



## EVERYDAY IMMUNE RESILIENCE

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Hi everyone. Today I'm going to be going over immune tolerance and how immune tolerance has an impact on immune resilience. If you guys aren't familiar with the Everyday Immune Resilience program, I created a free program that just talks about lifestyle factors that really support immune resilience.

So today I want to talk about something called immune tolerance. And immune tolerance is one of the most important things that you really should know about as you get older. If you're dealing with food sensitivities, if you're having any type of autoimmunity, if you're having any environmental issues, reactions to chemicals, one of the things that it's important to understand is that we all have some degree of what's called immune tolerance. So how do we react to foods, how do we react to chemicals, and we react against our own tissue.

If you're looking at your food sensitivities, for example, you may have noticed as you've gotten older that you start to develop more reactions to food; that indicates that you've lost some degree of immune tolerance. And as we all get older, we already have some loss of our immunological integration and function. Some people can maintain it and have a very healthy immune system, and then some people, through various factors, will basically have some issues with loss of their immunological tolerance.

Also what happens is that many people, after they go through some stressful event, whether it's a divorce, whether it's graduate school, whether it was some type of a significantly stressful response for many months, for many years, they may notice that they started to develop lots of food sensitivities and lots of reaction — that's associated with what's called immune tolerance.

Now some people when they lose their tolerance actually develop autoimmune disease and some people just develop a high sense of sensitivities to foods. So there's different stages and different degrees of immune tolerance. Some people are born with very poor tolerance right from the get go. They are a child and have multiple food sensitivities and multiple reactions, so they already have a less efficient immune tolerance system to work with.

Basically the concept of tolerance is that when you get exposed to something foreign, like a chemical or a food protein, how does your immune system react to it? If it has an exaggerated response to it then that's called loss of tolerance.

You may have notice that you are very sensitive to gasoline smell or fumes than you ever have been before, or you walk into an elevator and if someone's wearing a lot of perfume it may really bother you. So those are all signs of loss of immune tolerance.

Now in basic terms there's three different types of tolerance: There's dietary protein tolerance, which is reaction against food, there's loss of chemical tolerance, which is an increased response to chemicals around you. and then there's loss of self-tissue tolerance, which is where autoimmune disease comes in.

And the key feature of autoimmune disease is that you start to attack your own body. So one of the other things that I've done is I created a program called a 3D Immune Tolerance Protocol, and I go over these concepts in it with diet, nutrition, and lifestyle strategies and a workbook and recipes that you can use to improve your tolerance.

Now, supporting your immune tolerance is different than necessarily strengthening your immunity. However, you have to have some degree of immune tolerance to keep your immune system healthy.

If your body is constantly reacting to the environment, you're going to deplete your immune reserves, your immune potential. So that's one of the things to remember.

Now, one of the things that also we know about is that how healthy a person becomes and when you look at individuals that are greater than a hundred years of age and how they function, they typically have very, very strong immune systems. They have very strong immune tolerance systems, and they're able to distinguish self from non-self very well and then they don't really have an exaggerated response to the environment that's around them.

Now let me try to see. Thank you for everyone who's joining. I can see some of the questions that are coming up here. So I'll try to go into topics and answer questions as I see them here.

Hi Linda. Thank you for joining us. So Sarah says, "**Hi Doctor K, could you please advise me what's a good dose for vitamin A?**" So I think vitamin A is really a key nutrient, it's a fat soluble vitamin and there used to be a lot of hesitation of using high amounts of fat soluble vitamins, they thought that it created health problems. And then when vitamin D research started coming out and we started to realize that people need vitamin D and now people are taking anywhere between 1000 IUs of vitamin D to 50,000 IUs of vitamin D. Most healthcare practitioners are recommending five to 10,000 IUs of vitamin D.

And then vitamin A, what they're realizing is just like vitamin D that you actually need higher doses than we thought before. So some people can just take 100 IUs of vitamin A and some people take 10,000 or 50,000, or 100,000 IUs of vitamin A. It Really depends for how long and for what reasons.

The key thing with any fat-soluble vitamin is that there's some issues with metabolizing it, so certain people that have, say, kidney disease or liver diseases, should be very careful with very high doses, but for the most part, most people that take vitamin A, even at high doses of let's say 10, 20 or 30,000 IUs, usually have no problem, especially if they take it for a short-term period just to try to support their immunity. I think you can easily take 10,000 IUs of vitamin A daily without any significant problems.

One of the side effects of taking any fat-soluble vitamin at too high of a dose, we get to the toxicity levels. You'll start to notice hair falling out, you start to notice dry skin. Those are the common features that take place. But a lot of people need vitamin A to really also support not only their immune function but their immune tolerance.

So vitamin A is also essential for the lung barriers. And I know with the recent concerns and fear with the coronavirus, one of the key things for the coronavirus is that it breaks down the barriers. And now there are some immunologists that are theorizing one of the differences between getting exposed to the virus and potentially having reactions and not having reactions maybe how fit the lung epithelium barrier is. So vitamin A is essential for not only the lung barrier, but the gut barrier. And vitamin A is also really important for the cells in the immune system called dendritic cells. And dendritic cells are these cells that dysfunction when there is vitamin A deficiency.

Now people always ask, "Well, how do I know if I have a vitamin A deficiency?" You can measure these with a red blood cell test. The most obvious symptom of vitamin A deficiency in a clinical setting is really referred to as night blindness, and night blindness doesn't mean that you're blind at night, but it means you have a hard time seeing at night. So for some people they'll notice that when they drive at night, their vision is not as well.

So vitamin A is retinoic acid, and there's retinoic acid receptors in the eye that help distinguish colors. In the cones of the eye, you have these receptors that are really dependent on retinoic acid. When vitamin A levels become depressed, those cells don't function well and it's clearly expressed with poor vision at nighttime.

Now, other types of vitamin disorders can cause [inaudible 00:08:11] deficiencies and is common to do that. Also, when vitamin A levels drop, people just notice that their skin doesn't look as well as they used to look, their nails aren't as strong as they used to look.

And the most common cause of a vitamin A deficiency since you're bringing this question up is actually due to people that have fat-soluble vitamin malabsorption secondary to a gallbladder issue and this happens a lot in females. So sometimes it happens as people get older, their gallbladder which normally stores bile and releases bile to break down fats and also to help absorb fat-soluble vitamins like vitamins A, D and K, fat-soluble bile — as we get older, the turns into stones or converts into sludge and then the absorption of vitamin A, D and K become compromised.

Because many people think, "We live in a healthy country, we're all getting lots of nutrients, we're all getting food, or we're multivitamin. How can I have a vitamin A deficiency?" Well, you can simply have a vitamin deficiency if your gallbladders is inefficient.

Now, if you do have an inefficient gallbladder, one of the first things you'll notice is that you may have some intolerance to fatty foods. So if you eat anything really fatty or really fried and you just don't feel well and you just feel like the food's stuck in your system and you get bloating, those are all signs that you may have a vitamin A deficiency. Thank you for bringing that question up, Sarah, about vitamin A. So in that case for example, it's not about how much you dose vitamin A, but maybe you support your gallbladder.

This kind of goes back into, in a real clinical setting the difference between just following protocols and having let's say a clinician manage a patient. When you just follow the protocols, you kind of just read something online and you think, "Oh, I should just take this." But when you understand the concept of let's say, for example, immune tolerance — let's say someone comes in and they have a very clear vitamin A deficiency, whether it's by lab work or maybe they have significant symptoms, especially with vitamin A, they have difficulty seeing at night compared to daytime, especially when they drive, they have noticed a change in their skin, they notice a change in their hair, they have notice a change in their nail beds. If all of those things are happening and there's vitamin deficiency, maybe you do have to go back and really support and fix someone's gallbladder with diet, nutrition and lifestyle strategies to then allow them to absorb vitamin A, to then let them regain their tolerance. So that's one of the key things there. So I hope that answers your question, Sarah. Let me go onto the next one.

