Barry Munro: Good afternoon, everybody. Thank you for joining us again for another installment of our SCI: Moving Forward, A Response to COVID-19 crisis. As we've always expressed, we are very grateful and thankful for the Craig H. Neilsen Foundation for making this possible through a generous grant. Before we go further, I thought we just, once again, let you know how we brought this together, in that we are the North American SCI Consortium. Our mission is to bring about unified achievements in research, care, and cure, and policy for supporting collaborative efforts across the spinal cord injury community. There's our website.

What we have is a unique opportunity by being where we are, and that we can tap into all the great resources and all the corners of the North American continent and try to share them in some type of organized manner connected to our website, so that people can access and different organizations can gain from the great work done in different packets, if not nationally, internationally, or regionally throughout North America.

The SCI: Moving Forward series was really a webinar series, which was a direct response to the pandemic. We felt that, in many ways, there was an infodemic going on. A lot of great resources out there, but they're coming out at some different angles. They weren't organized, probably, the way it was easier to understand. We thought we would take it upon ourselves. Again, through a generous grant from the Neilsen Foundation, we put together this webinar series, which is more importantly connected to a website, microsite, part of our larger site. As you can see, there's a link there where you can go back and look at collateral resources. Eventually, you can watch this webinar again. We encourage people to share the link with others, so that they can go back and hear our presentation over and over and over again, if they want. Thanks.

After today, our upcoming webinar series, the installments are adapted exercise on June the 30th. We have one on the self-advocacy, resiliency, and system change all related to COVID-19 on July the seventh. Then, we do a bit of a wrap up on July 14th. Then, on July 21st, we do a Latinx version, so that the Latin community can also take part in this, as part of our proposal to try to reach out to all parts of our community. Some of you may have known already that this webinar series will have Spanish subtitles at the end of this. Again, we can help reach out to the Latin community and give them the opportunity to see the great resources and produce what we have here today.

Without any further ado, I want to introduce a friend of mine and a long time colleague, but someone who's really quite the leader in this field is Joanne Smith. She's a Certified Nutrition Practitioner who graduated with first class honors from the Institute of Holistic Nutrition in Toronto, holds a degree in psychology from York University, as well as a diploma in radio and television broadcasting from Seneca College. Joanne's nutrition services focus on individuals who have sustained traumatic injury with specialization in neurological conditions, such as spinal cord and brain injuries, as well multiple sclerosis and cerebral palsy. She also teaches nutrition classes to individuals who are deaf and blind at The Canadian Helen Keller Center.

As you know, or may know by now, Joanne is also a person who have the experience, so she can talk first hand of her experience and what it's like going through her injuries, and then, really reaching out and how nutrition has made an impact. Now, she can make an impact on others. Once again, welcome, Joanne. Thank you for coming today.

Joanne Smith: Thank you, Barry. Thank you, everybody, for having me here. It's great to be here. It's definitely been a different and difficult three months, being quarantined and socially isolated. For us here in Ontario, Canada, we're starting to have some relief and flattening our curve and starting to kind of open things up a little bit here. But we all know that we could have a second spike. We could have a second wave.

It's still really, really important that we empower ourselves and help protect ourselves by supporting our immune system and support the immune function. Obviously, it's critical right now. As I'm going to go through in the next few minutes, it's so important for anybody with a spinal cord injury, including myself, to take care of your immune system all year round, every single day. This afternoon, I'm going to cover the important nutrients, food supplements to help you maintain your immune function.

If we move on to the next slide here, a little medical disclaimer. I am going to be talking about some supplements today. I just want to say anybody who's considering taking these should consult with your healthcare provider, your physician, because some supplements have interactions, contraindications with other medications that you might be on. Definitely worth getting a consult with your physician. Just for an example, if you're on a blood thinning with medication, fish oils, which I'll be recommending, are also natural blood thinners. You need to be careful of and consider things like that.

It's also important to optimize your immune function through a good diet. Healthy diet's important for all of us at any time of the year. I also want to say that eating a healthy diet, protecting your immune function, is not going to prevent you from getting COVID or any other infection. What it will do is build your immune system so that, if you do get sick, you have the best tools possible to help you fight it.

Moving on to our agenda. What I'm going to go over in the next 40 minutes is some specific COVID-19 facts that have implications for what I'll be talking about, and why SCI, individuals with SCI, are at an increased risk of infection, important foods supplements to support your immune health. I'll give you a budget-wise food shopping grocery list, talk about some kitchen and food safety tips, and then, some additional health tips that complement the nutrition that I'm going to be talking about.

