Dr. Ritamarie Loscalzo: Good evening, everyone. This is Dr. Ritamarie Loscalzo, and welcome to Balance My Body Blueprint – Self Assessment Tools for Balancing your Body Hormones and Chemistry with Diet, Lifestyle, and Nutritional Supplementation. We are on week eight, and we’re going to be talking about immune system balance and inflammation.

**Supporting the immune system is at the heart of healing just about every other condition going on in your system.** There’s a clear cause and effect relationship. We’ve talked a lot about the immune system with relationship to thyroid, to your blood sugar maintenance, and in terms of your adrenals. Now, we’re going to tie it all together.

We’re going to talk specifically about what the heck this thing called the immune system is, and how you can take charge of it and help it function really well. We’ll talk about how you can look at your tests, what tests you can run, and how you can tell if your immune system is functioning properly.

I’d like to start with the **job description for your immune system**, which is very, very simple: **Your immune system protects you from foreign invaders**. We call these foreign invaders antigens. Basically, your immune system is the police department and the army for your body. It’s very, very plain and simple.

**What is it protecting us from?** Well, it could be protecting us from bacteria, viruses, fungi, yeasts, molds, and food particles. The last one is kind of an odd idea: Why do we have to be protected from food particles? Well, when food particles get in the wrong place, i.e. outside the digestive tract and into the blood stream, your immune system needs to attack them, because they don’t belong there.

Also, the **immune system needs to protect us from dirt**. If you get dirt in your eyes, you have a whole immune system effect. You see watering of the eyes, they get red, and your body flushes the eyes out with this extra secretion. The **immune system also protects us from parasites**. Parasites can come from walking in dirty bodies of water, from your pets, and from your food. There are lots of ways you can get parasites, as gross as that may seem. It’s a very common problem, and the immune system’s job is to protect you from that. Lastly, the **immune system protects us from environmental toxins**: toxins in the air, in the food, in the water, in
your air fresheners, your cosmetics, your rugs, your paints, and all sorts of things. Your immune system’s job is to help protect you from them.

**Your immune system protects you against free radical damage. What the heck, really, is free radical damage?** You hear that term all the time, in the news and on TV. “Free radical damage” is a common term, but a lot of people really don’t know what a free radical is. They think, “Is that somebody who escaped from jail who has some radical political ideas or what?”

Let’s start with your cells. Your cells can become oxidized (they rust, basically) when the get exposed to oxygen. Say you take a potato or an apple and cut it, then you see that brown stuff. That’s oxidation. That happens to your cells when they get exposed to oxygen. It happens all the time, because oxygen is in our system. **When your cells oxidize (or rust), you produce free radicals, which are these little unpaired electrons that go around and look for buddies.**

Free radicals are like crazed teenagers looking for a partner, and they bind to some of your own cells and grab an electron. Then, they leave your cells with an unpaired electron, and then they start looking for a partner. It creates this chain of events that leads to more and more of these unpaired electrons.

**When your cells get oxidized and damaged, it causes damage to your DNA.** Your DNA is your genetics, right? We haven’t talked about genetics in detail yet, but we have talked about it throughout the program in general. Your DNA is this blueprint for your body. It tells you what color eyes you have, what color hair you have, and what color skin you have, but it also does much more than that. It determines how well you make specific enzymes, how well you detoxify, and how much fat your liver makes. DNA determines so many things.

When the DNA gets damaged and there’s damage to the cell membrane, that creates all kinds of problems throughout your system. The **problems damaged DNA can create include oxidized cholesterol, stiff arteries, wrinkles, brain damage, dementia, depression, and brain fog.** These things can all be caused as a result of free radical damage. So, part of working with the immune system involves talking about how to increase your antioxidant status so that you can avoid some of this damage.

I put the quiz here in for you to use, and we’ll also load a copy up to the website. These are questions that help you get your own oxidative stress score. It asks you to agree or disagree with statements like “I often feel fatigued,” and “I get less than 7 or 8 hours of sleep on a regular basis,” and others, so that you can get an idea of how much oxidative stress you have on your system. This helps you assess how much immune system stress is being placed on your body.

**What components make up your immune system?** Well, your immune system is not like your digestive system, where you can look and say, “Oh, it’s kind of contained in this part.” It’s not like the respiratory system, the urinary system, or the reproductive system, which have specific places where their organs are located. Your immune system, thankfully, is all over your body.
So, let’s explore the components of the immune system, starting with the **immune barriers**. They are designed to keep stuff from going in. **Your skin** is a good barrier, right? If you get dirt on your skin, it’s no big deal, right? You don’t worry about getting an infection from just getting dirt on your skin because your skin is an intact barrier. However, if you cut or burn your skin and there’s an open wound, you are really careful to protect it from getting dirt in there, because the dirt could get right into your system without the immune barrier of the skin.

Another immune barrier is **your intestinal lining**. We’ve talked about this before. There’s a mucous lining coating your whole intestine, and there are only very small openings from the intestine that lead into the blood stream to allow digested food and water to go through. Your intestinal lining is a barrier. It doesn’t allow the larger molecules like bacteria, viruses, and environmental toxins to go directly through the lining. That’s one of your protections. **Your lungs**, where you breathe, are another barrier. You’re breathing all kinds of garbage in the air, and your membranes in your lungs filter that.

Now, these barriers are not completely impermeable. Don’t get me wrong. The intestines let things through and the lungs can let things through, and when the skin is broken it lets things through. The idea is that the barriers reduce the amount of foreign invaders that can get into your blood stream. They provide a level of protection. You not only have this physical protection, but also antibodies and immune components that live in those barriers that kill things off and don’t allow them to grow.

There’s also something called the **blood/brain barrier**. This is kind of a unique barrier. You don’t want everything in your blood to get into your brain. Maybe your digestive tract can handle it, and maybe your liver can handle it, but when certain toxins get into your brain, it can really damage you and cause a lot of problems. So, there’s a very specific blood/brain barrier, and it’s very, very tight.

There are very few substances that can go past the blood/brain barrier, but not everything can pass through. Alcohol is something that can go right in through the blood/brain barrier. Anybody who has ever had a drink of wine or beer (or a few too many) knows exactly what we mean by that. It enters the brain and - whee! - you feel a little bit different.

We could literally spend three or four days talking about the immune system and still not cover it all. It’s a very complex system, and I do not want to bog you down in the biochemistry to the point where you’re seeing stars. I just want you to get a general overview of the parts of your body involved with the immune system and how they function.

Another important part of the immune system is the **thymus, a gland that lives in your breastbone**. One really cool way to stimulate your immune system is to go ahead and take all four fingers and tap right over your breastbone. You’ll feel kind of a hollow feeling. That stimulates your thymus, and it’s really good to wake up and stimulate your thymus to
produce one of the hormones it makes to stimulate your immune system to do its thing. That’s just one little trick.

There’s also the spleen, which lives over close to the stomach. There’s the lymphatic system, which is throughout your body. If you’ve ever been sick or had an infection somewhere, you know you can get swollen lymph glands. If you get a tooth infection, you can get a swollen gland right below your jaw bone. If you get a respiratory infection, sometimes there’s a lymph in your neck that swells. If you have a breast infection, like mastitis, you can get swollen lymph nodes in your armpits.

The lymphatic system is located throughout your body, and its job is to circulate the toxins to get them out of the area where there’s an infection or invasion and into the bloodstream. It protects by dumping things out. When you have a cold or a flu, it’s a great idea to do some lymphatic massage in your neck. You can make small circles coming down from your chin to your collar bone.