Deborah, hi, from Vista. **"Thank you for teaching us."** My pleasure. Thank you for joining us. And then I have a question from Maria. **"Thanks Doctor K. Hello again, from New Zealand. I'm taking the 3D intolerance program."** Fantastic. **"Enjoying it very much. The way you teach this very simple model, so helpful to manage better my Hashimoto's. Dealing with pandemic virus. We should stay 100% gluten-free to keep T-cells healthy. I am a foodie. I am doubtful of my consumption of potentially reactive food proteins. Is gluten-free oats okay? Can you please name some more foods to be avoided? Thanks."**

Well, it's very interesting, I was speaking with one of my dear friends and mentors, Dr. Aristo Vojdani yesterday. He'd already started doing some cross-reactivity research with food proteins and COVID-19 and coronavirus, and there was some cross-reactivity with gluten. There's other foods also that are listed. There is an emphasis for us to write a manuscript and try to get this published as soon as we can, but what that would mean is that if you have coronavirus, there could be certain foods that really increase the inflammatory reaction if you eat them because of molecular mimicry and similar reactivity.

So we are working on that and I think that at the end of the day that we're going to have to see what research comes out and what gets published and so forth. But in general, gluten is very inflammatory. Gluten is one of the things that if you do have sensitivity to it can help break down barriers and have some reactions and so forth. So those are things that you could do.

Next question. Thanks for that question. **Viral load. Is there specific titers and IgG testing for Epstein-BARR and cytomegalovirus, EBV or CMV [CMV stands for cytomegalovirus] or other frequent infections? When you suspect there are viral load is it enough to have a treatment? Is IgG testing for titers even useful to gauge this?"** So let me explain antibody responses and laboratory testing. So there is a type of test that's called the viral load and the definition is also known as a polymerase chain reaction test or PCR test. And what this test measures is how much viral activity is taking place by looking at different DNA structures.

So right now when people say they're being tested, for example like coronavirus or if someone gets hepatitis C viral load test, they're actually measuring PCR and that's determining how much viral activity is there and that's different than an antibody test. An antibody test is letting you know that your immune system has made antibodies and is trying to defend against the pathogen. And initially with most viruses, IgM antibodies go up first, which tells you that there is an acute immune response and as a person starts to develop immunity, there is the development of IgG antibodies.

One of the things that I think many people want to know when it comes to, for example, coronavirus, is do they have immunity to it? Because we now know that there are some estimates say between 25 to 50% of various populations that have been exposed to coronavirus but have absolutely no symptoms and now have immunity. And the way you would determine if you have immunity or if you had what seemed like a really bad flu and it could've been that coronavirus response and you developed immunity to it, you should have high amounts of IgG antibody. So for pretty much most viruses, and especially for Epstein-Barr virus, to answer your question Colin, and cytomegalovirus, you can measure both antibodies and polymerase chain reaction testing for them.

And typically the way that is done and the most common form of testing for viruses in the healthcare field is with hepatitis C. They'll screen for hepatitis C with let's say an antibody test to see if someone has say acute liver symptoms, they may screen with antibody tests, the IgM antibody and then if they have the virus infection, they'll determine how aggressive and active the virus is and looking at the viral load or PCR. So we'll see what happens with testing. Antibody tests are usually cheaper than the viral loads or PCR testing, but that's the basic concept of how immune tests work for viruses.

Next question here. Morelia. "Thank you for taking the time to share your expertise with us. Blessings." Thank you joining us. I really appreciate that. And then Michelle, "**Can you give us optimal levels for vitamin D for Hashimoto's patients?"** So when you look at vitamin D, vitamin D and specific to Hashimoto's, the vitamin D laboratory reference range in the U.S., when you're looking at 25-hydroxy vitamin D is somewhere between 30 to 100, that's the normal laboratory reference range. Most people that practice nutrition and functional medicine like to see vitamin D levels not just in the borderline above normal of 30, they like to see around in the 50 range or kind of in the mid line. That's an ideal, let's say, dosage for vitamin D. And levels below 30 for sure are insufficient.

Now we know that Hashimoto's patients are a bit different. Hashimoto's patients, many of them have gene uniquenesses that actually make their vitamin D receptors less efficient. So that being the case, when it comes to vitamin D, if you do have Hashimoto's and we know that a large percentage of Hashimoto's patients with genotypes that have vitamin D receptor gene uniquenesses, so they're not as efficient processing Vitamin D, you definitely want to be above the 50 range with your vitamin D test. And then when you're looking at levels where it may be too much, definitely I think when you're getting above a hundred units with your 25-hydroxy vitamin D levels, those levels may be a little bit too much.

Now, there could be some people that have their own uniquenesses and differences to it and that's always real world stuff, but when you're looking at how much do you take with vitamin D, this is a whole different issue as well. Some people, for example, have a vitamin D level of 25 so they're clearly below the laboratory reference range and they may take 10,000 IUs of vitamin D and then six weeks later it

may have gotten up to 28 or 30, it hasn't really made a big change or some may not even move at all. So whenever that happens, and that's really more of a malabsorption issue. And once again, especially for females and especially those with Hashimoto's, gallbladder issues should be investigated.

The reason I also say with Hashimoto's with gallbladder is because thyroid hormones are necessary to metabolize bile, and when a person is deficient in thyroid hormones and maybe it took them many years to get diagnosed, their bile and their gallbladder can become very sludge-like and develop stones and then you can have some gallbladder related issues. So that's something taking place.

Brandon, nice to have you on board. Thanks for joining. Gene. **"How often should you do coffee enemas?"** Well, I think for coffee enemas are something that we use for a specific purpose. It's not done for daily health as a general routine, so I don't really have a good answer for you. Now, coffee enemas can be used for several different mechanisms. One thing is since we were been talking about gallbladders, coffee enemas can help activate and stimulate the gallbladder, but research has shown that so does just drinking coffee to get that gallbladder contraction. Some people use coffee enemas because they have significant constipation and motility issues and the only way they can have a regular bowel movement is if they actually use coffee enemas. And the caffeine in coffee activates what are called acetylcholine nicotinic receptors, which are some of the muscles in the gut and they cause them to contract so it can increase motility and help with people that are constipated.

Now, there are some patients that I work with that have Parkinson's disease or they've had some significant injury to their gut plexus or through the brainstem from traumatic brain injury and they have ongoing chronic constipation and the only way they can have regular bowel movements is if they do something like a coffee enema to activate those acetylcholine receptors. So I have seen some patients that have impairments or injury to their gut or to their vagus nerve or a neurodegenerative disease which has degenerated their nervous system in their gut, do coffee enemas daily to have regular bowel movements. But for most people, it's not something you want to do unless you found a clinical need for it, in my opinion.

Next coming here. Peter. Thanks for joining us. I appreciate you're onboard. Judy. **"What do you think of vitamin C from GMO corn versus vitamin C from whole foods like [?] or ascerola?"** Well, when you're looking at vitamin C, the question you're asking is, so GMO corn versus another source is the protein source the compound? Technically, the vitamin itself should just be the vitamin and the vitamin isn't attached to a protein. So when you're actually looking at the extracted pure vitamin C, you don't see an issue between one or the other. I mean, some people are going to have different preferences.

Right now, I think it's just theoretical. One has a different effect than another. I would suspect that it really doesn't. There's a question that people that are highly sensitive to pollutants or pesticides and different reactions when it comes to food proteins may need to make a consideration, but when you're looking at the extract of the actual vitamin, I'm not sure there's any clear research that it would make any difference and since there's no proteins involved with it, I don't necessarily think that it would be an immune inflammatory reaction.

Obviously, if there's any contaminants or pollutants in a supplement, that's a whole different issue, but that's actually has to do with the purity of the compound. You can have vitamin C from what seems to be healthy sources, but they're actually contaminated and that does happen when they do bioassay testing in nutrition manufacturing. So I think at the end of the day, it's not so much the source that matters, but how clean the product is and if there's any type of pollutants or contaminants in it itself.

What most people don't know is that majority of supplements that are sold in the U.S. are not manufactured in the U.S., they are actually manufactured in Asia and China in particular, where they have a high degree of pollution and they don't have the GMP standards. So when nutritional

supplements get imported into the country, they don't have the same guidelines they do for manufacturing in the U.S.