If we go on to the next slide, a little bit here about COVID-19. We go to the next slide. We must move forward right there. We do know this means different updates are coming out on a daily basis about COVID-19. What we do know is that it lives on different surfaces, anywhere from several hours to several days. Other viruses can take hours to get into ourselves. COVID-19 can get into ourselves within 30 seconds, which is why it's so contagious and why we need to really be prepared and have our bodies fighting it and striking back, if we do come into contact with us. That's one of the reasons why it's so dangerous.

The outside of this virus is made of lipids. Lipids are another name for fats. One of the best ways to kill this virus is with soap. Soap repels fats. When you have a dish full or a sink full of dishes and you got the fat floating at the top, you put a drop of soap in there, it repels it. That's what soap will do. They don't interact, so it was one of the best ways to kill it. It's also cheaper than some of those antiviral wipes that you have. Soap is good enough to kill this virus.

The other really important thing I want to talk about and you'll hear me talk about a few times is that this virus causes what's called a cytokine storm, which means there is a massive immune response and release of inflammatory molecules called cytokines. These cause a massive amount of oxidative stress, which can cause tissue inflammation and, ultimately, tissue damage. It targets the lung tissue, but it can also target liver, kidneys, heart, and other organs, as well as cause small blood clots.

Basically, what this means is, this virus is causing an exaggerated inflammatory response. Inflammation in our bodies is a natural and needed defense in response to an injury or bacteria or viruses. It's a protective mechanism because when your tissues swell, it protects that area if it's injured. If it's infected, you've got extra blood flow going there carrying oxygen and reparative nutrients to the area. Short-term inflammation is good. We need it. The problem is, when inflammation is chronic, as seen with COVID-19, that's when you get this uncontrolled release of pro-inflammatory cytokines, causing inflammation and ultimately, tissue damage. I'm going to be talking a lot about different foods that have an anti-inflammatory effect, anti-inflammatory properties.

The last point about COVID-19 here is we're all at risk of this infection, but we know from research on this that you're at higher risk of being infected if you're elderly, because people who are elderly tend to be less active and they have decreased immune function. One of the reasons there's decreased immune function is because, as you get older, you actually have less production of things called T cells. These are white blood cells. You're also at risk if you have cardiovascular disease, diabetes, if you have lung disease, you're a smoker, poor circulation, and anyone with an underlying health condition, such as spinal cord injury.

If we move on to the next slide here, statistics demonstrate any comorbidity increases risk of COVID-19. There's a worse response to it. People with spinal cord injuries are at increased risk of infection for a multitude of reasons, which I'm going to go through. The first reason is that our body systems communicate, interact, and influence one another. When we talk about body systems, we tend to describe them and talk about them as individual systems, like the nervous system, the immune system, the endocrine system, which is our hormones, because this is an easy way to identify them and understand them.

In reality, every moment of the day, these systems are constantly talking to each other and communicating and influencing each other, such that, if you have dysfunction in one of these systems, there is high likelihood capability that it's going to negatively impact the other systems. Spinal cord injury, nervous system dysfunction can have an impact, negative impact, on the immune system, and vice-versa. That's one of the reasons why we are at higher risk.

Can you see that interaction there? The next reason we can never go is that people with spinal cord injuries, we know we are immuno-compromised, immuno-suppressed, as a direct result of our spinal cord injuries. Our bodies do not initiate or respond to bacteria and viruses as strongly as they did pre-injury. As the Christopher Reeve Foundation explains, this is because, after a spinal cord injury, messages about viruses and bacteria may not be transmitted to the brain correctly for the body to initiate a strong and proper response.

Another reason why we are at such high risk is paralyzed, weakened abdominal, intercostal, and diaphragm muscles. This decreases our ability to effectively cough and clear the lungs of debris. Again, as Christopher Reeve Foundation explains, coughing helps disrupt viruses and bacteria from making a home in your lungs.

Another reason is people with SCI have decreased mobility and activity levels, which also means there's decreased activation of your lymphatic system. Just a quick explanation, your lymphatic system mirrors your circulatory system. Your cardiovascular system and all your arteries and veins is mirrored by the lymphatic system. Your lymphatic system plays a really important role in your immune function, because the lymph vessels and the lymph nodes of your body are where your immune system lives. You have lymph fluid in your lymph vessels. Your lymph fluid contains antibodies and lymphocytes, good bacteria, to help destroy infectious bacteria, viruses. Your lymph system also helps rid your body of toxins and waste and destroyed viruses and bacteria by transporting it into your circulatory system where it's, then, taken to the kidney and the livers to, then, be extracted and released from the body.

