YCBS1E10 - LongCOVID_V2_mixdown

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SUMMARY KEYWORDS

Long COVID, people, brain, symptoms, patients, pandemic, brain fog, important,, issues, improve, affected, terms, impact, strokes, research

Susie 00:00
[Your Complex Brain theme music] Before, I was a real outgoing, multi-tasking floral designer, ski patroller, mom with three dogs, with endless amounts of energy. COVID really takes your health from you. It takes your life as you knew it and flips your world upside down. [theme music continues]

Heather 00:22
This is Your Complex Brain, a podcast all about the brain, the diseases that impact it, and the path to finding cures. I'm your host, Heather Sherman, and I have the great pleasure of working alongside the team at the Krembil Brain Institute in Toronto, Canada, a leader in brain research and patient care. In each episode, we'll take you behind the scenes into our clinics and our research labs to meet the game changers of the future, and we'll empower you with the latest research to help you take charge of your own health. You'll also hear directly from patients who are living with brain disease and the care teams who support them. Join us on a journey to unravel the mystery of your complex brain. [theme music continues then fades out]

Reporter 1 01:09
Tonight, COVID cases are on the rise across the country with hospitalizations also climbing.

Reporter 2 01:14
[dramatic news theme music] Tonight, the pandemic ripple effect and the dangerous strain on urgent care.

Reporter 3 01:19
[dramatic news theme music] Promising prognosis, new this morning: encouraging data at what could be a critical time in the pandemic.

Heather 01:26
[light, bubbly electronic music] More than two years into the pandemic, COVID-19 continues to spread and evolve, with new variants and new waves of the virus emerging steadily.

Reporter 4 01:38
New COVID variants are fuelling a surge of infections in parts of Canada. The masks may be coming off, restrictions fading away, but COVID is not.

Heather 01:49
Staying vigilant while returning to some semblance of normalcy has been an enormous challenge for many people. Fear and uncertainty have become the norm, and for those dealing with lasting symptoms of what has come to be known as long COVID, life has often changed dramatically. But how prevalent, worrisome, and long-lasting are some of the brain-related symptoms of COVID, such as headaches, brain fog, and memory issues? And how do we know what is caused by the virus itself, and what could be the result of living through stressful and unprecedented times? And, perhaps most importantly, what is being studied today that may give us insight into the long-term effects of COVID on the brain? That's the focus of our episode today – what scientists and physicians are learning about how to identify, diagnose, and treat long COVID in the years to come. We recently spoke with Susie Goulding, who's been living with long COVID for over two years. Here is her story. [music continues then fades out]

Susie 03:04
[light, upbeat electronic music] Hi. I'm Susie Goulding. I'm 54 years old. I was a floral designer before I got COVID, and ended up with long COVID, and I'm currently working in the film industry as a medic. I am single mum to one 14-year-old boy and three dogs, and hoping to be able to get back to skiing this year, but not sure that that... We'll wait and see. Yeah, it was the beginning of the pandemic, in the first wave, March of 2020. I went to the hospital for a yearly screening. This was the week of the lockdown. Everybody was hoarding toilet paper. Two days later, I started having just a really mild sore throat, and it really wasn't too concerning. Four days later, I woke up with very bizarre symptoms. It was the start of a barrage of meandering, ongoing symptoms that would redefine my definition of health. I started with inflammation at the back of my head. It felt like someone – without any pain – had hit me with a baseball bat at the back of my skull. It just felt swollen and inflamed, and it was very odd. I was having difficulty swallowing. It all sort of went ear, nose, throat for the first few weeks, and then it sort of dropped into my chest where I had a cough. [music fades out] [light, bubbly electronic music] Then, I started experiencing gastrointestinal issues, and it felt like a flu, and gas and strange symptoms that I'd never dealt with before with any illness. Then, a few weeks later after that, I could feel things happening in my heart. I started having chest pain and tachycardia and strange heart rhythms and twitches in my muscles, and this took me sort of into June. At this point in the pandemic, there was very little access to testing. You had to meet very strict criteria. Travelling abroad, being in contact with a known COVID case, or working with healthcare or long-term care facilities, you'd be able to access a PCR test. But, for the mainstream of people, we were not able to get tested, and were told to just handle your symptoms at home. And at that point, nobody really wanted to go to the hospital and expose themselves to potentially getting COVID, and people really didn't know about long COVID at that time, and all these bizarre symptoms. [music fades out] COVID was thought to be a one-week to two-week illness that you would recover from. [gentle electronic music] It was supposed to be a respiratory disease that just affected your lungs. I was suffering from severe, severe fatigue like I had never experienced before in my life. And then, I started having issues with my brain, very unusual difficulties with understanding what was going on and my surroundings around me, difficulties remembering things, difficulties with the speed at which, you know, I would react to things or be able to process information. You know, I was very dizzy, unstable on my feet, and it was quite severe. I think out of most of the symptoms, the brain issues that I was having were the most worrisome, that affected my

