Good afternoon, I'm Commander Ibad Khan, and I'm representing the Clinician Outreach and Communication Activity, COCA, with the Emergency Risk Communication Branch at the Centers for Disease Control and Prevention. I'd like to welcome you to today's COCA Call, Evaluating and Supporting Patients with Long COVID in Returning to Work.

All participants joining us today are in listen-only mode. Free continuing education is offered for this webinar, and instructions on how to earn continuing education will be provided at the end of the call.

In compliance with continuing education requirements, all planners and presenters must disclose all financial relationships in any amount with ineligible companies over the previous 24 months, as well as any use of unlabeled product or products under investigational use.

CDC, our planners, and presenters wish to disclose they have no financial relationships with ineligible companies whose primary business is producing, marketing, selling, reselling, or distributing healthcare products used by or on patients, with the exception of Dr. Greg Vanichkachorn, who would like to disclose that he's a consultant for Highmark. All of the relevant financial relationships listed for these individuals have been mitigated.

Content will not include any discussion of the unlabeled use of a product or a product under investigational use. CDC did not accept financial or in-kind support from ineligible companies for this continuing education activity.

At the conclusion of the sessions, participants will be able to accomplish the following. Explain the importance of work participation in long-term recovery. Describe how to assess current functional abilities and establish functional goals for patients with Long COVID. List resources to help employers make accommodations for patients returning to work. And outline how to develop a usable return to work plan for patients with Long COVID who have been out of work.

After today's presentations, there will be a Q&A session. You may submit questions at any time during today's presentations. To ask a question using Zoom, click the Q&A button at the bottom of your screen and type your question in the Q&A box. Please note that we receive many more questions that we can answer during our webinars.

If you're a patient, please refer your questions to your healthcare provider.

If you're a member of the media, please contact CDC Media Relations at 404-639-3286 or send an email to media@cdc. gov.

I would now like to welcome our presenters for today's COCA Call. We are pleased to have with us Dr. John Howard, who is the Director of the National Institute for Occupational Safety and Health at the Centers for Disease Control and Prevention. Dr. Marianne Cloeren, who is an Associate Professor in the Division of Occupational and Environmental Medicine at University of Maryland School of Medicine. And Dr. Greg Vanichkachorn, who is an Occupational and Aerospace Medicine Physician and the Medical Director at the Mayo Clinic COVID Activity

Rehabilitation Program. It is my pleasure now to turn it over to Dr. Howard. Dr. Howard, please proceed.

Thank you very much and welcome everyone to our session today on Long COVID and occupational health. Next slide, please.

First, I want to remind listeners that the views expressed in this presentation are those of the presenters and do not necessarily represent the official position of the Centers for Disease Control and Prevention or the employers of the presenters. Next slide, please.

So before I turn to our occupational medicine experts, let me set the stage for our discussion today. Long COVID is very broadly, very generally defined as signs, symptoms, and conditions that continued or developed after an initial COVID-19 infection. There are quite a few names for Long COVID -- post-COVID conditions, long-haul COVID, post-acute COVID-19, chronic COVID, and post-acute sequelae of SARS-Coronavirus-2 infection or PASC. Next slide, please.

And indeed, there are a dizzying number of symptoms. Patients and researchers alike have identified more than 200 symptoms associated with Long COVID, including most prominently post-exertional malaise, fatigue, brain fog, dizziness on standing, gastrointestinal symptoms, shortness of breath or difficulty breathing, heart palpitations, changes in sexual desire or capacity, loss of or change in smell or taste, thirst, chronic cough, chest pain, abnormal movements. And this short list that I've provided is not exhaustive. Next slide, please.

So when we look at Long COVID, people often ask, well, how long is Long COVID? And the answer is, we don't know. Certainly, it can last for weeks and indeed months. And some studies have marched it through time in years.

It occurs most often in people who are unvaccinated or who have had severe COVID-19. But I hasten to add that even people with milder COVID-19 infections in the Omicron era that we're currently in, they still can experience Long COVID. The estimates of the number of people who suffer Long COVID do vary. This quote from a National Institutes of Health news article says, "As of April of this year, the federal government's Household Pulse Survey estimates that about 6% of those infected with COVID-19 continue to experience and suffer from the many symptoms termed together as Long COVID." But the estimates vary, sometimes much higher than that. Next slide, please.

There certainly are a large number of challenges associated with Long COVID. First of all, there are medical and scientific challenges. What's the pathophysiology of Long COVID? What are the causes here? How does it manifest itself in the body? Can we actually develop a definition that's more than just a collection of symptoms? Can we develop a test or a biomarker to aid in diagnosis? And can we ever have an effective treatment? There are also labor market challenges.

This is from a study, 18% of people with Long COVID had not returned to work for more than a year, according to a report by the New York State Insurance Fund. This finding adds to other research suggesting that Long COVID is contributing to a labor shortage and is hurting the U. S. economy. And lastly, we're going to talk about some of the challenges that are related to the

employment setting, return to work issues, reasonable accommodation issues, and disability issues. So I'm very happy now to turn our discussion over to Marianne.