The key thing here is, unlike your cardiovascular system which has a pump, your heart is your pump to pump the blood around, your lymph system doesn't have a pump. The way your lymph system moves is through activity. If you have paralysis and you can't literally move your limbs as much to move that lymph around, then, your lymph system isn't as activated to rid your body of that waste.

All right. Another reason that we are increased risk is increased risk due to exposure. What I mean by that is our mobility aids, wheelchairs and hand rims, or if it's a walker or cane, we're constantly being in contact with more surfaces in the ground and dirt. We know that the respiratory droplets fall to the ground. We can be picking them up on our mobility aids.

Really important, keep those rims and those any surfaces clean. I know for myself, I'm guilty when I'm out in the community. I push off countertops and doors and any of the surfaces around me. My hands, I'm even exposing them more to surfaces, so I've got to be really vigilant right now to stop doing that when I'm outside. Another thing is, we know the six-foot distance rule. We don't have to maintain social distancing. What's come out is, when you're in a wheelchair, with that you're having a lower position is that we actually may be more vulnerable to those respiratory droplets when they're coming down. Again, it's increased exposure.

We also are increased risk exposure with caregivers. Many of us have caregivers for personal needs, or with meal prep. Those caregivers, also, may be serving other clients with immunosuppression. We're at increased risk of being exposed to more people who are being exposed to others who are at risk. That's another reason.

Moving on to the next one is it's common for individuals with spinal cord injuries to have poor diets. There's studies that show this. When you have poor diets, you're at risk of nutrient deficiencies. There's several reasons why people with spinal cord injuries are at risk of nutrient deficiencies. After injury is, often, change of economic status. Then, maybe, you don't have the ability to buy the amount of same fruits and vegetables as before. Maybe, there's transportation limitations. The ability to get out and buy fresh food, fresh vegetables, and fruits.

There's changes in digestive function after injury. We don't break down absorbed nutrients the same way we used to. For some people, maybe, it's dexterity. If you can't physically prepare foods, healthy foods, meals every single day, the fresh fruits and vegetables that I'm going to be suggesting that you have. All of these things contribute to nutrient deficiencies here. What's listed, these particular nutrients are the ones that people with spinal cord injuries tend to be deficient in, many of which I'm going to talk about are critical for strong immune function.

Another reason that we are at higher risk is that we are at high risk of having, developing multiple secondary health complications. One of the reasons for that is the poor nutrient intake, poor diets, that we have and I've just discussed. These secondary health complications put additional burden on our body for nutrients. Studies show that the average person living in the community with a spinal cord injury experiences seven secondary health complications a year. It could be any one of these combination or others, such as pressure wounds, pain, arthritis, bladder infections, all of these things. On average, seven. That's a lot of additional burden on your body to be fighting. When your body has to fight an infection or any other secondary complication, it needs extra calories and extra nutrients.

The last reason that we're at increased risk here is stress. It might seem strange, when I'm talking about stress, but it has to do with your immune system. What it has to do with is stress in the form of mental stress, emotional stress, and physical stress. When I talk about physical stress, I mean pain. A lot of people's spinal cord injuries have pain, neuropathic pain, muscular pain. Physical pain is another form of stress. When you are under stress, chronic stress, daily stress, your adrenal glands are constantly releasing those fight and flight hormones, such as cortisol. Cortisol, when it's released, it can contribute to systemic inflammation. When you have systemic inflammation and stress, critical nutrients are depleted from your system, one of which is vitamin C, which is critical for immune function.

It's also important to note that people with SCI are systemically inflamed because of medications or it's because of the injury itself. When you add on top of that daily stress, that's a lot of chronic inflammation depleting your system with nutrients that your body needs.

Another interesting thing is psychological, mental stress suppresses cellular immunity through the depression of natural killer cells, which we'll talk about quite a bit in a moment. Natural killer cells are like the policeman in our body. They patrol our blood system and our lymph system I just talked about. They help seek out and destroy viruses, bacteria. We need them. If you're under stress, your production of them is decreased.

The other thing about stress is, and we've all experienced this, is when you're stressed, you tend to turn to comfort foods. You tend to overeat, things that are latent with sugar. Cakes, cookies, pops, things like that. That can contribute to weight gain. When you're eating overweight, that also decreases your immune function.

I've given you a number of reasons why people with SCI are increased risk of getting sick. The good news is there are lots of things that you can do to strengthen your immune system. I know. I just talked about it, but it's so easy when you got a spinal cord injury, when you're recovering from injury, or being in lockdown, as we've all been in lockdown, to reach for pizza and carbs and all those comfort foods. It's so important right now to really be focusing on healthy, unprocessed foods to support your immune system.