So a key thing to also remember is, if you're perusing supplements, you definitely want to use supplements that are manufactured in the US with GMP standards, and even higher level professional grade supplements they do toxicology testing and so forth and that would be the ideal way to take it.

Sometimes patients just go to the nutrition health food store and they just see a really cheap supplement and they think it's all the same but typically the stuff that's imported without the high degrees of GMP standards and higher standards and without toxicology screening and third person confirmation of ingredients are the ones that are inexpensive and cheap.

Okay, let me try to answer some more questions here. Okay. I have a question here from Linda. **Hi Dr. K, I'm a practitioner of microcurrent neurofeedback, I see clients who had multiple concussions complicated by mold toxicity, does one have to have continuous exposure to mold to have continued immune symptoms?**

So let me explain something about mold sensitivity and what's been published in the literature. So there's something called mold — when you look at a patient that has been exposed to mold, they can have mold antibodies and there are different types of antibodies. There is an IgG antibody which means that there is some exposure happening and the immune system is reacting against the mold and that lets us know that there's something there.

Now, what they found in a large study that was published, I can't remember, it was one of the Norwegian countries, where they did databases. They found that if a person was in an environment with lots of mold, a damp building for a long period of time, a percentage of them starts to switch from an IgG response to mold to an IgE so then they develop a classical allergy response. And when they went into an IgE response, they had permanent mold allergy symptoms forever. So whenever they go into a damp building, they have reactions to mold. So that's really the worst scenario.

Now when it comes to any kind of path — pollutant or toxin — and molds produce what they call mycotoxins — different people have different reactions to them. Some people can go into a room with a lot of mold and have no reactions, no symptoms. They have a good antioxidant reserve system. Their body is capable of dealing with that. And some people get exposed to the same room and just totally fall apart. So it's not just the exposure but also has to do with a person's immune resilience and their ability to produce antioxidants and to quench mycotoxins. There could be some genetic immune responses at play too that make one person more or less sensitive to another. But those are all the different factors.

So it's always a good idea if you suspect that someone has a mold reaction to measure blood IgG and IgE reaction to see if their immune system is reacting or not reacting against them. There are people that just are in the same house and the house could be filled with mold and one family member has no antibodies against it and no reactions and another person has severe reactions against it. And this goes back to today's topic which is again immune tolerance.

So if a person has a healthy immune tolerance system, then their reaction to mold would be much, much different. Now, one of the key things about maintaining your immune tolerance is how diverse your microbiome is and one of the scariest things that I'm seeing happening right now with this fear of the pandemic and everyone getting coronavirus is there's a lot of people using hand sanitizers and everyone's washing their hands and everyone is really... well, people aren't connecting or interacting with each other and you have to understand that we need to get exposure to bacteria to keep our immune system healthy and to especially to keep our microbiome diverse.

So when you go into a very high sterile environment, you actually do impact your gut microbiome and the amount of diversity it has. The less diverse the microbiome becomes, the more immune reactive you

become. So I think that one of the things that I'm really concerned about is that once we get through the pandemic, once we have a high degree... once we start to get to the point where the human population starts to have higher degree of immunity to this viral pathogen and it's not so much of a health concern for overburdening hospitals, there's going to be people that are extremely scared to touch things. They're going to open doors with gloves or they aren't going to go outdoors. They're going to be really avoiding human contact and they're going to really overly sterilize themselves. And as soon as that happens in the worldwide population, we're going to see I think an explosion of more food sensitivities, autoimmune diseases and so forth.

It is actually really, really important to have your hands touch different things and get exposed to all different types of bacteria to really keep the microbiome healthy. So it's one thing to, when we have a pandemic that's dangerous for some vulnerable people, of course we want to avoid contact but as this continues into other areas, we really are more concerned about that.

So I think there's going to be a constant need to support your immune tolerance and if you don't interact with people, it's still a good idea to go for a walk, touch things out in the forest or in the natural environment to get some exposure of bacteria to your gut microbiome and really at least have some chance to support that.

Okay. Questions are really coming in quick right now as people are joining in. So let me try to answer some more. Tammy: **Acetylcholine deficiency has something to do with immune neural tolerance. What choline do you like to use for immune neural tolerance?**

Well, I'm not sure where the concept of acetylcholine deficiency has anything to do with immune tolerance so I'm just going to skip that one. I don't know how to answer your question Tammy, I'm sorry.

Julie: **Hi, Dr. K. You mentioned gallbladder issues a couple times already today. How would you treat or resolve a gallbladder issue?**

Well, for the most part if you have a gallbladder issue, the key thing is to you have to avoid fats for an extended period of time. Studies have shown that drinking coffee helps with gallbladder issues. You want it in the [gut] biome. You want to take botanicals like dandelion root. You can take bile salts as a digestive supplement to help dissolve some of the stones and you probably want to take digestive enzymes like lipase to help thin out the biome.

So the combination of those things are a typical approach to really supporting the gallbladder. The key thing is to really avoid fats for an extended period of time and load up on lipase and bile thinning compounds like dandelion root, milk thistle, those are the most common ones used in botanical medicine and then there's been some studies published with case studies where they've actually used bile salts to not only help with gallbladder sludge but with stones in the literature.

So the key thing with bile salts. If you use them for gallbladder issues, notice that if you do take too much, you can get significant diarrhea and bowel movements so you have to kind of be careful with how much bile salts you use if you're trying to support your gallbladder that way.

Okay. Yvonne: **Can you talk about the quality and price of different antibody testing?**

Well, I think — there's different types of antibody testing. One is called ELISA and then Isabelle says **have you looked at Vibrant America's COVID-19 antibody test?** There's microarray analysis and there's ELISA. I know for example, Vibrant is using microarray analysis, and microarray analysis is not as accurate as ELISA.

So I personally like to use ELISA testing and I like to use a lab called Cyrex. And I work with Cyrex. Whether Cyrex or a different lab, the key thing is not all antibody testing is the same. So even though it might say IgG or IgM, a cheaper version of that is called microarray analysis and even though it can still

have some benefits, the sensitivity and specificity is not the gold standard. The gold standard is what's called ELISA. So if you do get any antibody testing, make sure the lab you're using is using the ELISA methodology. You would have much, much more reliable test results when looking at antibodies.

Okay. Next question here. Hi, Dr. K, from Rachel: **Hi Dr. K, thanks so much for sharing your knowledge. Can you talk about autoimmune testing? Can you have borderline antibodies at one time to certain receptors and a few months later antibodies are normal or borderline high for other receptors?**

Yes. And that question was from Cyrex Array 5. So Cyrex, which is a specialty immunology lab that has very good panels to really evaluate autoimmunity, they have a panel called Cyrex Array 5 which screens for antibodies to multiple tissues and if you do a panel like that, ideally what should be normal is you have no antibodies to your own body tissues and if you have antibodies to your own tissues, that's an autoimmune reaction.

Now one of the things we do when people have autoimmunities, immediately just look at their antibodies and see... so if someone came in with let's say rheumatoid arthritis or someone came in with Hashimoto's, what we want to do is kind of look at the antibodies and see are there antibodies anywhere else in the body. Most people [with autoimmunity] have autoimmunity antibodies in other areas of their body as well.

So the Cyrex Array 5 allows to just quickly see what's happening. Now, it's not uncommon as your immune system responds and reacts to your stimulus, your environment, the things you're eating, the pathogens you've been exposed to, whatever you're doing that's impacting your immune system, to have antibody levels change. You can go into remission and have antibodies come down or you can get activation and antibodies go up and they don't necessarily all fall along the same pathway because you can have some certain triggers that cross react and raise the antibody titers.

I'll give you an example. Wheat germ agglutinin which is the lectin portion of wheat can cross react with TPO [thyroid peroxidase hormone]. So if you got exposed to wheat germ — let's say you were following an autoimmune protocol and you had multiple tissue antibodies but your autoimmunity for the most part was going into remission because you were getting proper sleep and you were eating better and you were doing various lifestyle factors that impacted your immune system in a healthy way — but you got exposed to some wheat germ agglutinin from maybe exposure to gluten, those can raise antibodies that cross react with TPO. so on a test your other markers can all go down but your TPO antibodies can go up.