Your bone marrow is part of your immune system. We’ll talk a little bit more about that soon. We’ll also talk about white blood cells, antibodies, and how that all fits together. We’ll talk about complement hormones and hormone-like chemicals. That’s all part of the cascade that happens as a result of orchestration from your white blood cells.

I don’t expect you to memorize this. I’m not going to give you a test. I don’t think it’s important that you memorize it all. I just want you to have the big picture so that you can say to yourself, “Oh, look what’s happening in my system now. I recognize this.”

Let’s go through the progression of an immune system attack. Then we’ll talk about some of the different parts in detail. I have a really cool excerpt from one of my favorite books on thyroid, “Why Do I Still Have Thyroid Symptoms When My Lab Tests are Normal?” The author wrote a beautiful presentation related to Hashimoto’s, but it’s also a great general immune system story, so it might help you to really put this into perspective. He calls it the autoimmune crime scene. I’ll talk through the progression of an immune system response, and then read you his description.

First, an invader (called an antigen) makes its way in. It can be any one of the invaders we talked about earlier. Let’s just say it’s a virus. Next, macrophages, which are types of white blood cells, and engulf the invader. See how the macrophage looks like a Pac-Man? It’s got a little mouth? The Pac-Man guy is the macrophage coming at it. Macrophage = Pac Man; Antigen=Bad Guy.

The macrophage engulfs the antigen, but there’s nothing specific about the response yet. When any old antigen comes in, these macrophages say, “Ooh. Bad guy. I’m going to eat you.” The thing about the macrophages, as Dr. Kharrazian puts it, is that they are kind of like an overweight security guard with a club but no gun. He can’t move that quickly, he just has a club, he can stun the invader but isn’t going to kill him. He needs help, right?
So, next, the engulfing of the antigen by the macrophage creates something called an antigen presenting cell. You don’t need to remember what that is. It’s just a macrophage engulfing the invader. That’s how it’s referred to in immunology terms.

**The antigen-presenting cell the macrophage creates is like a burglar alarm to summon the rest of the immune system to help out.** You get this big police guy who thinks, “Oh my God. I’ve got to get rid of this guy. Help!” He puts this cell together to call for help. **The player who responds next is what’s called a T helper cell.**

The T helper cells come right away, and they bring some really cool guys and gals along: The natural killer cells and the cytotoxic T cells. **The natural killer cells and the cytotoxic T cells have poisons in them.** They are basically the stun guns. They can also be called the guns. They may stun, or they may kill, and they do everything they can to get rid of this antigen - boom, boom, boom.

**The down side of it is that these natural killer cells and cytotoxic T cells cause inflammation to happen in that area.** They release mast cells and chemicals called histamines, which cause a lot of inflammation and a lot of really toxic stuff to be released. So, a problem can occur if there are other cells that are good cells around.

Say there’s an infection somewhere near your thyroid gland, for example (and it’s very common to have thyroiditis as a result of a viral infection). You’ve got this virus and the immune system attack just happens to be in the vicinity of the thyroid. The thyroid, the innocent bystander, gets whacked with some of these guns and chemicals that are being shot out, and it can get damaged.

That’s all the first big part of the immune system response. The T helper cells try to go in there and kill the invaders off. Sometimes that’s enough, but not always. Maybe there are a lot of invaders, or the invaders are really strong.

There are also the **T regulatory cells, which are kind of like the dispatcher** monitoring the situation. He may say, “OK. Let me see. T cells over there…do we need more, or are we done? Do we need to send in water to make sure we knock the fire out?” The T regulatory cells ask whether there’s enough protection. If not, they will dispatch more T helper cells. The T helper cells can also alert **B cells, which are a kind of white blood cells that make antibodies.**

There are a couple of reasons for making antibodies. **If the invader is really difficult or there are a lot of invaders, making antibodies will help.** The antibodies have their own chemical artillery they can secrete. The thing is, if it’s the first time the body has ever seen this particular invader, it takes a couple of days to formulate this perfectly formed antibody that matches the invader.

If it’s an invader you’ve seen before, then - boom - you’ve got a memory of it and the T helper cells can mobilize those antibodies really quickly and help. If not, if it’s the first time, the T cells work on creating a mast cell, which works like a lock and key. It’s this very specific antibody
that matches the shape of that antigen. That way, when the invader is recognized by the body, it will say, “Oh, we’ve seen that one before. Send out the guy who can get him specifically and knows exactly where his weak points are and knocks him out.” Then, it memorizes it for next time, so the next time it mobilizes it pretty darn quickly.

Let’s take a look at this next picture. If it’s too overwhelming for you, no big deal, but I want to show you a little bit more. This is copied from “Why Do I Still Have Thyroid Symptoms When My Lab Tests Are Normal?” by Dr. Datis Kharrazian. I highly recommend you get the book. It’s really good.

Look back at the macrophage and the antigen - boom - they make this connection. They cause an antigen-presenting cell, which stimulates T helper cells to destroy the antigen. They will dispatch the T helper 1 cells, which go right out. They say, “OK. We’re ready. Let’s get the cytotoxic T cells, let’s kill off this whole thing.” Then, the T helper 2 cells, several days later, will mobilize these other kinds of chemicals (which we’re not going to go into a lot of detail on right now because we’ll mention them later when we talk about testing) called interleukins and cytokines. Those are inflammatory cells. They are meant to create inflammation and knock this antigen out. It creates B cells and all the rest follows.

**Once the fight is won, the T regulatory cell**, who is watching, says, “OK, guys. Enough fighting over here. We’ve gotten rid of the bad guy. Now you’re just fighting each other and getting the innocent bystanders. Enough is enough.” Then, it **sends out the T suppressor cells to turn the immune response off**. That’s what these guys on the left hand side are. If and there’s still some danger, the T regulatory cell says, “OK. We need more T helper cells. Let’s send them out.”

You can see it’s a pretty well orchestrated setup. Let’s go back to the picture. I really like the way Dr. Kharrazian wrote the description. He says, basically, to think about the cell membranes as the windows of your house that protect you from burglars getting in. If that’s intact, you don’t have to worry about burglars. They’re not going to get in if you have unbreakable, bulletproof glass; everything’s fine. That’s the intact immune barriers we talked about. However, say the burglar breaks in and has some fancy little tool to do it or breaks the window and gets in. Then, you’ve got to do this other thing to protect yourself.

I’ll read his description: **“Like a movie that involves the mafia, bad cops, and double crossers, a typical crime scene can go awry when any of the players deviates from his job. That’s what happens in the case of autoimmune disease, when some cells of the immune system start destroying the body they were designed to protect.”**

I love that description of the crime scene. Here’s another part I like: “The macrophage envelops the intruder, creating an antigen-presenting cell that acts like a burglar alarm summoning the rest of the immune system to come help. The first response to the alarm is the T helper cells; the dispatchers who organize the attack. They send messengers to bring the elite police force - the natural killer cells and cytotoxic T cells - to swarm the intruder and destroy it. Back at Central
Headquarters, police sergeants - the T regulatory cells - monitor the scene to ensure there are enough T helper cells and T suppressor cells to stop the immune reaction once the intruder is disarmed. They also make sure they’re doing their jobs.

The immune system takes no chance at another attack, and assumes the intruder is a member of organized crime. The T helper cells fetch the detectives - the B cell antibodies - which attach to the intruder and put all his information into a memory bank. This identification process makes the natural killer and the cytotoxic T cells more efficient at recognizing and destroying the intruder if he comes back again. Although the natural killer and cytotoxic T cells are like an elite SWAT team, they nevertheless have poor vision, and they rely on the B cells to spot the intruders."

