melatonin, especially with autoimmune disease, you've got to be very careful. However, things like magnesium right before bedtime are pretty benign. Very unlikely to it'll be an immune trigger. So that could be something you can use to help you. Things like chamomile tea.

So if you're trying to improve your immune system, I can tell you sleep is the most important thing to get fine-tuned. And if you get proper sleep, your immune system will dramatically change.

Now I can tell you also working with autoimmune disease patients for many years, one of the tests that we used to do in the clinic was a test called natural killer cell activity. And the way this test works is the patient goes into the lab, they submit their blood and the blood goes to the laboratory, blood gets drawn out, they isolate natural killer cells and they expose it to a compound and they measure how active natural killer cells can destroy the compound. It's called NK cell activity.

And most people I saw with autoimmunity had very weak NK cell activity, natural killer cell activity. And natural killer cell activity not only helps fight viruses, but it's been shown to be not only killer cells but immune modulators and autoimmune modulators. And one of the most profound things that impacts natural killer cells is really — sleep. So back to sleep again.

Okay. So that's the first thing I really wanted to make sure that you guys all really consider and try to figure out strategies to make yourself sleep better and figure out why you're waking up in the middle of

night. That's important. One thing I didn't mention, another common reason where people have problems sleeping through the night is because they are hypoglycemic throughout the day.

So if you get shaky, light-headed and irritable throughout the day, and when you eat, you feel better, that's a sign to you that you're really playing this blood sugar roller coaster ride. What's normal is when you eat, you're just no longer hungry and there's no change in energy.

But if you're going through the day and when you eat something, you feel like you can focus again, like you can think again, like you can concentrate again, that's a sign that your blood sugar levels were too low. And if you're constantly going through the day with low blood sugar, then you are unable to make a storage form of glucose called glycogen that you store in your liver which keeps you in a restful sleep state throughout the night.

So one of the key things to also look at if you're not getting proper sleep is to really look at, if you're letting your blood sugar levels drop throughout the day. For many people once they have their blood sugar levels dropping throughout the day, by just eating more frequently with proteins and fibers instead of sugars, then they'll be able to start to sleep again.

Okay. Let me go into some other questions. Again, so nice for everyone to say thank you, to join. It's my pleasure to be here. Okay, well let's see... sleeping early. Okay. "What can we take for substance foods to strengthen our immune system?"

I think the key thing to remember is there's a lot of stuff happening on the internet right now where people are coming in saying, you can take one supplement or you can't take another supplement. Like some people will say, you should take echinacea. And if you just look at echinacea from a research perspective, some of you are probably researchers or in the medical profession listening in, go on the national library of medicine and then type in echinacea and upper respiratory diseases. You're going to see about 12,000 studies. There could be more. But it's a high amount of studies. And they've done clinical trials with echinacea with different upper respiratory viruses and they found that it's very helpful.

And they've gotten to the point where there's now several meta-analyses done, and a meta-analysis is where they take multiple clinical trials done, then they combine the data together for what's called a composite score to see if this actually — do all the trials find the same thing, what's the average outcome. And what they find is that echinacea has been shown to help.

But there's now people that are saying, "Echinacea can be harmful to you because it impacts this enzyme and this enzyme is coronavirus and it can make it trigger and it can make it get worse." When I read these things, it's actually very frustrating because there's two things.

Number one, it is possible that taking an immune supplement, especially if autoimmunity can trigger your immune response to make you worse, but it's also possible that these things could be helpful.

And the problem is that sometimes when people are commenting about vitamins, like echinacea being okay, vitamin C being bad, they're looking at one, let's say animal study with one single mechanism of immune response and then trying to make some kind of assessment about that. They're speculating about what it can do. So I remember just reading some stuff that people said, "Oh, do not take vitamin C, it can flare coronavirus." And I was like, "How do you know that?" And they'll cite some weird enzyme, and part of the immune response as, "This is a coronavirus uses to fight your body. And if you

activate vitamin C, you make it worse." That is an absolutely total inability to understand how the immune system works.

When you look at the immune system, you can't look at the immune system as one messenger system. It's kinda like, if you're looking at a football game and watching football players, you can't just look at the quarterback. If all you do is look at the quarterback, you won't understand what's happening. So there's a team of messenger pathways, there's a team of immune cells that are all working together.