It could also happen with different pathogens. Different pathogens may cross react. So you could have for example H. pylori bacteria. H. pylori antibodies cross react with the thyroid and TPO. So you could have your myelin basic protein and collagen antibodies go down because your immune system is getting better but you recently got an H. pylori exposure and now those TPO antibodies are going up because of molecular mimicry. So you don't always see the same antibodies going up.

For those of you that are healthcare professionals, I do have a course coming up on May 16 and 17 from the Kharrazian Institute on Hashimoto's. I'm going over all of the published and known pathogens, foods, chemicals and environment that directly impact Hashimoto's. It took an extensive amount of time to put all that research together into teaching materials and a clinical model. So if you're interested in learning, saving yourselves countless amount of time and learning a clinical model of all the different things that can raise TPO antibodies and trigger Hashimoto's, you may want to check out the Kharrazian Institute course that I have coming up on May 16 and 17. We're live streaming it on May 16 and 17 and then you can watch the course anytime on demand once you register for the course after we record it with your registration.

So, okay, let's go on to the next question. Thank you for all the positive feedback I'm reading. Thank you, Kirk, for joining. Okay. Let's go into some other stuff here. Okay, Julie: **I recently did a petri dish mold test throughout my house. Only three came up with mold and there were only one of three spots. Is that something to be alarmed about? What do I do? The one with three spots was the kitchen. A spotted dish in my office, one spotted dish in my bath. Any action required?**

So I think one of the things that's available to you and available to all of us is to do these, you can do mold testing, air quality tests and I'm not sure about the test you're doing, Julie, but you can do in-house mold testing and even hardware stores like Home Depot carry them or you can order them online and you can measure the air quality and send it out and see if there's any kind of mold spores that can be measured. Whenever I see a patient that has lab work that comes back and they have immune antibodies to mold, that means they're getting some exposure. So in those cases we like to have either a professional come out and test the air quality in their house and area they work or even just as a quick screen to just get some of these test kits and see if there's any exposures that way.

So that's one way to screen for it. Now again, not everyone is going to have adverse health reactions to mold. Some people are very susceptible to it and have significant symptoms to it and some don't so those are all things to keep in mind.

Okay, let's go into a question here. **Can peripheral neuropathy be caused by mold exposure?**

So, it's not specific but obviously any kind of pathogen can cause autoimmune reactions anywhere else in the body. So mold itself doesn't directly attack the nerves but mold exposures can cause immune dysregulation and immune dysregulation can turn into antibodies to something called neurofilament or myelin basic protein and that can lead into things like peripheral neuropathy. So it can happen but it's not specific for it.

And this again goes back to the whole concept of immune tolerance. Now, we talk about vitamin A as a good strategy to support your immune tolerance. That's one key thing. Getting your microbiome diverse is really, really important. Getting exposed to healthy amounts of bacteria, especially in sterile environments is something to consider. Eating a very diverse diet of many different plant fibers is critical to support your immune tolerance. So those are some really good strategies to keep in mind as you're trying to support your overall system and health.

Okay. Next question here. Hello Dr. Datis, from Muhammad, **does fasting modulate gut microbiome?**

Yes. So fasting has a profound impact on the gut microbiome in a very positive way and so does... fasting also has a huge impact on the immune system. So the key thing with fasting, however, though, is what type of fasting and how long and what the effects are. If a person is fasting for let's say three days or longer, there are some both positive and negative effects that take place.

The ideal form of fasting when we look at all the pros and cons may be intermittent fasting. Whether it's every other day or 6/18 version where you have six hours of feeding cycle and then 18 hours of fasting. And one of the reasons why is that the immune system totally dysfunctions when someone starts to become deprived of proteins.

So when protein levels drop when someone is doing fasting and they're not getting enough proteins in their system, it's hard for them to keep their immune system healthy. Now remember that the immune system is made out of immunoglobulins. Globulins are proteins. And you have to have some ingestion of proteins. You can't be chronically protein deficient and maintain a healthy immune system. Now if you are doing intermittent fasting, there are changes in the microbiome. There are what's called autophagy of white blood cells. Your immune system has cells die off and you have newer, healthier, stronger immune cells kick in. So intermittent fasting is really good not just for reducing inflammation but also for supporting immune tolerance and so forth.

For a lot of people, if you're at home stuck all day, there's been a lot of people that are doing fasting now and in fasting because they're just tired of going to the grocery store and don't want to go all the time so they're getting the health benefits of just extending their first meal into a six hour feeding window where they're fasting for 18 hours and then eating for six. So they may start, for example, eating their first meal at 12 and then they finish eating by 6 so they start their first meal at 2 and stop eating by 8 and then this allows them to really have some benefits in reducing their inflammation. It does have an impact on improving the microbiome and it does calm down inflammation and it's something that's very useful.

Okay. Question from Adam. **What Apex product besides the gut supplements do you suggest for immune strength? ImmoZyme or others?** Yeah, ImmunoZyme and others. In the 3D Immune Tolerance protocol that we put together — you can access that course at [drknews.com](http://drknews.com) — we go through an entire protocol of everything you need to take to support your immune system and your immune tolerance with guidelines and how it works and everything but it really involves things like short chain fatty acids, vitamin A, vitamin D, enzymes and so forth. ImmunoZyme is a general product but it's not something we use in the immune tolerance protocol.

Next question from Julie. **Do you remove eggs and dairy?**

So eggs and dairy are common food pathogens. Egg has a very reactive protein called egg albumin many people react to. And dairy has a significant immune reactive protein called casein. When you look at the most common food proteins that people react to, it's gluten without question that is the most common. Then I would say milk, casein, then egg albumin. And then we see corn and soy, maybe potentially because of GMO impacts where people have a lot of reactions to it. There's also concerns that glyphosates bind to proteins and change the structure of the proteins and we know that there's weed killer used in fields before they get ready for ~~gluten~~ harvest so even though gluten does not have... gluten has high amounts of glyphosates, lots of grains have high amounts of glyphosates and the glyphosate combination with different food proteins can trigger what they call a new protein. Potentially this is the theory that causes some significant reactions.

So corn and soy are very high in glyphosates and then grain products are very high in glyphosates. So those are the most common ones to really I think we see food reactions with but if you're trying to support your immune system, you're trying to calm down your inflammatory reactions, trying to improve your immune tolerance, we typically recommend going off gluten, dairy, egg and soy to have the best effect there.

Okay. Next question here. Heather [inaudible 00:42:26]: **Get your hands in the dirt.**

Absolutely. Get your hands in the dirt. That's what you need to do and get some of those exposures there.

Question from Amy. **If I've had an autoimmune reaction, throat, will taking NeuroFlam reduce it quicker?**

So, NeuroFlam is a nutritional supplement that Apex makes and it has compounds that have been shown to dampen the microglial cells like apigenin and luteolin and green tea extract and so forth but a person's reaction or response to it is different from one person to the next. So it's not specific for any kind of response. It's not specific for any kind of disease. It's just flavonoids. At the end of the day, you may have to do some trial and error, Amy, and kind of see what may work for you.

Okay. Let's see. Next question here. **Your thyroid books states people with low TSH, low free T3, low T4 is a pattern primarily caused by pituitary dysfunction. Is this the case for untreated hypo or can this pattern occur as a result of taking synthetic T4, T3 together through different mechanisms? If not, how does one actively determine the root cause of pituitary dysfunction?**

So, there are people that actually have what's called a primary pituitary dysfunction and it's not low T3 and T4. It's actually total protein-bound T4 and T3. So normally the thyroid gland responds to stimulation by the pituitary by a hormone called TSH but there are times where TSH levels get suppressed. So chronic inflammation, chronic stress and some medications that have an impact on this, and high amounts of glucocorticoids can suppress this feedback loop. And when that happens, TSH level is low, but the actual total T4 is low. And the reason I say total T4, is because what the actual thyroid gland produces is total T4, and it's the best marker to actually see your pituitary function. Free T3 and free T4 are really associated more with what happens after the thyroid gland has produced those hormones, and then the proteins cleave off, to what they call thyroid binding globulin, which becomes free T3 and T4. So those are the key things that cause it.