day-to-day abilities just to be myself. [music fades out] [upbeat electronic music] I started the Long-Haulers Support Group on Facebook, because I wanted to connect with others that were going through the same thing. So, it was a mission to find other Canadians who were long-haulers, who were suffering from COVID and these issues. You know, their symptoms weren't going away, and we weren't getting any help so, you know, the group quickly grew and, shortly after we started the group, the media started asking for interviews, and they wanted to know what was going on. And, you know, we tried our hardest to get the word out that there was definitely a third outcome, besides the deaths and recoveries, and that you needed to take all the precautions necessary to protect yourself. At that time, there were no vaccines, so mask up, social distance, and really be careful not to catch COVID, because you could become a long-hauler, and you know, these were symptoms that we were having that were life changing. We're now at over 17,000 members, and through all of that, we've connected with a lot of researchers and practitioners, people who are interested in helping people with long COVID, and who are interested in the science, and who are trying to help us. We've sort of become like a recruiting grounds for research where we're patient partners. We've invested a lot of time in participatory roles, as well as partnering with a lot of researchers. We're advocating to the government to have a centralized system set up for funding for researchers and, you know, for help in creating a national platform or information. And, you know, ultimately we're trying to get post-COVID care clinics set up for the masses because, right now, there are very few clinics, and anytime a clinic opens, it's just stampeded by long-haulers, and it's shortly thereafter the doors are closed. They just-- they've reached capacity levels, so there's just not enough care. [music fades out] [upbeat guitar music] When I think about COVID and the impact it's had on my family, in my life, it's been life changing. And I think of all the other families and lives that have been lost, and there are many people who are much, much more in dire straits than myself. And so, in a way, I feel lucky that I can manage to work and take care of my son – maybe not to the capacity that I was able to before, but, you know, this illness has taught me that you need to approach life with faith and with an optimistic outlook, you know, the bottom line to be kind to yourself, and patient. Just this experience has brought my son and myself closer, and so I have to be thankful for that. [music fades out]

Heather 10:32
[Your Complex Brain theme music] Joining us now to discuss the link between COVID and the brain is Dr. Carmela Tartaglia, a Cognitive Neurologist and a Clinician Investigator with Krembil Brain Institute, as well as Co-Director of UHN's Memory Clinic. Dr. Tartaglia is currently involved in a number of studies, looking at the cognitive and neuro-psychiatric impact of long COVID on patients, as well as sex and gender differences in long COVID. Dr. Angela Cheung is an Internal Medicine Specialist and a Senior Scientist at UHN. Dr. Cheung is also the Co-Lead Investigator of the Canadian COVID-19 Prospective Cohort Study, also known as CANCOV, which is designed to better understand the short- and long-term outcomes for patients with long COVID, and their caregivers. And, Dr. Abdu Sharkawy is an Internal Medicine and Infectious Diseases Specialist at UHN. Under the mentorship and support of Dr. Cheung, he has become an active and dedicated consultant to UHN's Long COVID Clinic. Dr. Sharkawy is also a trusted public figure who is regularly called upon by media to comment on the latest COVID-19-related news and information. And, if you follow him on Twitter, you'll know he's also an avid hockey fan. Thanks to all of you for joining me today on the podcast. [music continues]

Dr. Tartaglia 11:51

Thanks, Heather.

Dr. Cheung 11:53
Thank you.

Dr. Sharkawy 11:53
Thank you. [music fades out]

Heather 11:55
Well, I think we're all on information overload right now when it comes to COVID-19, but the purpose of our discussion today is really to try to break through some of that hype, and help people understand where the current research stands, and what we're learning about COVID from a scientific point of view. So, Dr. Cheung, I'll start with you. I think there's still a lot of fear and a lot of misunderstanding about what long COVID really is. So, as a physician who deals with this, I mean, how do you even determine if somebody is living with long COVID?