Putting it into story form may just make it a little bit easier for you to get. You don’t have to remember the names of all those things, but just understand that it’s a very orchestrated process and there are a lot of places for things to go wrong, and they do.

**What happens when your immune system goes out of balance?** There are three main types of conditions that occur. One is frequent infections or chronic infections. So, either you just keep getting sick a lot and you get acute stuff very frequently, or you have this chronic sinus infection or chronic bronchitis that just won’t go away. That’s a sign that your immune system is out of balance.

You also may have allergies. A lot of people have allergies to cedar, pollen, grass, and different kinds of foods. An allergy is your immune system responding to an attack from something that really isn’t dangerous. I don’t know about you, but I don’t think broccoli protein is very dangerous. The issue happens if these proteins get into the immune system in a larger form than they should. Then, anytime you eat it, you’ve got this memory (we just talked about how the B cells create a memory bank for each invader), and you get an immune response even though the broccoli is not damaging to you.

The final type of immune system problem is autoimmune diseases. Autoimmune disease involve a hyperactive immune system, just like allergies. The immune system is on overdrive. **It’s reacting when it doesn’t need to.** Autoimmune diseases happen when your body has actually created antibodies to your body tissue. A lot of times that happens because there’s a similarity between the antigen and the body tissue. It could be that the body tissue got in the way and the immune system got confused as to which was the invader and which was the real thing.

**Some of the autoimmune diseases we know about include** Hashimoto’s (that’s an autoimmune thyroid problem), and diabetes (we talked about that last week). **Diabetes type 1** is an autoimmune disease where the cells in the pancreas that make the insulin are being attacked. **Lupus** is a very common one, in which there are widespread antibodies in lots of different parts of your body. **Scleroderma** is another one, usually in the connective tissue and the skin. **Crohn’s and ulcerative colitis** are autoimmune diseases of your gut and your intestines.
Rheumatoid arthritis, in your joints, is another one. There are a lot more. These are the most popular, if you want to use that word. They are the most common ones.

Antibodies can be created that negatively impact any part of your system. We have tests to measure thyroid antibodies, the intrinsic factor for creating cells in your stomach that help to absorb B12, and antibodies in your pancreas that affect diabetes. In your brain, there have been antibodies measured that cause people to have balance problems, focus problems, and memory problems.

We can measure antibodies in connective tissue, in the kidney, in the skin, in the mucous membranes, and in the myelin (which is a sheath that surrounds your nerve cells and helps the transmission from the brain to a body part). When your body parts don’t respond quickly, it could be a disease called multiple sclerosis, which is the result of an autoimmune attack against your body’s myelin.

So, this is not just a matter of, “Oh, I’ve got a little sniffle.” This is not just a cold or a flu or a sinus infection. This is serious stuff that can dramatically impact your life if you don’t take control of it and get it under control. The standard Western medical thinking on this is that there is no cure for autoimmune problems, so you just have to suppress the immune system by giving steroid medications to shut down the immune response.

Yes, there is inflammation going on, so in theory that approach could be good. However, if you don’t stop the fire, it just keeps going on, and there are lots of side effects to the steroids. So, it’s not a good solution at all. We’re going to talk about some ways you can balance your immune system using some natural anti-inflammatories which work a lot differently than the steroids. We’re also going to talk about understanding the underlying causes and rebuilding the tissues that are having problems.

First, let’s talk about what can go wrong. Well, first of all, the immune barriers can be weakened. Remember we talked about that? Those include the gut, the brain, the skin, and the lungs. If you’re letting stuff in because of a breakdown somewhere, that’s a place to fix. Things that can cause weakening of the immune barriers include vitamin D deficiency, blood sugar imbalances, overactive adrenal glands, poor diet (heated and hydrogenated fats, sugar, gluten, pesticides, dairy products; foods that create a lot of oxidation in your body and a lot of free radicals), gut infections (Candida, molds, yeasts, overgrown bacteria in your gut, and parasites), emotional or physical stress, and prenatal environment.

That last one means that if your mom had some immune issues while she was pregnant with you and you developed some of these overactive immune responses like allergies or intolerances, you can have still problems as a result. Autism, asthma, and eczema, in the literature, are linked to maternal allergies and intolerances. Food allergens are another one. We’ve talked about that until we’re blue in the face.
Who are the players in the immune defense game? We gave you a list of these before, but now I’m going to go through a little bit of detail. We talked about the T regulatory cells, the T suppressor cells, the killer T cells, and the T helper cells. The thymus produces all of those. Your spleen filters your blood clear of foreign cells, and it pulls out old red blood cells so your body doesn’t start to mount an immune attack against them. That’s an important part of your system.

Both the thymus and the spleen are considered to be dispensable organs, in that people can live without them. However, people won’t have good, strong, healthy immune systems if they’ve had those organs removed. Some people have accidents where their spleen bursts, so they have to have it removed. The same thing can happen with the thymus, but it’s not the ideal situation.

We talked about your lymph system, which is a channel throughout your body that carries and gets rid of the inflammation generated from some of the immune activity. Your bone marrow produces new blood cells from something called stem cells. You may have heard about stem cell research and stem cell therapy. Stem cells are just very generic cells that can be converted into whatever the body needs. So, a stem cell can be converted into a white blood cell or a red blood cell. It’s really flexible at that point, and it matures in the bone marrow.

Then we have our white blood cells. We’ve looked at those on the CBC analysis. We’ve also got antibodies produced by your white blood cells. We’ve got things called the complement, which is a series of proteins that destroy antigens. You have hormones and hormone-like chemicals that are part of this cytotoxic killer reaction, and they are called lymphokines, thymosin, and interleukin. That’s not important, but I just put it there for those of you who really like the science.

Again, we’re not going to go into all the details, but I want you to be familiar with these terms, because when I talk about some of the labs, or if ever you have to order these labs, you’ll know what these things are for in general.

What are leukocytes? Leukocytes are white blood cells. If you ever hear the term, “leukocytosis,” that means you’ve got an increase in your numbers of white blood cells. If you ever hear the term “leukopenia,” it means you’ve got lowered levels of white blood cells. You’ll hear these if you ever watch any movies or TV shows that are hospital related. They may throw those kinds of terms out, and now you know what they are.

Now, let’s talk about the different types of white blood cells, and what they mean on your lab tests. Lymphocytes are often elevated in viral infections, because they take a little longer to come on. Neutrophils are the first line of defense, and they have a really short half life of two to three days. If you see neutrophils elevated, it’s usually a bacterial infection.

Now, it’s a misconception, however, to think one is absolutely associated with viral infections and the other with bacterial infections. They are both associated with both. However, when you have elevated neutrophils in relation to the lymphocytes, it usually means there’s an acute or
bacterial infection going on. Elevated lymphocytes usually means there’s more of a chronic situation and viral infection going on.

**Monocytes are part of your second line of defense.** So, when you’ve got an invader, like Strep, that has entered your body, your body mounts an immune response. If you took your blood during the response, you would probably see an elevation in your neutrophils and a decrease in your lymphocytes. When your body has the infection under control a few days or a week later, if you took your blood again, you would see those levels normal, but you might see elevations in the monocytes because you’re still in that recovery stage.

These are all just different types of blood cells that have different jobs. **The eosinophils’ job is mainly to deal with parasites and allergens.** They have a very specific set of chemicals that they engage, and usually you don’t see these levels elevated unless they are related to parasites or allergies.