So I would say as far as supplements go you're going to hear some very contradicting information out there about what to do for immune function and immune support. And some of it is I think intentionally scary. I think a lot of people are trying to shock people into not taking certain immune natural support supplements. But on the other hand, it is possible that some immune enhancing supplements can be a trigger for not just for coronavirus, but for Hashimoto's in general.

So when you look at coronavirus, we don't know what the specific protocol is. No one really knows. At the end of the day, you have to decide what's best for yourself. Your practitioner has to know what's best for you.

So what kind of supplements should you take? Now, I would say in general, when we look at patients that suffer from autoimmunity, typically things like vitamin D, vitamin A, vitamin C are very helpful. Vitamin C is a very powerful natural killer cell stimulator.

It may be possible down the road they find some, do research that it may promote a viral response. That's very unlikely, but it is possible. So I think it's tough to comment about which supplements to take right now. And you got to be very careful if you have autoimmunity to start taking a bunch of immune enhancing supplements and herbs because it can maybe just flare up your autoimmunity. So now's not the time to really experiment with different herbal botanicals if you are trying to build your immunity because it can be a trigger.

Now the other question was foods. The best foods for dealing with autoimmunity is basically healthy fruits and vegetables. Real food, processed foods.

Sugar is absolutely the worst thing. So there's been lots of research done on sugar and sugar wipes out T-cells. Just the sugar from like a diet soda and especially concentrated sugars from something very sweet can really suppress T-cell function, natural killer cell function for six to eight to 12 hours from one exposure.

So you really want to, if you're at home and you're depressed, you definitely don't want to be on a sugar binge because that'll definitely compromise your immune system. You almost want to just stop eating sugars if you're really worried about your immune system and if you have low white blood cells and you're immuno compromised, you definitely want to get off sugar.

And be careful with fruit juices. Fruits are typically okay because there's lots of fiber. So the fiber stops the glucose from being absorbed quickly, so it stops the spike, glucose spike. But concentrated sugars or fruit juices can have an immune suppressing effect. So that's one of the key things you really want to think about. Think about your sugar intake. And what I've seen happen with my own patients is they get in the mode of being just depressed, they're at home, they can't do anything and they just started eating lot of sugar to deal with their bad situation. So I would say for foods, definitely avoid the sugar.

The other key thing we know is having a very diverse microbiome is critical. And when you look at the bacteria in your gut, the bacteria in your gut produce something that are called postbiotics. So you may

have heard the word prebiotic or probiotic, but there's something called the postbiotic. So let me explain all these different things. So the bacteria in your gut are produced by eating foods that are called prebiotics, like high fiber foods. High fiber foods allow you to provide the resource your gut needs to populate your gut with healthy bacteria, good bacteria. So that's a prebiotic. Probiotic is something like acidophilus, you can get at the health food store.

So you could take acidophilus and that is a probiotic and it has some effect while you're taking it, some immune enhancing effect for some people, certain gene types, some better than others based on their overall microbiome health.

And then a post biotic is really what the bacteria make itself. And this is where a lot of research is focused on right now. Your bacteria makes things that are called polysaccharides. And there's different types of polysaccharides. So one form of polysaccharide is called polysaccharide A, and they find that if your gut bacteria makes lots of polysaccharide A, in animal studies that calms down autoimmunity.

So one of the things to really try to do when you have a autoimmune disease and you're trying to improve your immunity is to really diversify your gut. So what that means is you have to eat a high source of vegetable fibers and not only high source, but a diverse form. So you can't just eat cabbage all day if you like cabbage, or carrots all day. You really want to mix up different types of vegetables. And the diversity of the vegetable fibers will diversify your gut microbiome. Studies have shown that just one day and up to three days, especially three days of a high rich, diverse fiber diet can change your gut microbiome. So one of the best things to really do is to really diversify your diet with lots of different vegetables.

And you can put those in a Vitamix like five or 10 of them. You can get a bunch of different vegetables and different natural spices, blend them all up in a food processor, put a couple of teaspoons in the water and drink it. You don't always have to have huge salad. You just need to have lots of plant fibers that you get exposed to. You can take things like psyllium husks to just give you an overall bulking fiber response. But fibers and especially a diverse fiber, is critical to build your microbiome diversity, which then helps you make what are called postbiotics — polysaccharides — and then polysaccharides can modulate your immune health.

