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Boosting Immunity Amid a Pandemic: The Role of Behaviors, Diet, & Environment

Dr. Turck:
When we say the words behavior, diet, habits, and environment, chances are you don't think of the body's immune system, but based on recent research, those all, in fact, play a role in influencing immune function. So, how might we keep those factors in mind and boost our immunity in the face of prevalent diseases, including COVID-19?

Coming to you from the ReachMD studios, this is *COVID-19: On The Frontlines*. I'm Dr. Charles Turck, and joining me today is Dr. Heather Moday, who's a board-certified allergist and immunologist and integrative and functional medicine physician and author of a new book called The Immunotype Breakthrough.

Dr. Moday, welcome to the program.

Dr. Moday:
Thank you for having me.

Dr. Turck:
To start us off, Dr. Moday, would you share with us what led you to focus on the immune system?

Dr. Moday:
Well, I think like many other doctors who finish medical school after residency, I was an internal medicine resident, and I decided to go into a specialty, and I sort of got very, very interested in allergy and immunology just because of one of my mentors in my program, and I just found it fascinating. It's not something that we really learned about a lot in medical school, so I thought, "Wow, there's this whole field that I feel like I don't really know much about," and it was so fascinating, so I sort of just jumped on board and did the fellowship and ended up practicing as an allergist in private practice initially.

Dr. Turck:
Thanks so much for sharing that background, Dr. Moday. So turning our attention to your book now, you discuss a few key factors that impact our immunity, and I'd like to take a look at each of them in turn. Starting with behaviors and habits, would you tell us a bit about their immunoregulatory effects?

Dr. Moday:
So first of all, I would say one of the biggest ones is we spend a third of our life asleep—or at least we should be—and when we're sleeping, our immune system is actually extremely active. It's a very important time for cleaning up and repairing ourselves so sort of cleaning up the debris after, say, inflammation and infection. It's also a really active time for killing viruses and bacteria, so people don't think about that. And when you shortchange your sleep or don't have very good quality sleep, you can have some poor immune outcomes, and we've seen this even from data that's been shown over years that there is higher mortality and morbidity in people who are night shift workers or people who have chronic insomnia, so we do know that.

I think another area that is maybe lesser known to people, although it's getting I think a lot more attention, is the role of the health of the human microbiome, which is actually not human at all. It's microbial. It's bacterial, viral, etc. And we know, just because of research over the past few decades, that the interface between these nonhuman microbes and our immune cells have commensal sort of relationship that not only decrease inflammation but also encourage tolerance to decreasing allergies, autoimmunity, and things like that. So if you have a good functioning microbiome in your colon, in your intestine, that does help your immunity a lot. And most of that is enhanced by food, fiber, prebiotic fiber, probiotic foods. These are things you don't have to take pills for. You can just get those through your nutrition.

And I would say the last big one for people to be mindful of is stress levels. Acute stress can be actually helpful for humans, making us more resilient, but long-term, chronic, low-level stress, including childhood trauma, chronic emotional stress, really puts into motion these chemical pathways, so excessive cortisol, excessive epinephrine, norepinephrine, and over time this actually changes our immune function. Basically, it starts to lower antibody development. It can decrease the effectiveness of natural killer cells and phagocytes, which are, of course, part of our innate immune system and part of the frontline.

Dr. Turck:
And how about our diet? What does the latest research tell us about how nutrition plays a role?

Dr. Moday:
A lot of people would say, "Well, that's obvious, that's our nutrition," our immune cells require an enormous amount of antioxidants in the form of food—obviously that's where we get our antioxidants—in order to decrease free radical damage and to do a lot of repair, so things like vitamin C, vitamin D, which we know is a huge immunomodulator, zinc, selenium, these are all really, really important, and having people focus on that in their diet is extremely important. You could talk for hours about the nutritional impact on our immune function and how it helps keep our both innate and adaptive immune system really healthy and helps us create robust antibodies so that's like a huge area that I think people need to focus on a lot, especially during this time of a pandemic.

Dr. Turck:
And are there any other ways our environment impacts our immune systems?