So as far as taking thyroid replacement, thyroid replacement when you take it, it's going to eventually substitute for your thyroid gland making thyroid hormones. So there's going to be a normal response where TSH levels go down. So that's not necessarily the cause of that. Again, just to promote the course again, I'll be teaching, of course, in Hashimoto's May ~~15 and 16~~ [16 & 17] and we're going to go into every single key mechanism here with feedback loops and so forth. So if you'd like to get updated on that information, please check out the course Kharrazian Institute for Hashimoto's May ~~15 and 16~~ [16 & 17].

Okay, next question. **Is there any help for those of us that have issues still after having our gallbladders out?** Yes. When your gallbladder gets taken out, your cystic duct, which was the pathway to your gall bladder, actually balloons up and becomes a new gallbladder. It's a stump, but it still does work. Now, many people that have had their gallbladder removed can go back to normal function if their cystic duct converts into an expansion to a new gallbladder.

But for other people, they're going to have to take digestive enzymes, specifically lipase to really help them digest their foods. So if you have had your gallbladder removed and you still have intolerances to fats and just don't feel good if you get exposed to fats, you definitely want to take some lipase, because that lipase not only will help get rid of bloating and distension and gastrointestinal symptoms, it will help you absorb your fat soluble vitamins like vitamin A, D, E, and K, which is essential for your immune tolerance, for your immune health, just for your overall sense of having a healthy nutrient intake. So that's something to think about.

Okay. Next question here. **I want to take NAC or alpha-lipoic acid to detox heavy metals. Can you explain chelation?** Well, there's the chelating compound that can bind to heavy metals so it can be screened out of the body. There's different types chelators, DMPs, EPA, EDTA, those are pharmaceutical grade. There's some natural chelators, alpha-lipoic acid and glutathione have been shown to be natural chelators. They can bind to a chemical and help it be extracted from the body. So it's not going to be nearly as effective as taking a pharmaceutical grade chelator. However, for some people it is a good option and it does seem to offer some benefits for them. Plus the alpha-lipoic acid in NAC which becomes glutathione then becomes a natural chelator or safe and they are anti-inflammatory and for most people there should be no problems with that.

Okay. Next question here. Hi Datis, this is from from Michelle. Oops, lost it. Gosh I'm sorry. It's going too fast. The question is, **do you have to take bio enzymes for the rest of your life?** If you had your gallbladder removed and your gall bladder isn't able to kick in, you might need to take lipase forever.

Next question from Ivana, **what if you have low IGA?** IGA is immunoglobulin. Immunoglobulin A is tested with saliva test and when your Immunoglobulin A levels drop, that's another mechanism where you lose tolerance. And let me explain a few things. There's lots of things that cause a person to lose their immune tolerance.

One of them is, they can get things like vitamin A deficiencies. They can't support the gut epithelium, they can't support their dendritic cells and they end up becoming more reactive to the environment. Another one is that, they have leaky gut or they have overactive dendritic cells. There's lots of different mechanisms that we go through it in the 3D Immune Tolerance course, of all the things that cause immune tolerance, but one of them is also a depression of what's called secretory IgA.

Secretory IgA is an immunoglobulin that coats your oral cavity and your gut. And what immunoglobulin A does is that when you ingest food proteins, you get exposed to environmental chemicals. The IgA compound wraps around that chemical and helps decrease the intensity of that food protein or chemical to your immune system. In particular, there are cells in the lung epithelium and the gut epithelium called dendritic cells and dendritic cells cause an immune response. They sample either chemicals or foods and then direct an immune response against it.

The thing that protects overexposure of these dendritic cells to food proteins or chemicals in the longer gut or the SIgA, your secretory immunoglobulin count. Now your secretory immunoglobulin count, your SIgA levels can become depressed, especially with over-training, lots of stress, lots of restrictions, psychological impacts on SIgA levels, and just the poor diet malnutrition. When the SIgA levels drop, you do have greater reactivity to foods and to the environment, unrelated to things like leaky gut. Now, if you've ever had laboratory testing done, where they do a saliva test, a lot of laboratories are actually doing SIgA testing incorrectly and in particular it turns out to be most of the labs that are measuring hormones with SIgA.

In order to actually do SIgA testing correctly, you need a special vial with special reagents that can give you an accurate IgA count. For the most part, if you ran a hormone profile and you collected saliva to measure your IgA count and they just added in the IgA count with it, there's a very, very high chance, almost 90 to 100%, that you can have low SIgA, which may not be accurate. It just may be the fact that the lab has not stabilized the immunoglobulin count properly because it's not giving the proper vial.

Stool SIgA counts are another way labs can measure SIgA which is very accurate, but if you're going to measure SIgA count, then make sure it's done with the proper reagents. It's not just done with the same sample that's being used to measure hormones with some of these functional medicine labs. So that's the key thing with the IgA.

Okay. Next question here. **I was told by my seven year old daughter's pediatrician that she is too young to get Hashimoto's. They tested TSH and said it was fine yet she has skin that is darkening on thyroid, scares very easily and very emotional and ... Hashimoto's when their parents were pregnant with them and diagnostically.**

So just having Hashimoto's doesn't transfer ... your autoimmunity doesn't transfer into your child. However, anyone at any age can develop an autoimmune disease. So if you really want to evaluate if your daughter has Hashimoto's, the best tests would actually be TPO antibodies or thyroglobulin antibodies. TPO antibodies are actually a little more sensitive than thyroglobulin antibodies for Hashimoto's. And that lets you know that there's an autoimmune response against the thyroid gland. TSH will only be abnormal if the autoimmune attack on the thyroid gland is so prolonged that it's destroyed a significant amount of the thyroid cells.

So if you suspect that your seven year old daughter may have Hashimoto's, maybe because you have it and there's some inflammatory symptoms happening, then you really want to have a TPO antibody test measured, not just TSH. So you may want to find a new pediatrician or talk to a pediatrician that understands the difference between hypothyroidism versus Hashimoto's. And the key thing is to measure the TPO antibody, not the TSH.

Okay, next question. **Could you discuss LPS in what antibodies to LPS showing up in blood indicated by the immune system more specifically sexually too.** So LPS is a marker for lipopolysaccharide and lipopolysaccharide are normally found in your gut. However, they should never be in your systemic circulation. And one of the things that causes many people to get chronic inflammation and chronic fatigue and lots of symptoms is a condition called endotoxemia. And endotoxemia means that the bacteria, the gram-negative bacteria in your gut produce a compound called lipopolysaccharide. Then lipopolysaccharide gets into your systemic circulation and lipopolysaccharide have been found to directly bind to something called toll-like receptors, specifically TL4. Toll-like receptors and that triggers an immediate inflammatory reaction.

So one of the things that we always check with patients that have autoimmunity and chronic inflammation is, we check their gut barrier. We use a panel called Cyrex Array 2 to look at markers for intestinal permeability and on that panel there is markers for LPS and the worst scenario for anyone is if they have leaky gut and also have high amounts of LPS. If they have high amounts of LPS showing up in their blood, that means that their intestinal permeability, their tight junctures opened up and now bacteria is getting through and now this is going to cause what's called endotoxemia and cause systemic inflammatory responses.

There are hundreds of studies published in the literature about how endotoxemia basically causes systemic inflammation. Whether we're talking about promotion of type 1 diabetes, we're talking about brain inflammation, whether we're talking about cardiovascular risk factors, people surviving heart attack. There's lots of research on how LPS can be a problem and one of the worst scenarios of intestinal permeability isn't just that the tight junctions open up, but that the LPS compounds in the gut get through and then they cause LPS levels to be elevated.

Now, some people have leaky gut, but they don't have dysbiosis and they don't have this high LPS level production that then causes this LPS to get into the system. Other people have dysbiosis, meaning they have good and bad bacteria in their gut. They have all these adverse bacteria in their gastrointestinal system and then, they get so-called leaky gut and their intestinal tight junctions open up from an inflammatory response. Then that's when the LPS gets in the system, that LPS then turns on this inflammatory cascade. So that's what LPs means. So I hope I answered your question there.