Viruses, actually, the term in Latin means poison. Viruses has been around since the beginning of time. In order for a virus to live, it needs a host. Our bodies are the host. You want to make your body as unhospitable, unfriendly, to viruses as possible. How do you do that? By having a strong immune system that can strike back as soon as the infection comes near you. There are certain vitamins and minerals that you really need to get into your system.

The other thing, in addition to the 10 foods and drinks I'm going to talk about, is you want to reduce inflammation by eating an anti-inflammatory diet. What I'm going to be going through these top 10 nutrients I'm going to be going over, they're going to strengthen your immune system, but simultaneously, reduce inflammation in your system. Let's get through it here. We'll get to number one, vitamin C.

We are one of the rare animals that does not produce their own vitamin C. We have to get it through foods. The other interesting thing is humans do not store vitamin C. You need to be replenishing your system with different sources of vitamin C throughout the day. The immune system is particularly vulnerable to things called free radical damage. Free radicals hop in our body from the air we breathe, the foods we eat, what we drink, from illness, viruses, bacteria. They create free radicals. Free radicals are unpaired electrons that cause tissue damage in our bodies.

Antioxidants like vitamin C neutralize free radical damage. COVID-19 causes cytokine storm, a lot of oxidative damage. You want to get the vitamin C in there and antioxidants to neutralize the free radicals that are being produced. Vitamin C, also, has natural antibacterial and chief natural antiviral properties that helps activate neutrophils, which are very powerful white blood cells that work on the frontline defense. It also increases the production of things called lymphocytes, white blood cells that play important roles in antibody production and coordinating immune system function. Vitamin C also helps slow viral reproduction.

Think about vitamin C as it's used very quickly in the body, usually, in and out of your body in about four hours. Again, top up, top up. What I've listed here are some really great sources of vitamin C. We all know about citrus fruits, lemons, and limes, oranges. They're good for vitamin C. Even better are dark fruits and vegetables, dark berries, green and red peppers. Any of your dark green, leafy vegetables are great. I recommend getting a really good dose of vitamin C in your body by having a smoothie once a day, whether it's a snack, a meal replacement for breakfast, because you can load in a handful of kale or spinach, load it up with dark berries, blackberries, blueberries, raspberries. Drink it down, you're getting a ton of vitamin C in there between the fruits and vegetables. That is number one.

Number two is vitamin A. Remember that list I gave you of nutrients people with SCI tend to be deficient in? Vitamin A was one of them. You got to make sure you're getting vitamin A in your system. It has natural antiviral properties. It helps enhance the activity of white blood cells. It also helps with proper maturation of immune cells. About 90% of vitamin A is stored in our liver. It has the capacity to store vitamin A for up to several months. This isn't something you necessarily need to be eating every single day. But definitely, a few times a week, get these yellow, orange, red fruits and vegetables into your diet as much as possible, because a deficiency of vitamin A does suppress immune function and interferes with our body's ability to form a rapid response to infection.

Vitamin A deficiency also reduces the number of those natural killer cells that I just mentioned that play a really important role in antiviral immunity. Get the carrots, the sweet potatoes, squash, kale, liver. If you like it, great. If you don't, don't worry about it. Focus on the other sources. Butter, don't be afraid of butter. Butter always gets a bad rap, but butter has lots of vitamin A, and it's a natural anti-microbial. It's so much better than margarine. Don't be afraid of butter. Just don't use too much, but it's okay to use.

The next nutrient I want to talk about is vitamin D. This is, also, one of the nutrients on that list I gave you that people with SCI tend to be deficient in. Vitamin A, yes, it is a vitamin, but it also acts as a hormone. Hormones are chemical messengers. Vitamin D, there's been a lot of research around vitamin D over the last three months with COVID. Vitamin D is one of the best immune-modulators in our bodies, which means it has a very positive influence on our immune systems. Studies do show that vitamin D may reduce susceptibility to COVID-19-associated lung injury. You really want to make sure you got lots of good vitamin D going on there.

It's also very protective against respiratory infections. Studies show that supplementing with vitamin D can reduce the rate of respiratory infections by 50%. That's huge. Now, the big thing here, vitamin D, if you're raised from here, all over North America, US and Canada, we are not getting enough sunshine throughout the year to give us enough vitamin D that our systems need.