Dr. Cheung 12:25
They have to have had a COVID infection. If we use the WHO criteria, we would be looking at patients with symptoms – lingering symptoms – past 12 weeks of the acute infection. There are many different symptoms such as fatigue, shortness of breath, inappropriate fast heart rate, as well as brain fog. So, there are many different symptoms. I think one paper documented more than 200 symptoms that patients are reporting.

Heather 12:56
Wow. 200 symptoms?

Dr. Cheung 12:59
Yes.

Heather 12:59
And, Dr. Sharkawy, is that similar to what you're seeing with your patients?

Dr. Sharkawy 13:04
Yeah, I would say so. I think there's certainly a set of symptoms that are encountered much, much more frequently, and probably the most surprising thing is the severity of some of these deficits. What I'm really impressed with is the amount of impairment we see in things like short-term memory, and concentration ability, and comprehension ability in patients who are very well from a neurologic point of view, prior to their COVID infection. We're not talking about elderly people with dementia, or prior strokes, or even necessarily many risk factors for those conditions, but often very, very healthy people who don't really have a lot of reasons to have compromised brain health. And to me, that's the most striking feature of long COVID, is seeing the degree of deficit that a lot of these people present with.

Dr. Tartaglia 13:58

I think, you know, those are really important issues because there's a lot of heterogeneity in this population, and while some people have some deficits, a lot of them have subjective cognitive deficits. And so, by helping them with other symptoms – what could be headache could be fatigue, could be poor sleep could be depression, you know, muscle aches and pains – we actually can improve their cognition. I'm more struck by the amount of people that we actually see improvement in, by helping them with other symptoms.

Heather 14:33
Hmm. Well, Dr. Tartaglia, looking back at the last 2+ years, what have we learned about how COVID-19 has evolved? I mean, initially, COVID was thought to be a respiratory illness, but since then, it's pretty evident that it has impact on the brain.

Dr. Tartaglia 14:48
Yeah, I think that's really important because, initially, you know, a lot of us neurologists were kind of ignored because they thought, "Well, this is a respiratory issue." But, we all know that anything that affects other parts of the body will eventually become apparent through cognitive and behavioural issues. So, we're not surprised to see this. In terms of, you know, the brain effect, there's a spectrum, right? We've all heard about these devastating strokes, hemorrhages in the brain. Like, these huge bleeds can happen. Little bleeds can happen. And, of course, that's damage to the brain, and we can expect that there will be some effect, although some people do remarkably well. It's, you know, unbelievable, the plasticity of the brain. But, what we've come to realize is that a great number of people who had mild symptoms also have all these cognitive, behavioural, as well as physical effects related to the brain, and so those are the people that we really need investment in research, because we don't really understand why they have such persisting symptoms. We liken it a lot to what happens in a concussion. We can't see the injury, but after they've had their concussion, people feel that they've been changed. [rhythmic electronic music]

Heather 16:04
And so, you think that the brain is actually being impacted in a similar way to people who have had a concussion?

Dr. Tartaglia 16:10
In a way, because an injury is an injury. It's different types of injuries, for sure, but the way the brain will respond to an injury can be very similar. So, we always say to people, it's like, "Whether it's shrinkage of a part of the brain, a tumour in that part of the brain, a stroke in a part of the brain, the symptoms that a person displays will be very similar because your brain is a number of networks, and those networks subserve everything about you, whether it's your memory, whether it's your thinking, whether it's your, you know, happiness, your ability to love or hate, all of that. So, whatever impacts it will change you because it's changed your brain. The issue with COVID and other such diseases is that we actually can't see, we cannot detect what has changed. We assume something has changed, but we don't have any evidence that it's a permanent change, and I think that's where, you know, we need to really do the research so that we can figure out how to help people get back to themselves. [music fades out]

Heather 17:14

I think one of the scariest things for people is not knowing how you might react if you do get COVID. Like, will you get these long COVID debilitating symptoms, or will you get a more mild form of the illness? It's the million-dollar question really. Are scientists any closer to being able to determine that?