Okay, next question. **Dear doctor, thank you for your time. I was diagnosed with celiac by gastroscopy, but blood test never showed any antibodies. I was originally diagnosed with H. pylori and had H. pylori medicine recently. Doctor says that it might be that it was never celiac.**

Okay, so it sounds like you had a gastric biopsy. They were checking for celiac. They suspected you had celiac from your biopsy findings, but now they think that it may be H. pylori. ... sound about right. There are certain features on biopsy for celiac disease. There's what's called villous atrophy, where the at the top of your gut, the brush borders that absorb nutrients are atrophied and there's something called crypt hyperplasia where there are little changes in the epithelium or the cells of the gut that show up with celiac. And there's lots of inflammatory lymphocytes that cluster in, in a patient with celiac disease.

So it is possible that you could have an inflammatory reaction that may have looked like celiac and you actually had just an H. pylori infection. The the key way to really determine if you actually do have celiac disease is to check your antibodies to trans glutaminases too, and if those antibodies are high, that'd be one really good way to really determine if you actually do have the autoimmune target protein that's involved with celiac. So I hope that answers your question there.

Okay, next question here. **If Cyrex Array 5 shows antibodies to parietal cells, could you recommend supplement recommendations specifically for that?** So one of the things to understand about autoimmunity is that, just because you have antibodies to a target protein doesn't mean that you really

do a specific protocol for that target proteins. So if you have antibodies to parietal cell, what that means is that your immune system is making antibodies to destroy your gastric cells.

And when anyone has antibodies show up on a blood test: autoimmunity happens in three stages. Stage one is what they call silent, where a person has antibodies but no symptoms yet. And then stage two is where they have autoimmune reactivity. Autoimmune reactivity occurs when you start to have symptoms. If it's your parietal cells, you may start to have gastric burning and so-called ulcer reflux symptoms. And then stage three you just have atrophy of the gut. It's really progressed disease and that's where they diagnose a person with parietal cell antibodies and we get diagnosed with a autoimmune gastritis. Wo there is no specific protocol for just parietal cell antibodies. The key thing is just to improve your immune tolerance. So whether you have antibodies to parietal cells or antibodies to myelin or antibodies to TPO, that's where trying to support your immune tolerance is really a good idea.

For me, what I found was the functional medicine nutritional world really didn't understand the concept of immune tolerance. They were just focused on what's called leaky gut, which is one part of immune tolerance and that's why I put together my 3D Immune Tolerance program, which is numerous videos and materials that go into the details, how to support it. Typical.. the general model to support any type of autoimmunity from a diet, nutrition, and lifestyle model, whether it's parietal cells or any other target protein is to just to improve immune tolerance. So, I hope that answered your question.

Okay, next question. Some of them I'm going to skip because I don't understand them. Question from Corrine, **should we be concerned about gallstones with regards to too much regular intermittent fasting? Is there a way to know who is most at risk?** Okay. Well I don't think with intermittent fasting you're worried about gallstone issues. If anything, if you do intermittent fasting you may help have it have some supportive impact on gallstones as you decrease your total fat and your diet and you really decrease the inflammatory cascade. Ultimately though with the gallstone issues, you really want to thin the bile like we mentioned earlier and you really want to avoid fats and take some digestive enzymes like lipase is to function better.

Okay. Next question here. **Where do I look forward to the course again?** So as far as the courses I teach, I teach courses for healthcare professionals, which is more research focused and that's taught at the Kharrazian Institute. You don't have to be a healthcare professional to attend because what I've learned over my years of practice is that many of my patients are much smarter than the doctors and healthcare professional out there where they're focused and spending all their energy on their health and they just need accurate high level information. So there's no restrictions on taking the Kharrazian Institute course if you're not a healthcare professional.

However, you may have some difficulty with the vocabulary and language, you may have to look up some things because we're going to go over clinical and technical stuff. That information in those courses are found at the [kharrazianinstitute.com](http://kharrazianinstitute.com). And all the information is there.

Now I put together some programs, not for practitioners but for the public without the thick vocabulary and easy to understand concepts and terms and those types of courses are all found at [drknews.com](http://drknews.com). I have a free Everyday Immune Resilience program that I just put together, just to give people information about what they can do to support their immune resilience.

And then I have some programs that we do sell. One is the 3D Immune Tolerance Program and we talk about how immune tolerance works and go into great detail about what to do for much greater depth than I can do with his Facebook life.

And then we also have a program called Save Your Brain, which is a six week program into how to support your brain function.

And these are all videos and workbook type programs, so those are found at [drknews.com](http://drknews.com). So Kharrazian Institute is for the healthcare professional-level information and then for just the general public that interested about doing things to improve their health and learning concepts, those courses are at [drknews.com](http://drknews.com). Thank you for asking that.

Okay, next question here. **Your two books are an incredible resource. Thank you. What do you plan on having on your next book?** We're working on the next book right now. We're working on many next books for a long time. We just keep getting distracted with the other things, but hopefully we should have some books coming out on numerous topics, for starting with one on intestinal permeability in GI and the reason I wanted to write this book on intestinal permeability, that we're hoping to get done soon, is because intestinal permeability, leaky gut is more than just removing some foods from your diet and taking things like glutamine, it's much more complex. Hopefully we can finish up this year and put it out there and we're going to go into all the different mechanisms and concepts associated with intestinal permeability. It's definitely much more complex and involves many things than just taking a few nutrients and avoiding a few foods.

Okay, thank you for your interest though. Next question, **would you comment on iodine testing and what's your favorite?** You can use a urinary iodine test as a way to look at iodine levels. The skin iodine test, we're looking at iodine resorption, that is not an accurate test. There's some people who promote this test called the skin iodine test, where you put iodine on your skin and you measured the amount of time for it to disappear and if it doesn't disappear, you're iodine deficient or sufficient. That is a crazy. Urinary iodine would be a standardized test to measure iodine. So I hope that answered your question.

Okay. Next question from Lisa. **Best way to boost white blood cell count, if it is dropping despite eating gluten, dairy and crap free, staying away from [?] and taking all Apex and applicable, no alcohol, no sugar yet, white blood cell counts low.** So if your white blood cell count's low, which it is for many people, then there's definitely something that's exhausting your immune system. And it doesn't have to be food. It could just be the fact you have an autoimmunity that's not a controlled. And autoimmunity may not be controlled not just by food, but by healthy relationships, by pathogens, by environmental pollutants and exposures. Those are all things to consider when you're seeing a low white blood cell count. So even things from the lifestyle, like proper sleep and not being sedentary have an impact on supporting the immune system.

I think a mistake that some people make is that, when the white blood cells are low, they just think of, "What can I take to raise it?" Instead of, "How do I get my immune system to be healthier?" I would definitely look into the free course we put together at Dr. K. News, called the Everyday Immune resilience program. Make sure you're not missing anything there, that could be impacting your white blood cell count from a lifestyle point of view. And I'll also say to you, Lisa, getting white blood cells backup is not easy for some people. Some people it takes quite a bit of time to get those white blood cell counts up. However, it's really an essential part of health to have healthy white blood cells. If levels are in the three range, you definitely want to get them up to at least a 4.0 range to have ideal function.

Okay. Elaine commented, **"If he can't get to your question, there's lots of information on on our site."** Yes, at [drknews.com](http://drknews.com), we also have lots of articles and lots of information about some of the questions that are being asked here, so if you haven't checked out our website, [drknews.com](http://drknews.com), we do have lots of articles that are there for a lot of the topics and questions that people are asking about, so hopefully that can be a good resource to help you as well.