Also, with spinal cord injury, we tend to burn easier. If you're on antibiotics, we often cover up with long sleeves or lots of sunscreen, which means we're not getting the vitamin D we need from the sunshine. It's a long convoluted process. The sun hits our skin, and then, cholesterol on our skin, through a process which involves your kidneys and your liver, we create vitamin D. If you're always covered up with long sleeves and slathering with sunscreen, your body can't make the vitamin D it needs, even, say, the four or five months of sunshine we have here in Canada. We do have sun. I do recommend, if you can get 20 minutes a day of pure exposed skin before you burn, so good 20 minutes. Within that 20 minutes, your body can make about 10,000 units of vitamin D, which is a huge boost to your system.

Other food sources. There's not a lot of great food sources to get your vitamin D. We should be getting from the sun, but eggs, the yolk of the eggs are a good source, as good the gut's sources go. I often hear people say to me, "I had a really nice healthy egg white omelet." I'm always saying, "No, no, no. Put the yolk in there. The yolk is where you're getting the vitamin D. Also, really great. It's great balance for your nervous system and for your brain." Vitamin D is absolutely critical.

The next nutrient I want to talk about is selenium. Selenium is a mineral. It's also an antioxidant, right? Neutralize those free radicals. It has natural anti-inflammatory properties, really important. They stimulate white blood cells and those natural killer cells like you're talking about. Here's some sources of where to get your selenium. Brazil nuts. If you like Brazil nuts, grab a bag. You just need two a day to give your body what it needs to protect your immune function. If you're not a fan of Brazil nuts, again, if there's some eggs, get the eggs with that egg yolk. Fish and yogurt are also great sources. That's something else you might want to consider. Just snack on some nuts or have eggs several times a week.

All right. The next mineral I want to talk about is zinc. This is another nutrient on that list I gave you that people with SCI tend to be deficient in. It also enhances immune function, activity of the white blood cells. People are more susceptible to infectious diseases when they have a zinc deficiency. Even marginal zinc deficiency can show signs of depressed immune system. Pumpkin seeds are a really great source of zinc. Again, something to snack on. Get a little baggie of the Brazil nuts and the pumpkin seeds. Just a couple of times a day, just have a couple of little like golf ball sized snacks of those. If you're not a fan of that, beef, yogurt, and if you love shellfish, clams, oysters, mussels are great sources of zinc.

All right. Moving on, this is another really big one here. Omega 3 fatty acids. I can't say enough about these for a multitude of reasons, including immune function, because it is a natural one, the best natural anti-inflammatories. You want to be eating fish, at least, three to four times a week. Salmon, sardines, mackerel. If you're not a fish fan, then, have some walnuts or some ground flax seeds or flax seed oil. You really want to get omega 3 in your system for a whole host of reasons with SCI, because it does reduce inflammation, so it can help reduce pain. It's great for your cardiovascular system. It's great for neural function, brain function. You really want to be getting Omega 3s into your diet every single day.

The next one's a big one, too, probiotics. Probiotics are good bacteria. We have trillions of these in our intestines, large intestines, small intestines. What's really interesting, we have so many of these good bacteria in our guts, they actually weigh two to three pounds of our entire body weight. It's a lot of good healthy bacteria. They're there because they help with digestion. They help break down our food, absorb nutrients. They help with bowel function, which is a big issue for people with SCI. It keeps things moving along. With regards to our immune systems, they are critical.

The digestive tract is a really important component of your body's immune system, because it holds the largest mass of your lymphatic tissue. I talked about the lymph system before, and that 70% of it surrounds your guts. You'll remember that, for some people, COVID symptoms show up as gastrointestinal issues. It's really important to take care of your gut health.

Like vitamin D, probiotics, these good bacteria, are really important immune modulators. They positively influence your immune function. You really want to make sure you're getting them in your system through fermented foods, like yogurt. It doesn't matter whether it's regular yogurt, Greek yogurt. Sauerkraut, if you like it. Kombucha has become a really popular fermented drink. We sell it here in Canada in almost every grocery store now. Also, miso, kefir, which is a fermented milk product. Really top up with your system.

There's been some question about, well, what good do they do, because probiotics move through your system. 50% of your fecal matter is actually bacteria. The point is when your probiotics, when these good healthy sources are going through your system, they're doing a lot of good work as they're passing through your system. Just like vitamin C, in and out of your body in about four hours. It does great work when it's in there. Same thing with the probiotics. Make sure you're eating those once a day. If not, we'll talk about supplementation a little later on.

Some other things, nutrients I want you to get into your daily diet here, herbs and spices. Again, these are natural anti-inflammatories. They are fresh. The fresher they are, the more potent they are. They're really powerful. A study just came out in the Journal of Nutrition just a couple of months ago, that just six grams of a spice, six grams, depending on the spice or herb, it's anywhere between one teaspoon and one tablespoon, it can reduce those inflammatory cytokines that I've been talking about.