These levels are all measured in percentages. That means you take all your white blood cells and call that 100%, then divide the amounts of each kind of cell present to get the lab results. Say, you have 40% lymphocytes and 60% neutrophils and that’s it. That would actually be ideal, because the rest of the types of white blood cells come into play when there’s some immune system stuff going on.

If you’re in the second line of defense and have just fought something off, you may see a little bit lower percent of the lymphocytes and neutrophils and a little bit higher percent of monocytes. I’ve seen people with allergies and parasites with eosinophils up to 18%. That’s way out of whack. You need to be able to get that under control if you have a number like that.

Some people don’t understand why, if they have allergies, that means they have a hyperactive immune system. They probably don’t get colds at the same time. Actually, because a lot of the immune system is diverted towards killing off the parasites and allergies, you have more of a chance of getting some of those other invaders slipping by the defenses because you don’t have quite as many lymphocytes and neutrophils by proportion.

**Basophils are usually related, again, to histamines and allergies.** They are usually very small, because they are very short-lived. It’s even rare to see these elevated at all unless you’re in the midst of an acute attack when you get the blood taken.

Let’s go on. I don’t want to take a lot of time with this. Read through it if you’re interested. I just want you to know **there are two different kinds of lymphocytes; the B cells and the T cells.** We talked before about T cells. Those are a kind of lymphocytes. The B cells are basically the plasma cells. Those are mature B cells that produce antibodies. There are all these different kinds of T cells: Helper TH1, TH2, killer Ts, and suppressor Ts. The balance between those is what creates a healthy immune system.
Again, I’m just going to throw this next part out there for you guys to understand, because you may see these terms on a lab test. If you’ve ever had an allergy test, you know they test these things called IgG, IgE, and IgM. I want you to get what the difference is, because some allergy tests are not as accurate as others, and because you may have a different ratio of these particular types of immunoglobulins than the ideal range.

The IgM is formed after you are exposed to something new. So, if you were to take your blood during the very first time you were exposed to some type of streptococcus, you would see elevations of IgM. However, once you have formed those antibodies and they are sitting there waiting, the IgM won’t be elevated.

IgG is the most prevalent type of antibody in your blood, and that is the only type that can cross the placenta. When you have a baby and you nurse the baby, there’s something called colostrum that’s the first milk. It’s really important to nurse the baby and give the baby that because it gives them the antibodies. That’s actually the breast milk and not the placenta, but it’s the same idea. The IgG antibodies are the only ones that you can pass on to the baby in utero. Actually, with breastfeeding, the IgA antibodies can also go through the milk.

The IgA is the antibody on the mucous membranes. We talked a lot about that when we talked about gluten intolerance. Lining your digestive tract, there are all these IgA antibodies just waiting. If you get exposed to antigens, they immediately create attacks. You may have experienced waking up with your tummy not bloated, and then as soon as you eat, your tummy bloats up within a very short period of time and you look like you’re several months pregnant. Usually, that’s the secretory IgA that lives in your GI tract being activated. The IgA is all along your whole intestine. So, if you think about 22 feet of wound up intestine and 8 or 10 feet of large intestine, a little bit of swelling along that whole tract suddenly turns into a huge amount of swelling overall.

Scientists are not exactly sure what the IgG antibodies are, but they’re usually seen with IgM, so it has something to do with early exposure. IgE antibodies are important for allergies. If you have inhalant type allergies, if you get hives from certain foods or exposures, or you get respiratory symptoms like dripping eyes and nose, that’s caused by the IgE antibodies.

A lot of people talk about skin prick tests for allergies. They say, “Oh, I have allergies. My doctor did the skin prick tests and said I’m fine. Whatever’s happening, it’s not related to allergies.” Well, the skin allergy tests just measure IgE antibodies, and usually you don’t get those with food allergies that are more of a delayed sensitivity response.

So, the skin test is not a completely accurate way to measure. It’s a great way to measure for grass, pollen, and all those allergies that cause immediate sensitivity. If you eat strawberries and you get hives, or your throat closes up after you eat a particular food, those skin tests will identify that kind of allergy. Basically, they prick you on your skin, break the immune barrier, and expose you to one of these antigens to see how you respond.
That’s just an overview. It’s “immunology 101.” The reason I’m putting this up is to show general trends. It’s not an absolute. Sometimes, if you don’t have the funds or your doctor won’t order you the more sophisticated tests but you’re trying to get one of these diseases under control with diet and supplementation, it’s nice to be able to guess.

The good news is, if you figure out which one of these cell types is out of balance, and then you support the other one, it brings your autoimmune condition into balance. It takes some time, because you also have to improve the immune barriers and the other nutritional statuses, but this is an important piece of the action.

Most of the time, Hashimoto’s, diabetes, multiple sclerosis, and chronic viral infections are problems where your T helper cell 1 levels are out of balance and you are producing too many of the cytotoxic T cells. If you’ve got lupus, dermatitis, asthma, multiple chemical sensitivity, studies have found that’s more related to a T helper 2 antibody overreaction. If you’ve got another kind of immune sensitivity, it can go either way. There hasn’t been enough study to determine if it goes one way or the other.

Just briefly, if you ever see these next set of terms, you know they are associated with the immune system. Cytokines are really important. They are inflammatory hormone-like chemicals that are produced by the immune system to fight off invaders. Also, high levels of these get secreted when your immune system is out of balance, and that can cause inflammation, pain, autoimmune disease, and chronic conditions.

Thymosin is a hormone produced by the thymus to encourage lymphocytes to be produced. “Interleukin” is a term you’re going to see a lot. Interleukins are part of the complement system. There are about 30 different types, and they produce the protective effects of the immune system. Interleukins stimulate fever, B cells (remember those are the ones that make the antibodies), and antibodies. The interleukins are really important.

There’s a whole cascade of events that I’ve just ceased to try to memorize. If I need to analyze somebody, I’m going to look it up. I’m going to look at a chart, because I’m not flooding my brain with this big flow chart of 30 different things. I have a few in my mind that are common, but it’s enough just to recognize that interleukins are part of your immune system, and to know that imbalances in interleukins can create autoimmune problems.

Steroids and corticosteroids can be produced by the adrenals or by taking corticosteroid drugs. Your body produces both of these chemicals when you’re under stress, and that suppresses your immune system. So, keep in mind that when you get stressed out, that’s the immune connection.

I’ll give you a little example: Right before the call, I got all my stuff together, loaded it up, and I was going to send you another reminder to just say this call is happening. I discovered that none of the reminders had been sent over the last three days, or at least I couldn’t find any indication of it. I started to get a little pink in the face and hot under the collar, wondering who was at fault.
here, and thinking, “Oh my God. People haven’t heard. They are going to forget about the call. Nobody is going to be on the call. Oh my God.”

So, the first thing I did was touch my chest and start to breathe. I got myself under control. Because I did that, I was able to think through the steps of what I needed to do clearly. I went through all the steps, and I actually finished five minutes early, so I went outside and walked up and down the street a few times, just to release some of that stress and tension. I got some fresh air and sunshine and got myself into a mode where I can think clearly for you. You’re not going to learn a lot from me if I’m just a stress bundle and I can’t access the high level thinking functions I need to present this stuff to you. That’s just an example of how stress affects your system.

What can go wrong at the cellular level? Well, if you don’t get enough T suppressor cells, you can have damage to innocent bystanders, and we don’t want that. That’s kind of like a drive by shooting where people just get hurt. They may get the person they were after, but they get a lot of innocent people, and it’s not good. You can also get too many B cells made, which are those antibodies, so that too many of the natural killer and the cytotoxic T cells happen and they damage healthy tissues. This happens a lot with chronic viruses, which cause an increase of this interleukin 2.