Okay. Next question here. **Do you think infrared sauna has much of an impact to improving the immune system?** I think when you sweat, you have a general autonomic function and avascular response and immune response, at the very least, that's going to have a beneficial impact on the immune system. You can also overdo it. You can totally dehydrate in a sauna and you can shut down

your immune system. So the key thing is, if you're using infrared sauna, just use the amount of time it takes for you to feel healthy and get out of there, and don't really push it. Staying in a sauna longer and longer and longer is not a good thing to do and you can wipe out your immune system if you overdo it, so be careful. The key thing being dehydrated and then putting yourself in a physiological state of a stress response. So when you get into a high physiological stress response, sweating response, that does create a stress response. Then if that's prolonged, it can suppress your immune system. So, be careful with overdoing it in the sauna. I mean, people do get sick and get the common cold if they've been over-sauna-ing too much.

Okay, next question. **What if there's a problem taking glutathione and you think you have mercury issues? What can I do to safely chelate if I'm so sensitive.** Julie, I don't have a good answer for you about that. Glutathione, some people can't take sulfur compounds and glutathione is a sulfur amino acid. If you cannot tolerate taking sulfur, you may have a hard time using glutathione. There are natural compounds that have been shown to raise glutathione in the cell itself. Cordyceps is the one that has a lot of good research on it and so is milk thistle. They both have the ability to raise cellular glutathione even though you may not be able to tolerate sulfur. Those compounds do have an impact on cellular production of glutathione. So those are things to consider.

Okay, question from Jose. **Patient with Hashimoto's disease, with the presence of ovarian IgG, IgA antigens. She had two miscarriages already and could not get pregnant. What other test could you perform or what would you rule to continue taking to help information?** So, I think the scenario of the question is that there's a patient with Hashimoto's and they also have ovarian antibodies and they've had miscarriages and so forth. So ovarian antibodies are going to be expressed as getting premature menopause. So, it wouldn't necessarily cause a miscarriage, unless the person isn't able to have regular menstrual cycle function. I know in November in the Kharrazian Institute, we are teaching a course, a two day course on fertility and we're going into all the different mechanisms of miscarriages and infertility and so forth. But it's really complex and it's not just one simple way to look at it.

Any one time someone is Hashimoto's, the biggest thing, the most common cause of causing miscarriages is that they're actually getting into hypothyroid states throughout their menstrual cycle. And when a female patient becomes in a hypothyroid state where their TSH is high and then with the fluctuation levels of Hashimoto's patients, thyroid hormones are necessary for proper pituitary-brain feedback loop between the ovary and FSH and the first part the cycle and with luteinizing hormone and progesterone in the second half of the cycle. And then to be able to maintain the pregnancy, you have to have thyroid hormones to support that endometrium tissue. So it's not uncommon for people that have Hashimoto's and have this fluctuating hypothyroid in and out stage because of their autoimmune reactions. They end up with miscarriages. One of the key things to really deal with that is to get to the point where their Hashimoto's is really under control.

Now what does that mean? Well that means you've got to look at all the dietary nutrition, lifestyle factors unique to them and use a personalized medicine approach to make a difference. And this is the, I think it's the frustration that both practitioners and patients have when it comes to like, "What do you do when you have this condition?" Well, it's not always simple in a real clinical setting. You have to work up the patient, understand the mechanism, and then try to address that mechanism for that patient and then get a specific outcome. We're so used to just wanting to get a quick protocol or a quick secret or a quick supplement to make a change. But as we know, it's not that simple.

Okay. Next question here. **My TPO is less than 200 now but my TSH went back up by one point. Should I lower my ashwagandha dose?** So this is a question from Leila. I don't know. I don't know anything about your history, so it's hard to answer that question. So I'm going to skip that.

Joanne says **I have a Hashimoto's and my daughter was diagnosed at 12** so one of the striking pieces of information that's coming out in the literature recently is that Hashimoto's is a disease, an autoimmune disease, most common autoimmune disease that usually takes place between women ages age 40 and 60. So for most people that developed Hashimoto's, they are female patients. And then right when they turn around 40, 35, 40 from the majority of them, their disease turns on. So they've been healthy their whole life. All of a sudden they don't feel good. Things aren't the way they used to be. They just feel tired, their brain doesn't work, they don't have any energy, and then they don't know what's wrong. And that's really when Hashimoto's turns on. What research is showing is that the age is now trending downward. So we're starting to see the 30 year old and 20 year olds at a much, much, much higher incidence than ever before. So the incidence of Hashimoto's is now starting to go into younger age groups and there's no question that children would get Hashimoto's and teenagers with Hashimoto's.

So if your daughter has it, I think it's unfortunate, but you really want to make sure you immediately incorporate that nutrition, diet, lifestyle approach for Hashimoto's to make the best difference. And you definitely want to optimize your immune tolerance the best you can to have the best response.

Okay. Next question, Elena. **Dr Kharrazian, would you recommend antibody testing for COVID-19 if one has been asymptomatic?** Yes. So I think ideally, for myself, I like to know if I have any degree of immunity. So like many of us, some of us have fought some viral responses, had some so-called flu or common cold symptoms during the past few months.

And it's possible that for some of us that we're actually dealing with the coronavirus. And if that's the case, now we have immunity to it, and unless the virus completely mutates to a much stronger strain then you should have some degree of immune protection against that virus. So I think one of the key things that will really help people convert from social distancing back to regular life is we start to understand what percent of the population actually does have antibodies to it.

The entire country of Iceland had antibody testing done and they found a 30% of them had antibodies with absolutely no coronavirus symptoms. So they got exposed, they developed immunity against it and never had any reaction, so the antibody tests would be a good way to determine if you have had been exposed and had developed immunity. Whether you were symptomatic or asymptomatic, it's a good test to have.

Okay. Next question. **Would you start addressing LPS immediately in a person with Hashimoto's and leaky gut if they're already on the autoimmune paleo diet, or do we need to investigate Th1, Th2, CD4, CD8 ratios.** This question from Everett. Everett, I don't have a very long answer for you. It's in the course we're teaching [in May]. I'm not trying to keep promoting the course, but the way you treat the patient with Hashimoto's — you definitely do not want to take any kind of condition on patient and start to make rules, like “I always start in the gut”.

That is, that is clinical naiveness. You don't always start a condition in any one area. There is the patient uniqueness that has a difference. So where you start really depends on multiple factors. For some people you may want to work Hashimoto's by immediately jumping into their diet. For other people, their diet is flawless and has nothing to do with their gut. Maybe they have a raging blood sugar issue and that's firing up the Hashimoto's. For other people they could have an infection. Things like hepatitis C can trigger Hashimoto's like crazy so, where you start depends upon how thoroughly you work up a person. So that's my best attempt to try to answer your question in order to start with the patient has Hashimoto's.

Okay. Next question here. **On a previous chat, you mentioned only a very small amount of Hashimoto's patients can actually eat gluten safely, which tests are used to determine that?** So most people have a Hashimoto's have reactions to gluten and there is a large percentage of gluten sensitivity in patients that have Hashimoto's. There's a gene type HLA-DQ2 and 8 that is associate with celiac disease, but the

genotypes, the gene types, HLA-DQ1 to 8 overlap between Hashimoto's and celiac. So, many people that have Hashimoto's also have genes that either make them prone to develop celiac disease or for sure have gluten sensitivity.

The problem with testing is it depends on what marker you're checking. So when you're checking for gluten, you may have to check — what most people do is they just check for something called gliadin. If gliadin is abnormal, then they say you can't eat gluten. If gliadin is negative, then you can. However, there are different types of gliadin.

There is alpha gliadin there is gamma gliadin, there is different isotopes of different gliadins. The only lab that test all of those is a lab called Cyrex and they have a panel called Cyrex Array 3 that checks all the different markers. And the other key part of wheat that most people don't test for is wheat germ agglutinin. Wheat germ agglutinin has nothing to do with celiac disease or the protein gluten. Wheat germ agglutinin is the specific reaction of lectins to gluten. And a recent paper showed that wheat germ agglutinin has molecular mimicry or cross-reactivity with the thyroid gland so you could have people that have Hashimoto's thinking, "Well I was tested for celiac and gluten and I was negative", but they didn't actually test wheat germ agglutinin and they can eat wheat and have say to have significant reactions.