The worst thing that you can do if you have autoimmunity is to be so depressed that you're on an autoimmune paleo diet, you can't eat anything anymore, so you've given up and all you do is have the same lunch, breakfast and dinner. If you're doing that, you will wipe out your microbiome diversity.

So you really need to put a lot of energy into getting a lot of diverse vegetables to support your gut microbiome. That will also support your immunity.

Now, one of the questions I have here is, "I wonder why melatonin is bad." I've got a couple of questions here on melatonin. I think people are getting a little freaked out about that.

Let me say a few things about melatonin. So melatonin, normally when you look at common rhythms, there's cortisol and melatonin and they have this antagonizing effect throughout the daily circadian rhythm. So normally when you wake up, cortisol levels are high and as the day goes on they start to dampen. And then when you go to bed, melatonin is low and as you get into deep sleep, then your melatonin levels start to rise up. And as melatonin rises up, melatonin is one of many compounds that your body makes to activate immune cells and specifically T-cells. And there's been a lot of research on melatonin in autoimmunity, especially with rheumatoid arthritis because one of the key features of

rheumatoid arthritis is that patients with the disease, they wake up with severe joint swelling and inflammation around three to 5:00am. It's a common feature of the disease.

And researchers have evaluated reasons for it. And they find a direct link to melatonin activating the T-cells during those time periods. And they can see those that don't have a rise in melatonin don't have that same reaction. So the reason why I'd be careful with melatonin is that melatonin can be a T-cell activator. Now, for many people with autoimmune disease, that's not a problem. They can take it and they have no symptoms and any issues. For some people that have a very aggressive T-cell autoimmune response right now, and it's not being controlled and it's not being modulated, it can be a significant triggering effect. So that's one thing to think about.

At the other hand, melatonin is one of those things where if I had a chronic virus and I couldn't get rid of it, it would be one of the things I would consider taking before bedtime to really prime my immune cells. And this is the difficulty when it comes to, "what do you do?" Unfortunately there's different options for different conditions and there's uniqueness, a personalized approach. And that's, I think I don't want it be so frustrating for everyone, if you're stuffing for Hashimoto's to go, "What do I do?" Well, I think the best thing you do is you understand the principles and then think about how your body responds to various things and then see if that can make a difference for you.

Okay. So I tried to answer the melatonin question. Let me see if there's more things here. Okay. What do you think about n-acetyl cystine? So NAC is a sulfur amino acid used to build glutathione. And the other key thing is, there's been some reports of sulfur amino acids being a trigger for some people that have inflammatory asthma, some inflammatory respiratory disorders. But on the other hand antioxidants really protect your gut epithelium, your lung epithelium, your blood-brain barrier. So there's level of uniqueness. For me, I have a lot of hesitation really making specific comments with everyone's concern for coronavirus because coronavirus if you really look at the mechanism it actually destroys the lung epithelium and then the virus then allows the destruction of that barrier. And then you start to cause a cascade of events that then lead into pneumonia.

So in some studies they found that the lung barrier doesn't really break down until you have, your glutathione levels depleted. So theoretically there could be some reasons why having glutathione levels supported by things like n-acetyl cystine, or even different forms of glutathione can be helpful. But there's also some contradicting information and literature where they show glutathione could aggravate some upper respiratory disorders.

So where does that leave us? I don't know. So that's some of the questions we have about glutathione and the concerns. So it may or may not be helpful. It may be different for each person. I don't have a good answer. Again, we're dealing with a virus we've never seen before.

Okay. Let me ask another question here. "Is echinacea safe for kids?" Yes. Echinacea is safe for kids. And by the way, the reason I mentioned echinacea is because it's one of the most well studied botanicals. It doesn't get a lot of attention because it's boring. And because of its widespread popularity, they've made large amounts of echinacea so it's very inexpensive as well. But again, if you autoimmunity you have to be concerned about it being a trigger for you.

Okay. I have a question from Heather. "I've read somewhere that COVID-19 really affects glutathione levels. Is there any truth to that?" So all infections are going to deplete antioxidants to some degree and glutathione would be the most common antioxidant is one of the key issues.