When interleukin 2 gets elevated as a result of a chronic viral infection, this can cause too many B cells to be made, too many antibodies, and too much cytotoxic activity. That’s one of the causes of autoimmune thyroid. It actually can cause hyperthyroid. That’s not usually one of the causes of hypothyroid. Usually, a chronic viral infection creating antibodies against your thyroid causes hyperthyroidism. If you make too many antibodies, they attack innocent bystanders like the thyroid.

If you have parasites and food allergies, it causes an increase of interleukin 4, and that causes you to produce more antibodies. You can see these issues are all about too many antibodies; too many cytotoxic T cells. However, you need enough to be able to fight stuff off. If you don’t have enough antibodies, you can have chronic infection. If you have too many, you end up with these autoimmune problems and damage to innocent bystanders tissue in your system.

You can also have cross reactivity between an antigen and body tissue. So, say you eat gluten. The gluten molecule has three specific amino acids at the end, and that’s what the antibody looks at. It says, “Oh, there are those three specific amino acids. That’s gluten. I’m going to attack it.” Well, what if one of your body tissues has three specific amino acids that look very similar? It says, “Oh. There’s more gluten,” and - boom - it attacks it. Well, that wasn’t gluten. That was your poor thyroid. That’s how some of these food allergies can cause autoimmune problems.

There can also be attack on a non-harmful protein. Say you get a little bit of broccoli protein into your bloodstream. That’s really not going to cause that much damage to you unless it’s a whole big chunk of broccoli (which means you’ve got a really raging leaky gut). It’s generally
not that harmful to you, but that can create an allergy. Maybe the big piece of protein got into your bloodstream once because of a leaky gut, and you have healed the leaky gut, but your body is still responding to the memory of this. It sometimes takes a while for the memory of it to go down, and you need to be away from the food for a while.

Take a deep breath. We’ve had a lot of information. I want to talk to you about how to test your immune system and find out if it’s functioning properly or not. Well, you’ve got the oxidative stress test that you can take to see how much risk you have in that department. You’ve got all the things we talked about with your thyroid and your blood sugars that involve evaluating the symptomatology; what manifests when your immune system is out of balance.

You know if you have allergies. You know if you get sick often, if you’ve got chronic sinus infections or autoimmune disease. In addition to that, if you don’t have overt symptoms, you may have some subtle signs. Wouldn’t it be great to find out and make some changes before it gets bad?

There are immune markers you can test to see if your immune system is out of whack or if you’ve got some chronic inflammation. On the CBC, you can look at the white blood cells and the differential (which basically means the percentages of all the different white blood cell counts). CBC, again, stands for complete blood count. It measures the white blood cells and the red blood cells. We talked earlier about how we use the red blood cells to diagnose anemia and decide which kinds of anemia you have. The white blood cell is an immune marker, and that’s what we’re going to use to see how well your immune system is functioning.

C-reactive protein is an inflammatory marker. If often gets elevated when there are chronic conditions, often with autoimmune disease or inflammatory responses happening in your blood cells. It can also be a marker for heart disease, and we’ll talk more about the cardio-specific type of C-reactive protein when we discuss the cardiac system. C-reactive protein levels are really easy to read; it’s either up or down. If it’s up, it means you’ve got inflammation and your immune system is under attack. If it’s down, you don’t have that particular marker.

I like the Blood Spot Fatty Acid test. I know several of you have gotten it, and several of you have gone over it with me. It gives us so much information. One thing in particular we look at as an immune system and inflammation marker is something called the AA:EPA ratio. AA is not Alcoholics Anonymous. It is arachidonic acid, which is a type of fatty acid. Fat gets converted down to fatty acids. Arachidonic acid is very inflammatory. EPA is anti-inflammatory. So, when we look at the ratio between AA and EPA, we can tell how prone you are to inflammation.

Guys, inflammation is at the heart of all disease. The suffix “-itis” means “inflammation.” Any disease that ends in “-itis” involves inflammation. You can probably sit there and name off 10 or 12 of them: Arthritis, conjunctivitis, gastritis, colitis, etc. The fatty acid test will give us some information on inflammation. In addition to the AA/EPA ratio, it gives some information
about how our minerals and vitamins are doing because it shows how well we are converting one fatty acid to another.

Just as an aside, **arachidonic acid is found in meats, poultry, milk, eggs, and peanuts.** Very few plant-based foods have arachidonic acid, but peanuts are one of the only ones. So, if you’ve ever heard me say not to eat peanuts (eat almonds instead), that’s why. Peanuts are inflammatory. **EPA is found in fish and in some of your marine algae like blue-green algae** (because that’s where the fish get it). It’s found very little in land plants. You’ll see traces of it in some of your greens, but one of the ones that has a fair amount of it is **purslane**, which is a wild edible.

If you go onto [http://www.seedsofchange.org](http://www.seedsofchange.org), they have all kinds of heirloom seeds, and you can actually buy purslane seeds. Purslane is a wild plant that grows in some areas and not others, but you can cultivate it in little pots in your house or your garden. It’s a great source of EPA. It’s not huge, so you have to eat a fair amount of it, but it’s a great thing to put in green smoothies.

Then, **we can also test the cytokines and interleukins.** I’ll show you a few of the tests for that. The **sedimentation rate is a measure of how much sediment comes out of your blood when you spin it.** That has to do with how much inflammation you have. Another test we talked about before is the Oxidata test. That’s really more of an antioxidant test, but I thought I’d include it because oxidation is such a big part of the immune system.

We went over the Oxidata test in week three where we talked about home testing kits. It’s basically a urine test for the presence of oxidized fats; rancid fats in your body. It measures how well your body is producing antioxidants to protect you from free radicals. People have asked, “Well, what do I do if some of those tests are positive?” **If the Oxidata test is positive, you have to really work at reducing the oxidative stress on your body, which means balancing your fats and supplying the body with the right antioxidant nutrition.**

Then, the last thing is **allergy testing.** You can test blood, saliva, and stool for allergies. Of course there’s the skin test as well, which only identifies those IgE hypersensitivity environmental allergies. **For food allergies, blood, saliva and stool tests are the ways to go.** I’m not a huge fan of food allergy testing, just because I haven’t really found a very accurate test. They’re good as markers, and they are good guidelines, but they are not the be all and end all of testing.

When you test your immune system, you can find antibodies to many different things. We’ve already talked about thyroid peroxidase and anti-thyroglobulin. There’s another thyroid antibody called the **thyroid stimulating immunoglobulin; TSI.** That’s basically an antibody **that attacks your TSH.** So, you don’t get the feedback loop from the pituitary, and your thyroid just produces out of control. That’s usually related to hyperthyroidism.

**ANA stands for anti-nuclear antibody.** It’s usually seen when people have lupus, but also sometimes in rheumatoid arthritis. There are a lot of different autoimmune diseases that have
ANA. Anytime somebody has chronic inflammatory or immune system problems, that’s good to measure. If you’re doing a protocol and it’s not working, you want to see what your ANA is.

In my opinion, a lot of these tests are things you do after you’ve applied some of the nutritional analysis, unless it’s really important to know. These are expensive tests, but if you know what’s going on, you can apply specific therapeutics. The medical community basically will test them just to say, “Hey, you have this autoimmune disease. It goes in your chart.” Then, the process is the same: Corticosteroids, corticosteroids, corticosteroids. These are just tests you can do to help isolate where the problem is, and confirm whether there is a problem.