Dr. Cheung 17:32
So, we do know that women are more frequently affected by long COVID compared to men. So, men actually have a higher mortality in the hospital. We have a higher number of men coming to the hospital and be hospitalized, as well. But, there are more women with long COVID. One thing about the COVID pandemic is that many scientists are working together to try to solve these problems. And so, we don't have the full picture yet, but different bits and pieces are coming together. For example, we have identified two rare variants and one common variant that seem to predispose people to long COVID. Now, we haven't looked at, specifically, for the brain, but if you look at long COVID, there are actually genetic predisposition to long COVID.

Dr. Sharkawy 18:25
I would add that the correlation to vaccination is an important point, as well. There is some data to suggest that people who have multiple vaccines are less likely to develop long COVID compared to others. I don't think we have the same level of data to say if you've got what we call hybrid immunity, so let's say an infection, along with two vaccines, if that's comparable to three vaccine doses, in terms of reducing your risk. And, it may be tricky to, I think, tease that out without a very large data set to look at, but it's an important point because we want people to do whatever they can to protect themselves from any serious outcome.

Dr. Tartaglia 19:09
I think that's a really important point because there seems to be this kind of lackadaisical attitude right now where, "Well, you know, we're probably going to have to live with this," but, as Dr. Cheung has pointed out, there is such heterogeneity in people and, you know, we are not at the point where we have precision medicine, where we know what you will be predisposed to, how you will react, and so, a lot of the people who come into my clinic who are debilitated by their long COVID, and we're struggling to get them back, they were super healthy people, took care of themselves, had no problems, and we cannot identify anything about them. So, maybe there will be some genetic variants but, you know, at this point in time, we can't tell who will develop long COVID, and so I urge people to continue to try to avoid it if they can.

Dr. Cheung 20:05
Yeah, and I think that's a really important point because I go out nowadays and actually see everyone not wearing a mask, and even those who maybe have been exposed to someone with COVID, they're not isolating, and I think this is really a concern for the population. So, even if it's a small percentage of people affected with brain fog, or long COVID, the number of people affected by COVID, the numbers are huge because of that.

Dr. Sharkawy 20:36
And the relative complacency that we're seeing that has really seeped into the public conscience over the last several months, that's very worrying to me, and I think we have to worry about the silent

pandemic that's unfolding right now from long COVID that, you know, contrasts with the more apparent and very striking, you know, in-hospital pandemic that I think more people were attuned to a few months ago. [gentle electronic music]

Heather 21:06
And, the emergence of new variants, that's a concern too. But Dr. Sharkawy, what's changed in terms of the patients and the level of illness that you're seeing now, versus what you and your colleagues were seeing at the start of COVID?

Dr. Sharkawy 21:19
We're seeing, I think, a few different things right now. One is, because people have not necessarily been presenting to the emergency room or presenting to healthcare for attention for a number of reasons, we're often seeing patients at latter stages of their pathology. So, that runs the spectrum of people who've had seizure disorders that haven't been identified early enough, who've had tumours that are identified at later stages, just because of perceived lack of access to health care for, at some points, the actual lack of access because of prioritization of resources to manage COVID. And then, we've seen this new spectrum arise, where it's a combination of, you know, psychosocial issues, you know, substance-use disorders, and whatnot, that are related to the distress of the pandemic, and the ripple effect of loss of jobs, and the insecurity that you get from a lot of the issues related to the pandemic, and that factors in, obviously, into how patients present. It's led to overdoses in some situations for younger patients, and seizure disorders, and withdrawal syndromes. We're not seeing the frequency of clots in the brain, for example, in the strokes, I think, that we were seeing earlier on in the pandemic. And now, we're seeing these more subtle effects that patients happen to present with COVID-19, along with another reason for admission to the hospital. And then, when we comb over things a little bit more, finally, we identify that these memory deficits are more salient, that the comprehension and concentration issues are a little bit more apparent, and the cognitive decline is probably more notable than you would expect, accounting for all other conditions. [music fades out]

Heather 23:06
Well, when we spoke previously, you mentioned the idea of brain fitness. I have to be honest, I've never thought of keeping my brain healthy in those terms before. So, tell me a little bit more about that. I mean, how important is it to keep our brains fit and healthy? And how do we do that, exactly?