Pick and choose. You might not like all of these, but garlic, ginger, basil, cinnamon, coriander, oregano, parsley. Eat them to your heart's content. I planted some of them about a month ago on my garden. I don't have a proper garden. I just have big flower pots. I grow a lot of these. Every day, I just go up there and pick some fresh stuff to throw in my daily dishes. Get those into your system.

The next slide, the one particular spice I want to talk about is turmeric. Turmeric contains a compound called curcumin, which is a natural anti-inflammatory. Studies, lots of studies have been done on the curcumin. Studies demonstrate that curcumin blocks cytokine release and helps manage that cytokine storm. Add turmeric to your favorite dishes, whether it's a soup or a stew, or a curry.

What's really become popular in the last couple of years are turmeric teas, drinks. You can actually get pre-packaged turmeric teas. It's actually really quite soothing. It's a nice drink to have in the evening. That's a nice way to really boost your immune system there.

All right. Next thing I'm going to talk about are mushrooms. There are over 500,000 different types of mushrooms. They are great for supporting immune function. They're really high in antioxidants. Again, neutralize those free radicals. They contain vitamin D. That's a bonus. Mushrooms contain something called beta-glucans, which are found in the cell wall of mushrooms. They stimulate those natural killer cells. Like I said, there's 500,000 different types, though. Take a pick, which ones do you like. Two in particular I want to mention are Reishi mushroom. These are great for supporting immune function, because they do enhance white blood cell activity. They stimulate circulation, get things moving, and they reduce inflammation. That's a great one.

Another really great one is the Chaga mushroom. Very high in nutrients, vitamins, minerals, again, antioxidants. It helps increase those natural killer cells. To your heart's content, eat those. Something else has become really popular in the last two years, I'm seeing all over the place, is mushroom infused tea and coffee. People are catching on to how healthy mushrooms are for immune function. You can actually get little sachets of mushroom infused coffee. I have that every morning. I actually put a sachet in my normal coffee. It doesn't taste gross, I promise. It actually gives a really nice rich flavor and texture. This also really great teas that are infused with mushrooms. I got some green tea upstairs in my cupboard that also has mushrooms in it, and it doesn't taste any different than any other green tea.

Speaking of which, if we go to the next slide, green tea is really great for immune system, because it's loaded with antioxidants. It also contains something called EGCG, which has antiviral properties, and bonus, anti-inflammatory properties. At least, once a day, some green tea, hot or cold. It's getting warm out there. It's already warm for some of you, wherever you live. Make a big bat of it, big part of it. Add some ice cubes. Keep it in that huge pitcher in the fridge. Add some fresh lemon to it. If you like it cold, it's very refreshing, but you know you're supporting your immune system at the same time.

That's my top 10 nutrients, foods, drinks that you should be getting into your system. to really help support your immune system now, but always. As I explained, we're so risk of infections. Our immune systems take such hit with SCI. I've talked about what to include in your diet, but equally important is what to eliminate.

All of the foods listed here contribute to inflammation. As I said, we really need to reduce inflammation in our systems to support immune function. Just overall, we need to reduce inflammation because people with SCI tend to be systemically inflamed. Let's talk about sugar first.

Sugar is very, very inflammatory. The World Health Organization and the Heart and Stroke Foundation recommend no more than six teaspoons of sugar a day for women, and no more than nine teaspoons a day for men. On average, we're eating 22 teaspoons of sugar a day. It's way too much. You're weakening your immune function. Really interesting, the sugar molecule is very, very similar in constructions to the vitamin C molecule.

If you encounter some kind of virus and your body is trying to launch an immune response to it, your cells want to suck up as much vitamin C as possible. If you have a lot of sugar in your blood, your cells can suck up, mistaken those sugar for vitamin C. They're competing to get into your cell. You're actually decreasing immune function, because your cells may be using the sugar, instead of the vitamin C.

The other really interesting thing is just one teaspoon of sugar reduces your white blood cell production count by up to 50% for the next four hours after eating it. If you think about that, that's just one teaspoon doing that. You're eating 22 teaspoons throughout the day. It doesn't matter if you're eating it or drinking it, pop or a sports drink. You are depressing your immune system all day long by eating sugar. You really need to wipe out a lot of sugar you may be eating.

Refined grains, they're the white bread, white pasta, white rice, pastries, processed muffins, all those things, once they're digested in your system, they basically turn into sugar. Again, there's a sugar effect. Cow's milk, I've listed there, because it's very mucus producing in your body. Mucus inhibits immune function and can contribute to an increase in your respiratory illness and congestion. You want to get rid of mucus. You know, when you get sick, you create mucus. You don't want to be drinking milk and adding to that mucus formation.