And I think another thing to take in perspective is, when you feel awful, when you have an infection like a viral infection, everyone is so focused on trying to enhance their immune function with taking things that stimulate the immune system, but your antioxidant levels are a key factor of how well you recover and how you feel.

So antioxidants like high rich foods like pomegranate, blueberries, raspberries, even blueberry concentrate, pomegranate concentrate extract, it can really help build your antioxidant reserves. But again, people are in the literature, people out there in the internet are just saying, "Well those things can make it worse." I don't know if I agree with that. I think it's really important to really build your immune antioxidant system with super foods to really help you deal with it. But we don't know how effective it will be because this is a new virus if you're being specific to coronavirus.

Okay. I got a question from Michelle. "Can we hear you just speak on the importance of the gut health and how important, how it relates to immune health? I'm actually surprised we are not hearing more all over the internet." Well gut health is extremely important when you're looking at immune function because you're having a lot of post bacterial compounds, and bacteria and cytokines really modulate the immune function. And there's been some emails going back and forth with people that are faculty member for the Institute for Function Medicine and they're really confused of why the entire world, the internet hasn't really looked at immune function as a whole body response, the gut being part of it.

So gut health is critical for your overall immunity. In the 1900s, Dr. Metchnikoff got the Nobel prize in medicine where he showed taking really high fermented foods improves immune function. He was able to show that that made a big difference. So lots of fermented foods and fiber tend to have a huge impact on immune function as well. So that is something to really consider. So if you don't have a lot of fermented pickled foods, kimchi, lots of fiber in your diet, that can impact your immunity. So that's something to really, to bring up. So that's another good question.

Okay, now quite people come up like what about monolaurin, what about oregano oil extract? What about different botanicals? So this is the thing. Technically, theoretically, these things all have some type of immune enhancing effect. Two questions. Can you tolerate it with autoimmunity? Because it can be immune trigger. And two, if this will actually impact the virus. So there's just too short of a timeframe to know [inaudible 00:38:15] for coronavirus. All we can do is just think about general concepts of nutraceuticals and lifestyle for viruses in general. So technically all of those things can have some immune enhancing effect, but we don't know what they are. Just again, be cautious of people just saying everything is bad. We don't know if that's necessarily true.

I think part of it is going to be your personalized approach to how you want to handle your health and your family's health and what kind of things you want to do.

Okay. Let me try to answer some more questions. "Can you touch on the importance of fasting as it relates to the immune system?" So fasting is one of these things where technically it can have a huge impact on immune function because you decrease your antigen load, because food proteins are antigens and they can improve your immune function. But you have to understand not everyone can handle fasting. And for example, if you take a person who is hypoglycemic, they get shaky, light headed and irritable throughout the day and they try to fast, they're going to get such significant spikes of cortisol that their immune system is going to really wipe out — they're going to get wiped out from it. So that's the problem with just making general statements.

So theoretically, fasting, if you can fast and you don't have any significant symptoms, you don't crash and your brain still works, there can be some immune enhancing benefits from that. But if your, let's say

your blood sugar susceptibilities tends to be hypoglycemic, one of the worst things you could possibly do is fast because you're going to get these cortisol spikes and stress responses that will totally shut down your immune system. So be wary of that.

Let's see some of the things here. Someone asked about coffee. So coffee has lots of flavonoids and antioxidants, and they also help your circulation and blood flow. The key thing is coffee is a stimulant. So in general, I would say coffee for most people would have a positive effect because it's an anti-inflammatory compound, has lots of rich flavonoids.

The compounds in coffee have been shown to really have an impact on the microbiome and a really healthy positive way. But in other hand it's a stimulant. There's some people who just have such significant adrenal exhaustion that a stimulant would just put them over the edge and they fall apart. So again, there's some uniqueness and things to think about when it comes to coffee.

Now the other key thing I want to talk about is also hydration. So the immune system does not work when you're dehydrated. So one of the key things, if you're a coffee drinker and drink a lot of coffee and tea, especially caffeinated, is that you make sure that you stay hydrated. So when they look at research studies and states of dehydration, cells, immune cells do not function. And it's one of the most important things.