Dr. Sharkawy 23:22
To me, brain fitness is about doing everything possible to treat your brain very well. And, critical to that is the proper balance of sleep, exercise, and nutrition. And, because those things seems so common and almost mundane, unfortunately and paradoxically, we ignore them. And, I think I've used the analogy of our cell phones, you know, and our smart devices. We care so much about making sure they're optimally charged. We care about upgrading them. We don't want to drop them. We cover them with perfect little designer covers, [Heather laughs] and all kinds of things that we spent enormous amounts of money on, you know, but we don't take the care to perhaps wear a proper helmet, maybe when we're playing sports, or we're rock climbing. We don't go to sleep at the right time. We have way too much screen time so that we don't allow our brain to get that restorative time that it needs. That's all a part of brain fitness. Getting exercise and appropriate amounts to stimulate those endorphins, and to

do things that allow better vascular health is critical for the brain. Eating well is important for everything, including the brain. So that's brain fitness. It's doing everything that you can, from a mechanical point of view, from a nutrition point of view, and from a habits point of view to I think make sure that you're taking care of your body so that your brain, which is the biggest and most important battery, works properly and doesn't run out of juice.

Dr. Tartaglia 24:51
Yeah. I completely agree. You know, like Dr. Sharkawy said, I think people don't really understand how important it is, and the effect of these things on their brains. And so, if, on top of that, you've taken a hit because you've got COVID. You're isolated, you're worried about your finances. You know, I mean, there's only so much our brains can take, and then it's kind of like, "Okay, this is system overload. I cannot register information. I, therefore, cannot remember." That's the same for all of us.

Dr. Sharkawy 25:21
The other two things that I just want to add quickly, that I think are really important, is understanding the relationship between brain health and mental health, and it's almost impossible to disentangle the two. We know that, you know, stroke syndromes and physical injury to the brain is linked to depression, and it's linked to a lot of mental health disorders, and there's often a sort of bi-directional relationship so that, if you're more depressed, if you're having difficulty managing with mental health issues, it could potentially worsen the type of deficits that are already pre-existent due to the actual physical injury, and it becomes this vicious loop. You become even more depressed, more isolated, etc. So, I think it's really critical to make sure that we appreciate that, and that we try and invest and find resources to care for our patients. So, I think those two issues are ones that we really need to be aware of, and we need to focus on to keep our brains and our mental health in better check.

Heather 26:25
You make an excellent point. I mean, we're living in exceptional and unprecedented times right now. So, how challenging is it for all of you to even fully understand where the COVID symptoms end, and the stress of living through a pandemic begins? Dr. Cheung?

Dr. Cheung 26:40
Sometimes, really difficult, but there have been studies in the UK, especially, looking at those with COVID and those without, and there's definitely a difference. So, everyone is living through the pandemic, but those who have had COVID have more issues with mental health, with brain fog with, you know, a number of symptoms compared to those who didn't have COVID. So, I think there's a baseline influence of the pandemic with everything going on, but I think the infection, itself, also can cause problems, and the lingering symptoms.

Dr. Tartaglia 27:16
And I think that's, you know, a really active area of interest because, you know, when you think of women being at higher risk of long COVID, there are many other conditions. You know, I'm more aware of the neurological conditions, but you know, multiple sclerosis is a condition where women are more at risk. Lupus is a condition. So, there are other conditions where women seem to be at higher risk of getting that illness, and many of them happen to be inflammatory conditions. And so, this virus, which

seems to, you know, have a very pro-inflammatory – as most viruses do, but it seems to be maybe a little bit more excessive – maybe that has something to do with the fact that women are predisposed to living with long COVID. [gentle electronic music] And, I'm saying we don't know that yet, and so we do need a lot more research in this area.

Dr. Sharkawy 28:04
Yeah. Maybe the fact that women are disproportionately affected by autoimmune conditions, for whatever reason, it goes beyond MS, you know, certain thyroid conditions, a lot of connective tissue disorders, lupus, probably the most well-demonstrated example. And, you know, one hypothesis is that this virus is triggering dysfunctional immune activity, and immune mediated damage, and, you know, it's a plausible thought. You know, a lot of the treatment, early on, in severe COVID, relates to trying dampening down that immune process. We use steroids. It's one of the few therapies that has clear, you know, mortality benefit for patients who present with moderate or serious disease. We used other very powerful immunomodulators and, prior to Omicron becoming as rogue as it has, we were using monoclonal antibodies with a pretty decent level of success. So, I think what is going to be fascinating is seeing how much more we can work on immune modulation. If there's going to be something that strikes the right balance, can it work in a long COVID situation, potentially, as well as it does in a short COVID or acute, severe presentation? I don't know. It's going to be challenging, but it'll be very interesting to see what is uncovered.