Salt, this is interesting. This just actually came out recently, a study at the University of Bonn showed that a diet rich in salt weakens your immune defense. You shouldn't be eating more than five grams, about a level teaspoon of salt a day. Again, we're eating two to three times that on average. Just watch your salt intake.

There we go. I'm going to give you a nice shopping list here. Well, I know I have. The last three months, I'm going to this grocery store a lot less than I used to. I used to pop in on my way home from work and get things a couple of times a week. Now, I'm going, maybe, once every two weeks. When you go, you want to get basics. You want to keep the cost down. You want to get the foods that include the nutrients I was just talking about.

I created a list here, just basic stock up on for your immune function now and throughout the year as well. Don't worry about frozen fruits and vegetables. The way they flash freeze our fruits and vegetables now, they retain the nutrients. My freezer is full of frozen fruits. That's what I add to my smoothie. I know I'm still getting a good amount of those nutrients. It doesn't matter if they're frozen. That's a little shopping list for you there.

There we go. Moving on to supplements. There might be some foods I listed that you don't like. Maybe, you want to get a supplement form. I created a supplement list here with daily dosages you can take of some of the primary nutrients. As we can see, if we go there, vitamin C, what I recommend is 2,000 milligrams a day. You get vitamin C that's buffered and includes bioflavonoids. Buffer just means that it's easier on your stomach. Bioflavonoids just helps with the absorption of vitamin C. You want to take, maybe, 1,000 in the morning, 1000 in the evening, again, because we tend to get rid of it very quickly. That might be something you might want to consider. Vitamin C can soften stools. If you notice that your stool is a bit too soft, then, back off a little bit on the vitamin C.

Vitamin D again, there. For us in Canada, we know we can't get enough all year round because we don't get enough sun. What we're recommending here, two to four 1,000 international units of vitamin D a day. It's really interesting because some of the physicians and researchers I've been listening to and reading and watching during COVID are saying you can even go 5 to 8,000 units a day. If you want to keep it 2 to 4,000, that's within a good range to support your immune system. Vitamin D is best taken with food for best absorption.

The next nutrient here is the omega 3 fatty acids. What I recommend for that is two 1,000 milligrams a day. Again, consult with your physician, health care provider, before starting it. There could be an interaction with some medications you may be on. The probiotics, what I recommend is a minimum of 15 to 30 billion microorganisms per capsule. Sometimes, they go as low as one billion, not enough. That can go as high as 100 billion. 15 to 30 are in a good range there, but you also want to get multi-strain. Some probiotics only have one strain, two strains. You want to be looking for five to eight multi-strains in there. You want to look, for sure, to the lactobacillus strain because that, actually, really helps support lymphocytes.

Curcumin, the compound down in that spice turmeric, natural anti-inflammatory, two to four 400 milligrams in divided doses. Maybe, two in the morning, two in the evening. You might want to start slow, just to make sure. You have your stomach adjust. Maybe, start with one in the morning, one in the evening for a week. Then, move on to increasing it to two in the morning, two in the evening.

Zinc there, 30 to 50 milligrams once a day, maximum four to eight weeks. Then, take a break. The reason for that is, if you have too much zinc, it can inhibit the absorption of iron. Four to eight weeks, and then, take a break for a month. If you want to go back on it again, that's totally fine.

Food safety tips. We've heard a lot about this. We're starting to back off some of this here in Ontario where we live. I just want to go over a few things that have been put out there to really help protect yourself from touching the virus and being exposed to it. If we go to the next slide there, just some tips when you're grocery shopping. Obviously, you got the mask on. Don't touch your face, your eyes. When you bring your food in, soap and water, it's all you need to kill the virus. Wash down the inside of the containers, the cans, the boxes.

We tend to always put our food in the counter before we throw it away, so when shifter is away, wipe down your counter, your fridge handle with soap and water again. Same thing you might want to do if you have food being delivered. Wipe down the outside of the box there. If you're bringing your grocery bags in reusable bags, you might want to wipe down with soap and water the inside and the outside of those, or throw them in the washing machine to make sure you're getting rid of any viruses that might be on there.

I want to give you a few health tips here, because we talked about nutrition, supporting immune function. As I mentioned at the very beginning, the immune system is affected by other body systems. Supporting your immune health does require a more comprehensive approach, especially with a spinal cord injury. Here's a couple of lifestyle recommendations here. Get into the sunshine 20 minutes a day. Expose and get that vitamin D going. The nice thing about getting outside, too, whether you're going for a wheel, not to be a great huge exercise, but just movement. Any kind of movement helps get your lymph system moving.