Dr. Moday:
Well, I mean this is an area of research I would say that we don't know as much about, and I would say that would be environmental toxins. So things that we eat: so it could be pesticide residues in fruits and vegetables; it can be antibiotic residues or chemicals that are given to animals that we eat; and then a lot of things that we place on our body in terms of personal care products, we absorb a lot of that. We have to then detoxify it. The immune system doesn't just react to microbes. Cells do see that things like heavy metals and organic solvents and all of these things are foreign, and they're going to create an immune response to it.

The other thing too is that those toxins can change our cells. They can create what they call haptens, so these are molecules that have been slightly changed that the immune system sees them as maybe possibly dangerous or abnormal. And I would say probably the strongest research that we see in this is in the field of autoimmunity, so the potential role of toxins causing the immune system to lose tolerance and to start creating antibodies or reactions against our own tissue.

Dr. Turck:
For those just tuning in, you're listening to *COVID-19: On The Frontlines* on ReachMD. I'm Dr. Charles Turck, and I'm speaking with Dr. Heather Moday about how the immune system may be influenced by our behaviors, diet, and environment.

So Dr. Moday, now that we've discussed each of those factors, how might we take that knowledge and apply it to practice? How can we educate our patients and work with them to optimize their immune health during the pandemic and beyond?

Dr. Moday:
You know, I would focus on things that people do every day, and so what I start with is sleep because everybody sleeps. You know, people may have different stress levels, but everybody sleeps, and that's something that you can make a couple of changes and really can benefit from that. So first of all is keeping regular hours and really focusing on trying to get to sleep before midnight.

The other thing is really cutting down on electronics and anything that emits LED or blue spectrum, green spectrum light, because we do know that all of that spectrum that emits from our cell phones and our tablets, computers, TVs, etc., are very disruptive to the production of melatonin. And melatonin we think of as like this hormone that just helps us sleep, but that's actually not what it does necessarily. It's very much tied to our circadian rhythm, but it's an extremely important player in our immune system. It acts on its own as an antioxidant, so it sort of helps clean up the mess once we've had a lot of inflammatory activity at night, so it's really important to understand that, you know, when you are sleeping at night, you're actually doing your immune system a favor. So I would say that's a great place to start is to cut back on electronics an hour or two before bed, and then make sure that you're focusing on getting eight hours of sleep if you can.

The other thing is really to look at your food. You just have to look at how many, say, vegetables and fruits are you taking in a day. And the reason why I focus on that is because that is where we're getting the bulk of our antioxidant vitamins, which we know are extremely important for our immunity, and also what are called polyphenols, these plant chemicals that are the pigments that we find throughout the plant kingdom, so focusing on brightly colored fruits and vegetables and eating a diverse amount—like instead of just eating broccoli every night and potatoes every night, you know, try to pick a new color from the rainbow every day of the week because you're going to be getting in different polyphenols, which are very anti-inflammatory and very important.

Dr. Turck:
Now, we've certainly covered a lot of ground today, Dr. Moday, but before we close, do you have any other thoughts you'd like to share with us?

Dr. Moday:
I really want to empower people to understand that we're not just sitting ducks, and one thing that I think this pandemic has shown us is that there is risk stratification based on how people live their life and what is their baseline health. We saw at the beginning of the pandemic that people who were dying were, of course, generally older—because we know there's immune senescence, right? But even more importantly, we were seeing people who were obese, who had diabetes, or even just insulin insensitivity, so they maybe didn't know they were diabetic but they were already inflamed because they had very high blood sugar or people who just had cardiovascular disease. So all of these really we know are lifestyle illnesses. You don't just wake up one day with cardiovascular disease or diabetes or obesity. It's something that we can intervene with. And so my message is you really do have a lot of control over how our immune system works because the choices that you make every day can either be very positive or very negative.

Dr. Turck:
I think that's a great note to end on. And with that I want to thank my guest, Dr. Heather Moday, for sharing her insights into factors influencing our immune response. Dr. Moday, it was great speaking with you today.

Dr. Moday:
Thank you so much for having me. It was a pleasure.

Dr. Turck:
For ReachMD, I'm Dr. Charles Turck. To access this and other episodes in our series, visit ReachMD.com/COVID-19, where you can Be Part of the Knowledge. Thanks for listening.