Dr. Cheung 29:25
And it may also be a hormonal issue. So, we know that every cell in a female is actually sexed, [music fades out] so we know that, you know, like people going through menopause get brain fog. People who have breast cancer on chemotherapy also get brain fog. So, there may be some hormonal issues that are linked to this, but it's a little bit early to sort of know everything that is causing what we are seeing, clinically. [gentle electronic music]

Susie 30:01
So today, it's over two years-- almost two and a half years, I guess, since the pandemic, you know, affected me, and since it started. I'm still suffering from the issues of long COVID. I still suffer from gastrointestinal issues. I haven't been able to swallow properly since this has happened to me. I lose my voice when I get tired, and I'm starting to lose my voice now. [chuckles] I don't know if you can tell. I just moved this week, and I, really, yesterday, was bed bound. COVID really takes your health from you. It takes your life as you knew it and flips your world upside down. [music continues then fades out]

Heather 30:53
Dr. Sharkawy, is Susie's story similar to what you hear from your patients who are living with these long-lasting effects from COVID?

Dr. Sharkawy 31:00
The symptoms range from nuisance to devastating. And, you know, by "nuisance", it might mean that the memory deficits are fairly transient in nature, and they don't really functionally impair anybody to the extent that they can't necessarily work, or they can't do what we refer to as "the activities of daily living" around their own home – operating appliances, knowing how to take a bath, and you know, executive

function, planning, putting on their clothes, and tasks that take two or three different steps to them. But then, you see the other extreme, and I would say more of the patients are moderate to extreme in terms of they have difficulty reading, for example. I saw a patient not all that long ago who was quite well educated, had multiple degrees, actually, had a very productive career, who has trouble reading. She can't read for more than a few minutes because her attention deficits are so severe. I've had other patients who say you know, when they're trying to follow instructions in a recipe, they just can't. They give up. I guess more serious would be, you know, "Did I leave the stove on?" And so, you can imagine that that is very devastating to people. That sort of loss of independence, it feeds into a sense of helplessness, sometimes hopelessness, it dramatically affects their mood, and so creates this greater sense of isolation and sometimes depression for these patients, and it can be devastating. So, we really like to work on what we can to help with cues, to improve sleep, hygiene, and do everything we can to support brain health to try and maybe get over the recoverable parts of someone's routine, knowing that we can't necessarily do all that much about the actual impact of the virus itself, in the short to medium term. And, as mentioned before it by Dr. Tartaglia, when it's applied the right way, it's very encouraging, the results that we sometimes see with our patients.

Heather 33:02
Dr. Tartaglia, how often do you see these symptoms subsiding over time?

Dr. Tartaglia 33:06
We see that actually, quite often. We cannot treat long COVID, right? But we can sometimes treat the symptoms from long COVID, so, you know, sometimes treating people's headache. If you didn't suffer from headaches and end up with a daily headache, that is very distracting to the brain. So, sometimes we get people back to, you know, closer to their baseline, just by treating their headaches. Fatigue, you know, lots of people suffer from fatigue. There actually are decent treatments for fatigue. And so, sometimes we can get people back to some semblance of their previous self and, you know, I tell people, it's like, "Think of your brain like these little gears, right? And COVID has stopped one gear, or all the gears, but sometimes, just by getting one gear going, you can actually entrain the other ones." And so, improving people's mood, if you have long COVID for six months to a year, even longer than that, kind of normal that your mood will not be good anymore. Your sleep could be perturbed, partly from COVID, partly from your mood. Fixing mood, fixing anxiety-- anxiety has skyrocketed during COVID. You cannot remember things if you have lots of anxiety. So, fixing some of the, you know, let's say these associated symptoms that probably are caused from the COVID, by fixing them, we can sometimes actually improve people's cognitive function and cognitive abilities. And so, then, they're able to get back to themselves in terms of their work, their lifestyles, and that helps them get closer to their baseline. You know, I always tell people, it's like, "Once you are out of commission, let's say, for a while, you have to think of yourself as deconditioned, so if you sit or you lie down for two weeks, you will not be able to get to the bathroom without being sore. And so, think of your brain like that, too." We need to engage the brain, you know, cognitive stimulation, socialization as much as possible, getting up, taking a walk, and so you do a little bit each day, and that helps people, and that's therapy, just like taking a pill.