Clinically, I would say the majority of people that have Hashimoto's would be better on a gluten free diet for a couple of reasons. One, unrelated to celiac, gluten is just very inflammatory. Number two, if you look at the highest contaminants of glyphosates and pesticides in the food chain, it's in grains. It's very high in gluten containing foods. So when we're dealing with autoimmunity unrelated to celiac, unrelated to gluten, grains themselves have a high degree of glyphosates and pesticides in them and it's not a good thing to have in a diet with someone who's got an autoimmune disease.

Okay, next question, Katie. Thanks for a wonderful presentation. Thank you. **Best way to increase SIgA... diverse plant fibers, butyrate** — and that's where the question left off and the answer is yes. If you really want to raise your SIgA levels, the best thing to do is first of all remove triggers. So if you know if there's any dietary food triggers, and then you can follow concepts of supporting immune tolerance, like diversifying your gut with lots of plant fibers. Taking short chain fatty acids like butyrate is a good strategy and taking things like vitamin A is also a very good strategy to really improve total SIgA count.

Okay. Next question. Thank you for all the positive feedback. I'm just trying to, I see it and I really appreciative of it. I'm just not I answering those questions or reading them off because I really want to make sure I can get to people's questions that they're having. Okay.

Physio, **what is your advice for 20 years of brain fog? Are you hopeful for treating?** Well, 20 years of brain fog is not uncommon. I mean it, when you're a clinical practitioner, you see that all the time. Practitioners come and patients come in all the time with symptoms of brain fog for over 20 years. The key thing is to figure out why. Sometimes the answer is there was a traumatic brain injury that no one thought was important at the time, but it really caught up with a person. So they could have had a car accident and so like a typical scenario, someone had a car accident, they hit their head against the windshield. At the time they didn't notice anything, but five or six years later they start to have brain fog symptoms and they continued on for the next 20 years. That's something called microglial priming. That's when the brain gets inflamed and there's a domino effect and inflammation takes place later.

Other times people have subtle autoimmunity. When you do the lab work, they have antibodies to their myelin sheath or to proteins in their brain and they have the subtle autoimmunity. They don't have that [?] but they have subtle inflammatory autoimmunity.

So at the end of the day, the key thing with someone having 20 years of brain fog is to try to figure out what that mechanism is.

And, blood brain barrier permeability is another one. People sometimes have a chronic blood brain barrier that's permeable because of ongoing celiac disease that was never managed. So they have celiac disease in their family and they continue to eat gluten that breaks down the gut barrier and the blood brain barrier and they have chronic brain inflammation from that. So there's trial and error and there's testing to figure that out. My suggestion to you is to really work with a practitioner that can dig for those things for you.

Okay. Thank you all again, feedback. That's positive. Next question for Erin. **Low liver function numbers. Iron is okay. Any suggestions?** I don't know. So Erin, I'm going to skip this because low liver function numbers, that doesn't mean much to me. If you can give me more specifics on what you're looking at, that'd be helpful. Okay.

Another question that comes in is, **does low CD4 and bottom line of the CD8 suggest immune dysfunction or the immune system is just not being challenged.** So for those... because I don't know... immunology laboratory testing... CD4 and CD8 are the protective T-cells and in the clinical setting they can be measured to see how a patient's immune function is. So if a person has CD4 cells that are low, those are called T helper cells and CD8 cells are low, those are T-suppressor cells. This looks like whatever that panel is, when these T-cells are both low is immune suppression. Now, immune suppression can be from a chronic infection. It can be from chemical loads, it can be from just general autoimmunity so it doesn't help you a lot of times in a clinical setting when you see helper cells low, suppressor cells low, natural killer cells low, B cells low on immune panels.

That really just becomes your baseline and then you try to find whenever you can in your clinical history to optimize the patient's health and then use those panels as a way to determine if their immune system is getting healthier and healthier over time. So it's hard to necessarily know what the causes when you see low immune cell functions. Many times you have to kind of do your overall general survey and workup to figure out where to go from there. I hope that answered your question, Sean.

Next question from Sharon, **I had a post-menopausal and had high phosphorus on a blood test. What can cause it to rise?** It's not uncommon to see high phosphorous on a blood test. If your phosphorus is high with no other laboratory markers, it's really nothing to typically worry about. If you see high phosphorus with kidney markers or renal markers, that's a whole different story, but the isolated high phosphorus happens here and there on blood work and I've had that same question come up. A lot of times we've dug for different things and we can't find a source working with patients in the past. So I can tell you I've seen it but I don't have a clear answer of what the direct cause of that is. Sometimes there is just lab error where they just don't do the assay properly and you can get spikes in phosphorus.

Okay. Next question from Leland is, **will blood tests from several different labs in different countries be problematic when I'm trying to see what results I'm getting.** Yes, so laboratories for the most part use different technologies and they have different ranges in different countries and even in different regions in the United States. So you really have to, for the best way to monitor yourself, you want to use the same lab which is using the same laboratory methodology with the same ranges to compare a pre and post. When you start doing labs from one region to the next to the next first thing that you're going to look at is you're going to see there's different reference ranges. So the numbers may look better or worse, but you have to look at it in relation to the actual range to determine what's happening. If something is completely out of range, it's not going to matter if you, which lab you use from which country, it should clearly show abnormal. However, if you're looking at subtleties of before and after to change your marker then its always best to use the same lab. If you use different labs in different countries for results, you may have not a clear indication of if you're getting better or not.

Okay. Next question is, **what do you recommend for low platelets?** One of the most common causes for low platelets is a vitamin K deficiency. So you may want to just look at raising your vitamin K levels if your platelets are low. So that's the most common.

Okay. Let's see. Next question here. **Is low blood pressure affected by digestion, causing dizziness?** Yes, so if your blood pressure's really low, one of the things that happens is that you're at risk for getting lightheaded anytime you stand up. So you have to have some degree of perfusion or blood flow getting to your brain. And when you change positions, your ability to compensate for the changes in positions and have what they call orthostatic pressure, and dynamics of changing your blood pressure as you move, is critical. So people that have very low blood pressure, they are prone to having some disorientation and dizziness when they get up.

If your blood pressure is low, you definitely want to figure out how to get that back up. One of the most overlooked health problems out there is low blood pressure, so blood pressure should be at least 120 over 80 if your blood pressure is low, especially if your first number of systolic is below 100 and your diastolic, your second number is let's say in the 60 range.

Let's say you're 90 over 60 or something, you're going to have significant health problems and the literature is showing people that have low blood pressure, the only advantage they have is a decreased risk for strokes. However, they have greater degrees of infections. They have greater chance of getting autoimmunity, they have higher degrees of depression and they have a higher rate of just general chronic disease, so you have to have some degree of blood pressure to be healthy.

So if your blood pressure's really low, you definitely want to use salt. Use a lot of salt to see if you can get your blood pressure up. Ultimately you want to look at optimizing what is called adrenal gland function and really making sure your electrolytes are working well. I don't have a specific protocol for you, but those are some general guidelines you can use to help support your blood pressure.

Another very common useful thing if your blood pressure is really low is to take licorice extract. Licorice has been shown to modulate an enzyme to help you retain more sodium. And sometimes when people have very low blood pressure, we'll use liver, I'm sorry, licorice extract with sea salt throughout the day to try to get their blood pressure up as a way to really compensate for their hypotension. And unless their blood pressure comes up, they just don't feel better and they don't function —it's a common pattern.

So anyways, we're right at 1:30 so I need to stop here. We'll do these on a regular basis. Thank you all for joining. I hope I got to your questions. If I didn't, I apologize. Please check out some of the articles we have at [drknews.com](http://drknews.com). We may have some good questions answered in those articles and check out the courses we have at [Dr.K.news.com](http://Dr.K.news.com). And if you're a health professional, check out the courses we have on the [kharrazianinstitute.com](http://kharrazianinstitute.com). The next one coming up is Hashimoto's. We have the free course on Everyday Immune Resilience at Dr. K. News, and we have courses that we have for sale. One's called 3D Immune Tolerance Program, and one is called the Save Your Brain Program. They're also at Dr. K. News. And thanks again for all your support and for joining me this afternoon, thank you.