So we talked about sleep is the key thing you can do to prove your immune function. Hydration is up there. And the key thing with hydration is that you put an effort into staying hydrated, if you wait to have sensation being thirsty, that's a problem. If you drink water and all of a sudden feel a lot better, that's a sign that you're significantly dehydrated. So you really want to make sure you take water.

Drinking plenty of water is more important than any botanical supplement you can take. Sleep and water would be critical for just making sure your immune system can function. If you're dehydrated and you're taking handfuls and handfuls of supplements, it's not going to do much. So you really need to make sure you're hydrated.

Water is important for many immunological biochemical steps that are necessary to allow your immune system to work. And water is essential for you to have some degree of osmotic pressure and fluid in your blood to allow you to have proper exchange of immune cells through circulation. So you have to make sure that you're not dehydrated. If anything, make some effort to be more hydrated than ever before if you're trying to support your immune system.

So I talked about sleep, I talked about supplements a little bit. It's a deep hole. I didn't want to jump really deep into it.

But the third thing they also talk about is movement and how your immune system works.

So one of the things to understand is that the way our immune system is organized is we have different immune surveillers throughout our system. These are called macrophages or antigen presenting cells. So when the bacteria or virus comes in your body, there's the cells called macrophages all throughout your tissues and as soon as they sense a pathogen, they engulf it and then they send for help through different cytokines or messenger pathways. Then bringing things like T-cells or helper cells or cytotoxic T cells, things to deal with the immune response against it. But those messenger systems then are sent into your circulation and those messenger systems will then be sent to your lymphatic system and in your lymph nodes you have all those immune cells waiting to figure out what to do.

So without proper movement and motion, you can't get proper lymph activity and get the immune messengers for your infection throughout your immune system very well. So when you actually move and contract your muscles, you're actually pumping out your lymphatics. And when you move, you also increase your heart rate so you improve your circulation and blood flow.

What that means from an immune perspective is that when you have movement and motion, having muscle contractions and you're also increasing your heart rate and improving your blood flow and circulation, all these immune messengers that the immune system needs to integrate and communicate the proper immune response becomes more efficient. So if you're sedentary, dehydrated, eating the same diet every day and not getting sleep, you're doing all the wrong things.

So you want to get plenty of sleep, you want to get some motion and movement, like a brisk walk would be fine, to get your circulation blood flow going. But the more body parts you can move, the better, to get the best effect of your lymphatic and circulation system. So you really want to make sure that you are getting some type of movement.

Now, when it comes to exercise, one of the key things you have to realize is that exercise produces free radicals. So you've got to figure out what your personal tolerance is to exercise. If you have a very severe autoimmune disease, you may not be able to handle much exercise. If you were fighting an infection, like a viral infection, you've got to be careful how much exercise you can do because it also increases your free radicals. So you got to find the balance.

If you're healthy, really getting your heart rate up will be ideal. At the very least, having brisk walk for just a couple of minutes can really change your lymphatics.

I keep getting this question about LDN. So let me answer this. LDN stands for low dose naltrexone and low dose naltrexone is a medication that has some positive effects to many people who have autoimmunity. And LDN is theorized to work that it binds to regulatory T cells in the immune system in modulating the immune response. And when you're looking at LDN, LDN effects within the patient population, what I've seen in my practice is that some patients take low dose naltrexone and they feel no different. Some patients take LDN and they still feel a slight improvement.

But let's to put it this way. LDN has an impact on regulatory T cells, which helps as, it's more of an immune modulator than it is an immune enhancer. But it's not like a game changer. Most people that have autoimmunity, they take LDN and it's not like they go, "Oh, I take it now. I'm completely different from this point on." It's just something they take and it seems to help. For me, if I had an autoimmune disease, I would keep LDN around for an acute flareup. If you start using it every day, what we also see is patients just don't get the same benefits from it. So your immune system does start to not respond to it over a period of time. But there's some uniqueness from one person to the next.

Okay. let me read some more questions here. All right. "What are reasons that we can't sleep, wake up around two?" Reasons you can't sleep, I talked about earlier. Most common ones are like overactive bladder, too much salt, frequent urination, hypoglycemia. I tried to give you some strategies about that before.