Heather 35:19
And, it's never too late.

Dr. Tartaglia 35:20
No, it's never too late, and a lot of times, when those other symptoms improve, the brain fog also improves.

Dr. Cheung 35:27
This pandemic has disproportionately affected the folks who are on the edge in terms of employment, in terms of, you know, social support system, and so, you know, I think you might have seen someone, sort of, with long COVID. Actually, I know this person who actually wanted to apply for MAID or Medically Assisted Death, and it's because, often, you know, if you have actually support systems or finance to, sort of, see you through a difficult period, then people do okay with some of the measures that we're talking about. But when, you know, you have really no safety net and, you know, we can't access support through the province or government, then it can be quite devastating for people.

Dr. Sharkawy 36:18
[gentle electronic music] I think, COVID in general, but long COVID, in particular, has really underscored the importance of what we call a holistic model of care. I think we're very fixated as a society and obsessed with this idea of a silver bullet – you know, the one magic pill, if you will, that's going to be the answer. We've learned over and over again, that that's just not a reality that's going to come to fruition, and it's clearly not the case for long COVID, especially for the brain because, as we've mentioned, there are so many inputs, there are so many different influences that factor into why our health and our brain health in particular may end up being compromised. So, it's so critical, I think, to address everything that will improve someone's life status, whether that is poverty or nutrition, housing insecurity. We know the ripple effects of all of those things go into mental health, and substance use issues, and exercise, and access to health care, and, you know, that's part of the model that I think is so important to understand and, I think, focus on, and I think why we need so much more resource support to manage long COVID. I think it's going to become a huge issue over the next few years, and maybe for an entire generation. [music fades out]

Dr. Tartaglia 37:45
I think you made a really good point. We need more resources. You know, in long COVID, a lot of times we're talking about the people who were doing well before, right? They were healthy, and now they're debilitated. But what about people who already had a disease? The long-term care facilities have been devastated by COVID. We have a lot of people suffering from dementia in our society, and other neurodegenerative diseases, and a lot of them got COVID, too. So, what does COVID do to somebody who already has a disease? There is some research that it can accelerate certain brain problems, so we really have to think that there are a lot of people out there who already have some primary problem. You know, I know, in people who've had concussions, they get COVID, they feel like they got another concussion. The symptoms just relapse. I know people who have Alzheimer's disease who got COVID, and then, you know, they become delirious, agitated, they end up in hospitals. So, COVID can have a devastating effect on people who are healthy, but we have to think there's a lot of unhealthy people too, who got COVID, and what are the repercussions on them? In some of these people who have long COVID, they now have caregivers who have to help them with, you know, regular tasks, you know? And so, it's not just the patient anymore that's impacted. It has widespread repercussions like many

other brain diseases do, and I think that is going to take a huge toll on our society if we don't try to address this in the near future.

Heather 39:18
Well, you've all been seeing patients throughout the pandemic, and you've been keeping a close eye on the research. I'm wondering, what are you all curious about when it comes to how COVID may impact the brain? What do you want to know?

Dr. Cheung 39:29
For me, the most important thing is trying to find treatments. Like, I can give, you know, steroid inhalers for someone who's coughing, post-COVID, but I can't really give a pill or anything, an intervention that will improve brain fog. I totally agree with what Dr. Sharkawy and Dr. Tartaglia talk about in terms of improving other things to improve brain fog, but that's not very satisfying. I mean, I would love to have something that treats brain fog. We are sort of looking at some of those options, and we have done some preliminary studies together with Dr. David Mikulis, and both Dr. Tartaglia and Dr. Sharkawy are involved with this, where we have scanned people. Usually, the MRI scan and CT scans are very normal unless someone is hospitalized, and then they could have bleeds or, you know, strokes or other things. But, most of the scans are pretty normal. And so, we did a research study to see the response of the brain. So, think of it as a brain stress test. We found that those who actually have brain fog and long COVID have a slower response in the brain, and that's really just trying to look at dilation of blood vessels, in simple terms. And so, right now, I'm trying to get a study up and running to see if we can actually dilate those blood vessels and use that as a treatment for brain fog. So, working on it. Not up and running yet.