If you have thyroid peroxidase or anti-thyroglobulin, you know you have an immune problem. If you address it as an immune problem, chances are a lot of the other problems are going to go away. I’m not saying not to get these tests; don’t get me wrong. ANA is a good test to do. Rheumatoid factor and intrinsic factor antibodies are also good to test. That helps you to know if you’ve got an autoimmune process, which enables you to treat it better.

Next, we have immune tests you would do to assess for helper T cell imbalances, and Direct Labs has them available. Usually, I like to assess the situation based on symptomatology. Then, if we can’t figure it out, we’ll run the T helper cell 1 and T helper cell 2 test to find out more. A lot of times, you can look at your physical response to certain foods and herbs that affect the T helper cells and know how to treat a helper cell imbalance. If you can’t figure it out, it is a good idea to get this test run. It’s expensive, but it definitely can be worthwhile.

Just as a note, 90% of Hashimoto’s people are TH1 dominant. So, if you have Hashimoto’s, look at the protocol for TH1. If you’re TH1 dominant, it means you want to support the TH2. Don’t get this confused. 90% of Hashimoto’s people are TH1 dominant, and that means you want to support your TH2 so your TH1 dominance settles down and you have less fire going on in your immune system. I’ll reiterate that when I show you the slide with the protocol.

In the meantime, let’s look at your CBC and explore how to look at your white blood cells. The ideal white blood cell range is between five and eight. If your white blood cell counts are below that, it often indicates a hypoactive immune system, i.e. your immune system is kind of suppressed. Now, severely low numbers, like below the lab ranges, need to be investigated because they can be a sign of severe conditions like lymphoma, leukemia, or a blood disorder, which you want to make sure you rule out. If it’s in the low range just below the functional range, it can mean your body has been fighting a chronic condition. Maybe you have a chronic viral or Candida problem, or chronic allergies, and you’ve been fighting them for so long that the immune system is tired and suppressed a little bit.

If you have high levels there, it means you have an acute problem. Some severe bacteria or virus has gotten into your system, and your body has to mount an immediate attack, so it raises the numbers of white blood cells in order to facilitate that. In this particular case, we have low white blood cell count, so we’d want to look to see why.
Let’s look at the neutrophil and lymphocyte levels on this case study. The neutrophil level should be between 40% and 60%, and it’s only 32%. The lymphocytes should be between 25% and 40%, and they are up to 43%. That’s not a huge variation, but it’s slight. This suggests there’s a chronic (because the CBC is low) viral infection, because the lymphocytes are high. Now, if we had a bacterial infection, we’d most likely see the neutrophils high.

If we look at the monocytes, we see they are on the higher end of normal, so it’s fine. The eosinophils are what I really want to point out. They are 18. What do you think is going on? Maybe it’s not a viral infection. Maybe those ratios are just off because so many of those white blood cells are being diverted to eosinophils. The culprit here is either a parasite or an allergy; most likely it’s both. What that high a level, it’s most likely a parasite.

So, what we’d want to do with this person is either get her to do a parasite cleanse and see how that goes, or get tested, or both. Do the parasite cleanse, and if it doesn’t clear this up, then you find out what the parasite is and maybe do some stronger or very specific measures to wipe it out. The parasite cleanses are not guaranteed to get rid of all parasites, because some of them are persistent, but they are a really a good place to start.

One of the parasite cleanses I’ve used is from Health Force Nutritionals, and it’s called something like “Candida Parasite Internal Cleanse.” Premier Research Labs has something called ParaStat and Paracleanse that can be used for a parasite cleanse. There are other brands, but those are the two I’ve used most often.

Back to the case study, it could be a chronic viral infection, because this person has EBV (or mono) in her history. The actions are to take the anti-parasitic herbs, and support the immune system with herbs and foods that decrease the antigenic load. We’ll go through a list of those herbs later, but I’ll mention them here as well: Oregano, thyme, garlic, olive leaf extract, reishi mushroom, astragalus, echinacea, and berberine. Those are things that can help the immune system. The followup would be to do a stool test for parasites if this doesn’t clear up.

Here’s another example; CBC case two. I don’t see what the white blood cells are, but we’ve got neutrophils that are normal. The lymphocytes are a little bit low, but the monocytes are high. This tells me there is some recent infection. The eosinophils are also high, so again, like before, it’s either allergies or parasites.

So, we’d support the immune system with herbs and foods that decrease the viral load. Of course, we’d avoid sugar and processed foods. Exercise would increase circulation. We would do some of the basic stuff we’ll talk about in a little bit to support the immune system. I’d repeat the test in three to four months, and if the eosinophils are not cleared up and allergies seem to be under control, I’d have her do a parasite test.

So, this next example is a Blood Spot Fatty Acid test. I apologize for it being small. I can actually put this out there as a .jpeg file for you guys on the teleseminars page so you can see it
in larger detail. I think if you printed this out full size, you’ll be able to see it fairly well. I absolutely love this, because it gives me so much information.

You hear about so many people say, “Oh, just take fish oils. Take omega 3 like flax seed and hemp seed for your omega 3s.” A lot of people are doing that stuff, but don’t know what it’s doing to them. They don’t know where they’re high and where they’re low specifically. This is a test you can do by pricking your skin and submitting a blood sample.

You can go to Direct Labs and order it, but for some reason, they charge a lot. They mark it up. Most of their tests are lower than the list price, but they mark this one up a lot. I have an account with MetaMetrics, the company that does it, so I can get it for you at a lower price than what the Direct Labs gets you. You can order it either way. Tracey will have a link set up so you can order it through me as well. Some of you have already done this.

Let’s look back at this example. My eyes go right down to this one place on this page, which is number 10, the AA:EPA ratio. Look. She has an 11.3. Well, let’s look at the next slide so you can see what that means. The AA:EPA ratio is an inflammatory marker. The optimum range is 1.5 to 3. She has an 11.5. It’s considered unwell to have a ratio above 10. She has to do something about it. She may not feel unwell now, but there’s a fire going on that needs to be quenched. Anything exceeding 15 means a high level of inflammation.

The average American has an 11, so she’s average. Do you want to be average? Do you want the average diseases? I don’t. People with chronic illness and disease typically have scores above 15. People with things like multiple sclerosis usually have scores in the 20s or 30s. I have tested lots of people, and I have seen scores as high as in the 30s. I’ve seen a lot of them in the 20s, a lot of them in the teens, and I’ve seen some of them below 10. I’ve rarely seen any right in the right range when the person wasn’t doing something specific to supplement and really paying attention to their fats.

I’ve helped people get into the ideal range within three months. There are several ways to do this, and one way is to take fish oil or krill oil. Personally, I am vegan and have been vegan for 25 years. I don’t do animal products, and I’m about to see where my levels are. If mine are out of balance, I will work on a protocol to lower them without having to use those fish oils. If I work on that diligently, and I can’t get my numbers into the right range, I would consider doing krill oil or fish oil. If you’re vegan, your decision would depend on why you’re vegan. If you’re vegan for ethical reasons, you’re probably motivated to get this in balance without doing that.

Quite frankly, many people I worked with have serious diseases, serious inflammatory conditions, depression, and autoimmune stuff, and when I present the case, I say, “We can work on this from the vegan sources, or we can very quickly get these numbers under control with the fish oils. With the fish oils we can get them under control within three months, whereas it might take longer with the plant based sources.” Nobody has ever taken me up on the option of balancing it through the vegan sources. It’s up to you which way you want to go if you find your numbers out of balance.
If you take supplements, it’s important that you get retested in three or four months. I did have one person who was taking too much, and her numbers went below 1, which is in a range where you can have some bleeding happen, which isn’t good. Your blood can become too thin. How you address this is going to be your choice. However, improving your diet by including things like hemp seeds, flax seeds, chia seeds, pumpkin seeds, walnuts, blue-green algae, and purslane can help you achieve balance, assuming you have all the other nutrients intact.