Okay. "You brought up the flu earlier and how rare to have two virus at once. With that said, if you received a flu shot this year, would that helped with defense against the coronavirus?" That's the stuff we don't know yet. We don't know if any type of flu vaccines will impact coronavirus. There was a paper that was just recently published in one of the European or Asian journals where they were looking at the incidents of infections in China. And one of the reasons they theorized that kids could not affected by it

much is because they had some degree of immunity from whooping cough, as the explosion of whooping cough in China the year before and maybe some of them were vaccinated.

It's hard to say if it will have any enhancing effect with the coronavirus yet. This is just stuff people will do retrospective analysis on once we get past this pandemic and then be able to understand this virus more. It's too early to tell any of those things.

Okay. From Claire, "Diet like AIP paleo, working on root cause lifestyle change, lots of valuable info and the file's great." So that's great. If you're on the autoimmune paleo diet, you're working on autoimmunity, that's great. It's another key thing to understand. If you're dealing with Hashimoto's, how well you manage your Hashimoto's will be key factor of how much immune resilience you have. So if you have Hashimoto's and for example you know you have gluten sensitivity, but "you can get away with it", you can then just trash your immune system.

If your immune system is dealing with your autoimmune response, it's going to be weakened and it's going to have less efficiency to deal with a virus. So if you know there are triggers for you with Hashimoto's, maybe it is gluten, maybe it's dairy, maybe it is your diet, maybe it's the environment, your lifestyle, your social relationships, the more active role your immune system has in dealing with the autoimmune reaction, the less immune resiliency you will have. So one of the key things to just pay attention to, especially if you have Hashimoto's, is really do the best job you can controlling your autoimmunity and know what those triggers are. So be wary of those.

Okay, let's go into some more questions. Some of these questions I seem to have answered. "Does bouncing on the trampoline help support your immune system." Why not? You definitely going to pump your muscles. You're going to get circulation in the blood flow. If that makes you happy, that'd be great.

"Does exercise mess with your cortisol and keep us awake?" So if you exercise above your heart rate and above your tolerance level of fitness, you can definitely spike your cortisol levels. When you actually exercise, you do produce some cortisol and you do produce some free radicals. But after the exercise event, you actually have an anti-inflammatory response that lasts for many, many hours that counteract those negative responses. So that's where that comes in.

"Can you talk about adrenal health?" Okay. So your adrenal glands produce different hormones. One's called cortisol, which is your stress hormone. Cortisol helps break down glycogen. So you have glucose for energy and then the adrenal glands also produce mineralcorticoids, like aldosterone, which help for you to retain sodium. And they also produce epinephrine, norepinephrine, which is part of the stress response. So the key thing about adrenal health is how do we really define dysfunction of the adrenal glands? And there's lots of different theories and opinions about how to do that. But at the end of the day, the biggest reason people have what are called adrenal imbalances is where they get shaky, light-headed, irritable, their blood pressures are really low. They constantly need to salt the food.

This is typically because, most common cause is because you're constantly hypoglycemic. They just don't eat. They miss meals too often or they have ongoing infection or some triggering event. So usually with adrenal health you have to kind of treat everything else to get the biggest change.

Okay. Next question. "Does taking ibuprofen or NSAIDs make you more susceptible to an infection?" Well, I don't know. I don't think anyone knows yet. So the key thing is some types of, like acetaminophen will deplete glutathione. Glutathione is a key factor to maintain your barrier system,

including a lung barrier. Things like coronavirus break down the lung barrier. It's possible high acetaminophen may have a factor, but again, we don't know.

I think the biggest thing that's frustrating for all of us is that this is a new virus that's hit the human species and we don't know what to do about it other than a rest and keep our immune system healthy, but we don't have any specific treatments for it. And that's the problem.

“Thoughts on gluten.” Don't eat it. Let me explain gluten really quickly here. If you have Hashimoto's, gluten sensitivity has a genotype. It's a, what's it called? HLA-DQ genotype, human leukocyte antigen gene type. What that means is that how aggressively different triggers activate your T cells. In gluten sensitivity, celiac disease and in Hashimoto's all have similar, HLA-DQ gene types. So when you look at the Hashimoto's gene susceptibility markers, and you look at gluten sensitivity and celiac, they overlap.

So there's a large percentage of people that suffer from Hashimoto's that actually have full blown celiac or at the very least have gluten sensitivity. And what happens is when you get exposed to gluten, your T cells, which are critical for you to be able to fight off a viral infection, are now dealing with an immune response.