Now, to get your legs moving, if you're not able to move arms, legs, anything, if you're complete injury, then, even passive movement can help. Massage, if you've got a partner or caregiver who can help, just give a little massage to get that lymph going. The other thing about getting outside, just it's fun. It's relaxing. It helps manage that stress that I was talking about earlier.

It's really quite remarkable where I live. I've got a park beside me. I can't believe how many people since COVID are there bird-watching. Everybody's out there walking their dog, doing something. Some joyful activities by getting outside to reduce your stress.

All right. The last thing, get some sleep. A recent study showed that 77% of people are losing sleep over COVID-19. We need sleep. It's essential to our repairing and to our overall health. We also know that decreased sleep increases inflammation. Melatonin, the hormone that helps us get to sleep and stay asleep, and it's producing the pineal gland behind our eyes, there's a huge link between melatonin and immune function. That's one of the reasons why they're speculating that children aren't being as affected by COVID-19, because their melatonin production and release is much higher than adults. It's protective.

The other thing about getting outside is, when the sun hits your eyes and it hits that glands behind your eyes, that produces melatonin. The sun hit your eyes. It actually stimulates melatonin production. Another reason to get outside, it will help you sleep better at night. I went a little over there. That's my presentation. Do I have any questions? I hope this has helped. I hope this has given you great tips to support immune function throughout the year, not just now. Any questions?

Barry Munro: That was fantastic. Please feel free to ask questions. You can take your mute off your device, and ask the questions, or you can send it by chat, and Jess will read them out. Jess, do you have that from Jen French? Do you want me to read it?

Jessica Bassett...: Yes, I do.

Joanne Smith: I actually see it as well. I can [crosstalk 00:48:02].

Barry Munro: That's great.

Jessica Bassett...: You can see it as well, yeah, because it is to everyone.

Joanne Smith: To monitor, really, there's great apps now on your phone that you can. Cronometer is a North American system. It's really great. You just sign up on there. It's fantastic. You can just punch in what you eat every day as you're going along, and it will give you the calorie, the nutrient breakdown. It's also really cool. It has a way that you can actually just scan a food, that you can just wipe over the food's barcode, and it will download all the information as well. There's some really great apps out there that you can monitor, Fitbit, things like that, and look at your nutrient intake and make sure you're getting enough vitamin A, vitamin D, vitamin C, things like that.

Barry Munro: Now, Jo, the website that we have here, is your book on that website?

Joanne Smith: Yes. Thank you, Barry.

Barry Munro: This is shameless plug part right now.

Joanne Smith: I appreciate that. Seven years ago, myself and another nutritionist wrote a book on nutrition specific to spinal cord injury. There's 16 chapters in it. Each chapter addresses a secondary health complication, bowel, bladder, immune system, respiratory system. Each chapter walks you through what nutrients you need. It gives you recipes. It gives you the dosages, and a chart at the end. If you went to that website, you would find the book. We don't have any hardcopy books anymore, but you can go in the PDF form. Thank you.

Barry Munro: Perfect. Any other questions? That was fantastic. Very informative and very practical.

Joanne Smith: Thank you, Barry.

Barry Munro: I deeply appreciate it. I'm feeling a lot of guilt of what I had eaten today, but I'm not going to talk about that right now.

Joanne Smith: You can start fresh tomorrow. There you go.

Barry Munro: Every day is a new day.

Joanne Smith: There you go. Exactly.

Barry Munro: Thanks, Krista. Krista just said, "It was great. That's fantastic." All right. Well, if that's it for all our questions today, I just want to, again, thank you, everybody, for joining us today. Please, feel free to share this link. This will be archived within the week, and we'll be able to share this to everybody. I think it's very important that we take care of ourselves. It's really the only battle we have against this virus right now, that in masks and social distancing. This is the one. We can be bigger and stronger. It's the best defense.

Joanne Smith: Absolutely.

Barry Munro: All right. Well, thanks, everybody, for joining us today. Next week, we do not have an SCI: Moving Forward webinar, but there is a special webinar that is going to be going out on behalf of NASCIC. I think it's called SCI Connected. SCI Connection, sorry. We will send out a link to everybody on that, so you have the opportunity to find out about the great advocacy pieces that are coming out of United Spinal and SCI Ontario. Again, we're back on the webinar series the following week on July the 30th, sorry, June the 30th, where we're going to talk about the importance of exercise, again, connected to this great presentation today. Thank you, Jo. Thank you, everybody, for joining us today.

Joanne Smith: All right. Thank you, Barry. Thank you.

Barry Munro: Really appreciate it. Take care, everybody, and be well.