Let’s go back to the tests and show you want I mean. Let’s go back to number one on this page, which is alpha linolenic acid. That’s the fatty acid that’s found in the seeds I just mentioned; flax seed, chia seed, pumpkin seed, walnuts, and hemp; the vegetable omega 3 sources. Now, she is low in alpha linolenic acid. So, in this case, I would say to this person, “Go ahead and get those levels up. You need to eat those things on a regular basis, because I want to see your numbers way out here.”

EPA is the kind of oil found pre-formed in fish oil. There are several steps to get from ALA to EPA. If you’ve got plenty of ALA, because you’re eating tons of flax and this other stuff, and your numbers are way up, but you don’t have the nutrients your body needs to convert ALA to EPA, your EPA is going to be low, and your ratio is going to be off. So, in that case, you need to look at those nutrients.

I have a really good chart I somehow left out of this presentation. I will load that up. Basically, it shows which nutrients do the ALA to EPA conversion. I’ll make sure I get that up or point you to a place on my website where that whole big set of charts is already loaded. I’ll get that out after the call, and I’ll put a link to it on the Ning forum in the links section. So, look for it there.

Off the top of my head, the nutrients that do the ALA to EPA conversion include zinc, magnesium, vitamin C, B vitamins (in particular, B2, B3, and B6), manganese, and selenium (to an extent). All of those nutrients are vitally important, and if you don’t have all of the right levels of all of those nutrients - viola - ALA will not get converted to EPA. Then, you’re going to have high risk of inflammation. So, it’s important.

We’ve been talking about these nutrients all along. I’ve given you resources for correcting any imbalances, like the liquid B, the liquid zinc, and the zinc tally test. If you decide, “I’m going to spend the money and get my tests done after I’ve applied these protocols” that’s fine. You can just assume your cofactors are deficient, and up the pumpkin seeds, take some Brazil nuts, and eat lots of greens and sea vegetables. You can do the zinc tally test and other mineral tests, and if you find the numbers off, just eat the foods that contain those nutrients or do some supplementation. Then, you can go and have the test done see whether you’re doing enough.

The other lab result to look at is DHA. DHA is vitally important for your brain. Your brain needs DHA for mental clarity, energy, and mood. People with low levels of DHA often have some depression, brain fog, and/or focusing problems. We see this a lot in kids with ADD.
you see how low this person in the example is? Now, there is some conversion that happens here, but you can get DHA from vegan sources. With a number that low, I would not recommend she just eat algae, because eating algae is not going to raise it enough. It’s going to take her years to get her DHA up. I would recommend getting a DHA supplement.

You can get a DHA supplement derived from algae oil. You can get it in capsules or in liquid form. Dr. Fuhrman’s site, for which I’ll give you again after this call, has a DHA taken from algae oil that’s flavored with orange oil. There are other companies online that sell it, so you can search for “liquid DHA.” Just make sure there are no additives, preservatives, and stuff. There’s a company called Omega Zen that I think is the main supplier of it, and I think that’s the one that supplies Dr. Fuhrman’s site as well. He adds the flavor oil to make it taste good, but, you know what? You can get a little bottle of the flavor oil and add it yourself. Either way, you want to supplement if your DHA is low.

If you have symptoms of low DHA, like depression, brain fog, and difficulty focusing, DHA is an important nutrient to supplement and you’re not going to get too much. I’d recommend supplementing it, especially if you are vegan and you don’t eat fish or take fish oils. I take that, and I give it to my kids. I started giving it to my kids when they were very young, because I know how hard it is to get that from plant sources.

Polyunsaturated omega 6s: You’ve probably heard of omega 6 and omega 3 fats. You want a balance between omega 6 and omega 3s. Omega 3s are harder to get in your diet, so you really have to focus on those. Omega 6s are rampant, especially because, as a society, we use so much oil (corn oil, safflower oil, canola oil, and soybean oil). Those oils are all very high in omega 6s. You just don’t want to have too much of the omega 6s. She looks like she’s right in balance on her omega 6s, so I’m not too concerned about it. I’ll show you what I am concerned about as we go through.

The gamma linolenic acid, or GLA, is another one that’s really important for brain function and neurotransmitters. When GLA gets low, you end up with some depression and all that, but you also have hormone imbalances. A lot of women find that, if they take an evening primrose oil supplement, their hormone problems settle down (PMS and menopausal symptoms). So, GLA is an important one, and she’s really low.

Again, she’s got some decent levels in her diet, at number four, linolenic acid (LA), but it’s much lower at GLA. That means she doesn’t have the nutrients to convert it. We couldn’t really tell that from the first section, because she just isn’t getting enough ALA. She’s not getting enough omega 3s in her diet. With number four, we see she’s getting a decent amount. She’s just not converting it to GLA, number five. So, she’s definitely a candidate for the zinc, the B vitamins, and the selenium, and the manganese. She needs all those really, really nutrient-rich foods.
Also, if you’re not converting, I would look back to your stomach acid, because your stomach acid is important to those vitamins and minerals being taken into your body. It all goes back to some of the basics. It all builds on the basics.

Then, the DGLA is a precursor to AA. I’m not concerned about that being low. That’s in a good range. We don’t want that to be too high, just like AA. So number six and number seven are inflammatory. A lot of times, under stress, you’ve got diversion of your LA or ALA into DGLA, which is not good. She’s in a decent range for that. I usually like to see that a little bit lower.

Her arachidonic acid is really low. That is the one that comes from meat, and she’s been vegan for a while, so that’s the reason her AA is low. She eats fish every now and then, so she isn’t a true vegan, but that’s why her EPA is over there. You really need to have your EPA way up at the top and your AA really low at the bottom in order to get a good ratio down there at number 10, which is the AA/EPA ratio.

As a summary, in this person’s case, she needs to eat more of her precursor omega 3s, she needs to convert more, she could consider an EPA supplement like fish oil or krill oil if she wants. In some cases, if a person is totally vegan and is showing a pattern like this, we really need to focus on those conversion nutrients and get lots more ALA in the diet. That means more hemp, flax, chia, pumpkin, blue-green algae, purslane, and the like.

That’s basically it. The other ratios are the LA:GLA, which just tells you how you’re converting from LA to GLA. She’s not converting very well. She needs to have that ratio a little bit lower. The AA:EPA, number 10, shows inflammation. The EPA:DGLA, again, her ratio could be better there. She needs to have a little bit more EPA. Her index of omega 3s, the percentage, is very low, so it means that overall, she just needs to improve how much EPA and DHA she has, and that will support her immune system.

This may sound confusing. On the next case study section, I’m going to do some full cases, but I’m also going to pull up a whole bunch of these cases and get them loaded into my computer. Then, I’ll show you so that you can get very familiar with this information. If you’ve gotten this test done and I don’t have it because you’ve just done it on your own, ship a copy to me through the http://balancemybodyblueprint.com/casestudies link. Just load it up, give me a little bit of information and background on you, and I’ll do that case.

In general, if you have a .pdf copy of it and you want to throw that up there and say “case for fatty acids,” that would help on this end. If you’ve done this before when I was doing it online, you have a written copy of it and you’re welcome to scan that and send it off to me so I can make it easier.

That’s basically that. That’s your fatty acid test. I really love that test. It’s a really good immune system marker, but also good for your minerals and all that. Again, remember, you want
your ratios between 1.5 and 3, because if it goes above 3, you’re at higher risk for inflammation. If it goes above 10, you’re at much higher risk.