So if you have Hashimoto's, I mean you want to cover your bets, stay a hundred percent gluten free if you're dealing with the concerns of a pandemic virus and keep your T cells healthy to fight any infections that are there versus wasting its time dealing with the gluten immune response. So I would definitely suggest you get tested for gluten sensitivity or celiac if your Hashimoto's, it should just be an absolute next step. If you're not sure, it's probably just best to stay off it. It's just a very inflammatory food protein. So be wary of that.

Some people say it's too hard. Like really? it's not. Just do it. Here's the thing that I've seen as a healthcare professional with gluten. They don't see what I've seen. They don't see Hashimoto's patients progress five years all of a sudden into brain autoimmunity and to MS or to other things. And then they wish they could go back and been more diligent with things like being gluten free. So it's very frustrating. I mean, everyone does it. It's not a big deal. Please make sure if you are gluten sensitive, you avoid it.

Okay, let me go into some other questions here. “Vaccines and Hashimoto's.” I don't know if vaccines are going to be the answer for autoimmune disease in general. It's a different mechanism. Time will tell them with that. I think they're really looking at more like T-reg modulators is the best thing for that.

As far as coronavirus goes, they're working on a vaccine. Will it be effective? We don't know. Could it be a trigger for autoimmunity? Yes. It can absolutely be a trigger. We don't know. Could it cause molecular mimicry? Possibly. And these are all the things. At the end of the day, there's going to have to be some degree of overall immunity throughout worldwide. They say that we need about 60 to 80% of people that start developing antibodies against it before we have issues with it. I think that's very true. We just don't know how it's going to impact Hashimoto's community. Okay. I think I answered most of the questions that are coming up.

Okay. I do have Dr. K. News, drknews.com where I put together articles and information if you would like to learn more about some of the stuff I've done. And I put together a program that's free, immune resilience program for all my newsletter followers [see the home page at drknews.com].

And it just goes into some of the things I shared with you, how important sleep is, how important exercise is, how important hydration is. Those are key things to look into. So you can get access to that if you'd like for free. We're not trying to sell you anything. It's just something I made for people that are

following my information as an author. The other key thing is, that I mentioned the program that I want to share with you is how important getting an opioid responses with your immune function. And opioid response could be as simple as a hug. It could be a healthy relationship. It could be exercise. It could be laughing. So one of the things that I will definitely have my patients do when their immune compromised is really trying to encourage them to watch things that make them laugh.

For me, I always crack up watching like cat videos or dog videos on YouTube, so funny. Or you can have a favorite comedy you like to watch. When you laugh, you actually create a very powerful opioid response that has a powerful immune modulating effect. So as you improve your microbiome diversity, you definitely want to watch things that really are really good for you. You definitely don't want to spend your entire day freaked out and release all your stress hormones worrying about a virus and then just being in a world of fear, that's really going to be really bad for your immune function. So you definitely want to take breaks from that and have some family time.

And the other key thing is crying. Crying is also really helpful. Crying is a reflexive physiological response to help you release opioids that then modulate your immune system and block inflammation and help you deal with the physiological stressor. So if you can watch something that's funny and makes you cry, even better. But those are very important things to really to think about.

So my take away for you is, let me tell you the worst things you can do. The worst things you can do right now is stay up late, freak out, not get proper sleep. In a diet, lots of sugar. Eating the same diet every day, because there's no diversity in it. Letting your blood sugar drop throughout the day. That'll make your immune system worse. Continue to eat gluten if you have Hashimoto's, because it's such a significant link with that. And if you're doing all those things, you're going to really put your immune system in a state of weakness.

But things you can do to really improve your immune function right now is get plenty of sleep. Try to get deeper REM sleep. Stabilize your blood sugar throughout the day. Make sure it doesn't drop. If you can handle fasting, great. If you can't handle fasting, don't push yourself and make your immune system worse. Try to watch things that are positive. They have an impact on the immune system. Stay away from all the negative information. And really avoid sugar. Sugar has a very negative effect on the immune system. Anyways, it was a pleasure to be able to communicate with everyone. Thank you for all of your positive messages and happy to come back anytime. And thank you again.

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