Heather 41:09
That's exciting.

Dr. Cheung 41:11
Yes.

Heather 41:12
Looking a bit further into the future, with all of the cognitive impacts that you're seeing in patients, is it possible that dementia or Alzheimer's could emerge as a long-term consequence of COVID? Is that something that you're looking into?

Dr. Tartaglia 41:24
Yeah, I think that's an active area of research. I think what people are investigating is, what is the interaction when you have COVID and you have, you know, one of the neurodegenerative diseases, whether it's amyloid or alpha synuclein, that causes-- amyloid causes Alzheimer's, and alpha synuclein, Parkinson's. You know, what's the interaction if you already have this in the brain? That's an active area of research, but it'll be a few years before we see the results of that research.

Heather 41:51

[gentle electronic music] Well, there's been a lot of fear and a lot of misinformation out there, as we talked about. So, what's the best way for people to protect themselves? What's the takeaway message for anyone who's listening right now? Dr. Sharkawy?

Dr. Sharkawy 42:04
It's pretty clear that this has been very overwhelming for a lot of people. It is easy to feel discouraged. It is easy to feel resigned to the fact that we're all just going to get this and there's really not much they can do about it. And, I want to tell people, "Try not to think that way." There's a lot that you can still do, whether it's using a good mask, applying that in an indoor setting, in addition to being very mindful of good ventilation, and making sure that you are keeping windows or doors open, or ensuring that, whenever possible, you're limiting the exposure in indoor environments outside of your home. There's a lot of common-sense things that we can do that are still going to protect us. [music fades out]

Dr. Cheung 42:55
I would sum it up as saying, if you don't get COVID, you can't get long COVID, so [chuckles lightly] it's important to try not to get COVID, because I see patients who are healthy, at the prime of their careers, and they don't have risk factors for, you know, being deathly ill. So, they get a mild disease, but then they actually still get long COVID, which is quite concerning to me. So, I think, if you can do everything... Like, masking is important. Try not to attend, you know, really crowded gatherings, especially at this time because we are in a wave right now. We are in an Omicron wave, so people should pay attention.

Dr. Sharkawy 43:38
Get your third dose, too. Three doses.

Dr. Tartaglia 43:40
[chuckling] Four, soon.

Dr. Cheung 43:41
Yes, I was gonna say four.

Dr. Tartaglia 43:43
Yeah.

Dr. Cheung 43:44
So, consider getting a fourth dose.

Dr. Sharkawy 43:47
Three, at a minimum, we know protects people against severe disease. Two is definitely not enough at this point in time, unless you've potentially had one infection along with it. But, three is necessary for-- depending on who you are, and exactly your other risk factors-- is probably beneficial, but not the same level of impact as three, at least.

Dr. Tartaglia 44:11

Yeah. And the other thing is that there's some people who have become complacent because they already got COVID, and they feel like they were fine. But, the problem is that the second time around or third time around, doesn't mean the outcome will be exactly the same. I urge people to continue to protect themselves as much as they can.

Heather 44:30
[Your Complex Brain theme music] Well, this has been an amazing discussion. Thank you all so much for taking the time to be here today.

Dr. Cheung 44:36
Great. Thanks for having us.

Dr. Sharkawy 44:38
Thank you.

Dr. Tartaglia 44:39
Thank you. [music continues]

Heather 44:40
Thank you to Dr. Angela Cheung, Dr. Abdu Sharkawy, Dr. Carmela Tartaglia, and to Susie Goulding for joining us on the podcast today. If you'd like to hear more about Susie's story, head to our website at uhn.ca/krembil. This episode of Your Complex Brain was produced by Jessica Schmidt. Executive Producers are Carley McPherson and Tobin Dalrymple, with production assistance from Dr. Amy Ma, Twayne Pereira, Sara Yuan, and Suzanne Wice. If you enjoyed what you heard, please tell your family and friends, and leave us a rating and review on your favourite podcast listening app. Thanks for listening and have a great day. [theme music fades out]