Let’s just talk about what to do about all this, and then we’ll open it up for questions. I’ve got a three step process for balancing your immune system. We’ve talked about much of this before, and there’s some new stuff I’ve added tonight. Some of this is a review.

**Step one is to reduce the toxic load.** Modify your diet and lifestyle. Reduce your environmental exposure to toxins. Reduce your dietary exposure to toxins and allergens. How? **Eat a high raw diet with lots of green, fresh foods; packaged foods go out the window; and heated fats go out the window.** If you’re eating cooked foods, sure, it’s no problem, but those should be green, leafy vegetables and broccoli and maybe some whole grains like quinoa, millet, and non-gluten grains.

You want to **get rid of the gluten,** because gluten affects your immune system big time. Get the test done through EnteroLabs (I gave you that link last week), just to put your mind at rest. You really want to get that down. Gluten causes inflammation. Dairy does as well. Your top six allergens are gluten, dairy, eggs, corn, soy, and peanuts. Get those out of your system if you want to get an immune system under control.

**Repair your leaky gut.** We talked about that in the digestion section. **Eliminate infections.** We talked about that as well. **Reduce antigenic load.** We just talked about that with the allergens. **Balance your blood sugar.** We talked about that last week. **Reduce stress and balance your adrenals.** We talked about that two weeks ago.

**Exercise.** Please, keep moving, moving, moving, because it causes you to get more oxygen into your system, which helps reduce the free radical load, which helps to support your immune system. It moves your lymph moving. Bouncing on one of those mini trampolines is great. **Do anything that causes you bounce and get your lymph moving,** because it will support your immune system. This is the overall basic, basic, basic stuff we’ve been talking about all along. We’ll go through and summarize some of that and some of the things that we’re going to talk about we’ll bring that into play.

**Balancing your immune system step two** (and we’ve talked about some of this before as well) **involves the T regulatory cell support.** You want to **support your immune barriers.** What does that mean? **If you’ve got low vitamin D, replace it.** If you haven’t gotten your vitamin D levels up, go ahead and get them tested. There is so much research and recent study showing that with vitamin D levels between 100 and 110, the risk of breast cancer falls dramatically. There were no down sides to that.

**Balance your fatty acids.** That’s really important. We just talked about that test. Get those good fats into your diets, get those cofactors into your diet. **Increase your antioxidant levels;** your glutathione and superoxide dismutation catalase are really potent antioxidants. How do you do it? Well, you can do topical or oral precursors, or you can do genetic regulators like
Protandim or Oxicell. NAC is a precursor. We’ve got a list of those in the thyroid section, and I’ve also put lists of that out on the Ning forum in that extra link section. We’re also creating a new document for you that’s going to have just a concise list of all of the places you can go to get various supplements and herbs to support this.

A lot of people who have autoimmune problems have genetics that predispose them to that. When we talk about the genetics in a few weeks, we’ll talk more about that. **There are specific genetic markers found in close to 50% of the population that do not allow you to make enough glutathione unless you support your body with extra nutrients.**

This Protandim supplement I’ve talked about a few times is just herbs. It’s food, it’s green tea extract, turmeric, ashwagandha, bacopa, and milk thistle. Those support the whole system. NAC is usually a man-made chemical, but it’s derived from something whole. That stands for N-acetyl cysteine, and it has the precursors to glutathione so that your body can make it. The cream from Apex Energetics has the glutathione in it that can get right into your system. It’s your choice. Wherever you’re coming from, either in terms of philosophical bent or how bad your system is, just choose one of those methods to get it in you.

**Balancing your T cells is step three. Balancing your T helper cells (T1 and T2) involves stimulating the non-dominant T helpers.** So, let’s talk about what that means. If we go back to the slide, with Hashimoto’s, diabetes, multiple sclerosis, or chronic viral infections, chances are good (not absolute, but good) that your T helper 1 cells are overreacting and your T helper 2 cells are underreacting. So, if you support T helper 2 cells with some of the nutrients listed under T helper 2 cells, that is going to help.

Now, you don’t want to do all of these things. You may find you feel better with caffeine if you have one of those conditions, or if you’ve got an overactive TH1 system, but caffeine isn’t good for your body overall. If you’re doing caffeine and you haven’t give it up yet, decrease it slowly and increase some of the other supplements on that side of the chart. Things that support both sides include probiotics, vitamin A, vitamin E, boswellia, enzymes, turmeric, ginger, and things like that.

I’m going to put the resources up on the page. I’ve got a whole bunch of different files you can take a look at. That will give you more information about these, like the sources of essential fatty acids, the inflammation chart, and all that. I’ll get those loaded up either later today or tomorrow as extra resources for you to help balance your nutrients.

**Foods that enhance your immune system** (I can’t stress this enough) include **organic, whole, fresh, unprocessed foods high in nutrients; mushrooms** if you can tolerate them (don’t do them if you’ve got overgrowth problems and you find that you can’t); **fruits and vegetables; greens from the land; greens from the sea; and algae.** All of those play into supporting your immune system.
There are also some essential oils you can use. Frontier Herbs has them. You can probably get them at Whole Foods. If you happen to know somebody who does Young Living oils, they make some good ones. Find a good source of these oils, and this will give you some ideas of what you can do with them and how you can use it. Some of them you can take internally and put them in a glass of water. Others you can just put on your pillow or in a bath or make sachets, but they are helpful for supporting your immune system.

I threw this bit on resveratrol in because people ask me about it all the time. I know some supplements I’ve recommended, like the Health Force Nutritionals, have resveratrol in there. However, I’ve seen that you really have to take a lot in order for it to be effective. So, the jury is out for me as to whether it’s the miracle cure or not. When they did the studies, they needed somewhere between 750 and 1500 bottles of lime a day to get the effects in humans that they got in the rats. That’s a lot of lime, isn’t it? That’s a lot of resveratrol. But, studies are still being done, so I may change my tune once I get into the research a little bit more.

Actions you must take: We’ve talked about these already. Avoid refined foods and carbohydrates. Avoid sugar and hydrogenated oils and fats. Avoid any kind of heated oils and fats. Avoid overeating, because it creates total digestive imbalance, which affects those membranes and your absorption. Eat whole, fresh foods. Eat good fats. De-stress. Get fresh air and sunshine. Exercise regularly.

I know these seem like simple things, but if you’re not doing them, you’ve got to get on it, because it’s really going to help you balance your immune system. Yes, you’re going to need some of the other support. Yes, maybe your vitamin D needs supplementation. Maybe you need some of the other herbs and supplements. Maybe you need some extra glutathione support. Absolutely. These are good things for you to do. These are the basics. I just want to reiterate them.

I love this picture of my little mitochondria. In every single cell, the things that give you energy are these mitochondria. Mitochondria get damaged from blood sugar irregularities, stress and all the oxidation and chemicals from that, heated oils, and caffeine. There are all sorts of things that affect them so that they can’t produce energy for you. So, if your immune system is out of balance and your antioxidant status is out of balance, those mitochondria are trying their best to produce energy for you but they can’t.

So, feed them. Stop poisoning them. Support your immune system. Work on the stress, and eat fresh, raw, fruits and vegetables. Eat lots and lots of them. You don’t have to be 100% unless you’re doing a cleanse (and that’s a great idea), but you’ve got to eat lots of them abundantly and you’ve got to get rid of the junk, or it’s not going to work.

Thank you guys so much for listening. We are going to answer questions for 15 minutes, and then call it a night.