Thank you very much. Very happy to be here. Next slide, please.

So we're going to do this in two parts. My part is to set the stage for the importance of work to health and the need to try to prevent work disability if we can, sort of general principles. And then I'll be turning it over to my colleague, Greg, who will be sharing his experience with a lot of patients in real life in his clinical practice. Next slide.

We went through these already, so we can go to the next one. So what is occupational and environmental medicine? You're not alone if you've never heard of it. It's an actual field of medicine. It's a practice that's devoted to preventing and managing occupational and environmental injury, illness, and disability, promoting health and productivity of workers, their families, and communities. Next slide.

And occupational physicians are often board certified as a branch of preventive medicine. And our role is to address the impact of work hazards on health. And so we're all probably familiar with things like, you know, lead poisoning, asbestos-related disease. But also, the impact of health conditions on work, for example, the need for accommodations for someone to be able to do their work. And COVID actually has, you know, a foot in both of those because some COVID-19 was probably caused by work.

In any event, occupational physicians get involved in diagnosing, preventing, trying to mitigate the impact of conditions, manage conditions that impact work or are caused by work, control them, and do research related to them. Next slide.

There's a guideline that is designed for the non-specialist that I would like to just refer any physicians or other providers that are listening to this may find it useful to look up the personal physician's role in helping patients with medical conditions stay at work or return to work. And this is a general guide. It's not specifically about Long COVID. But I think it provides some useful perspectives and strategies. Next slide.

So why do we care about work? Studies have actually shown that work is good for our health and well-being. And there's one particular study that I like to refer to just because it was so big. It was an analysis of over 400 different studies. Now, this predated COVID-19, but it included people with many different medical conditions. And they basically asked the question, well, is work actually good for you? And their conclusions were that working is associated with better health and not working is associated with poorer health. Now, you may be asking yourself, well, I mean, if you have poor health, maybe you can't work.

But what they found actually in looking at a bunch of studies that asked this question is that returning to work can reverse some of the adverse effects of not working. And so working was better for both people who are healthy and people who had medical conditions and might not be considered, you know, perfectly healthy. Now, of course, it's important to consider the nature and the quality and the safety of the work. But we conclude that the benefits of work outweigh

the risks. And this is just one reference. There are many other studies that support this. Next slide.

The World Health Organization has established something called the International Classification of Function, and I think this is a useful model for sort of thinking about how impairment, which you see on the left, you know, something wrong with the body functions and structures, kind of interacts with environmental factors, personal factors, you know, maybe being afraid to go back to work, being worried. A lot of other personal factors may come into it. And how the health condition can impact activities, but it's not the impairment by itself. It's all these factors that wind up contributing to challenges in participating fully in life, which would include participating fully in work. So work disability and impairment are not exactly the same. They're related to each other, but they're not exactly the same. Next slide.

So when does an impairment become work disability? Well, you have to start out with a significant condition that is impacting important life functions. And especially if it's not accommodated somehow by society, for example, modified work, vocational services, you know, public access, and sometimes it's impacted, too, by the need for personal adjustments in a person that may be challenging. Next slide.

So now it's time for a self-knowledge check. Which of the following contribute to work disability related to a medical condition?

A, severity of the medical condition. B, environmental factors such as accessibility or accommodations. C, individual factors related to adjustment. A and B only, or E, all of the above. Alright, next slide. Let's look at the answer. And the answer is E, all of the above.

The severity of a medical condition can certainly contribute to work disability, but there are many other factors that can also interact and interfere with returning to work. And these include environmental factors such as accessibility or accommodations by an employer, as well as individual factors that can include how someone adjusts to their medical condition. Next slide.

You know, patients faced with health conditions that don't quickly resolve have to make adjustments in a lot of different domains. And sometimes it can even affect, you know, your sense of self, your identity. You know, you're perfectly healthy before, you know, ran marathons, you know, worked every day, took care of all your household responsibilities. And now all of a sudden, you can't do a lot of the things you did before. It can make you kind of rethink, you know, who you are. Patients may also have to make adjustments in their home life and responsibilities. They may need more medical care than they ever thought they would need. And they have to make some adjustments in work a lot of the time. Next slide.

So for those of you on this call today who are providers, one of the things that we are proposing that you do that's very important is to ask your patients about their function. And this is not just for patients with Long COVID. Just in general, you should be asking your patients about the functional impact of the conditions that you're treating.

You can ask questions like, how has this impacted your function? You know, what could you do before that you can't do now? How's it getting in the way of what you need to do at work or at home? Next slide.

There is also a tool, or actually a whole big group of tools, called patient-reported outcome measurement tools. And there are many different ones. And I didn't give examples of specific ones because there are some that are related to a specific specialty, some that are related to specific conditions. But this is just kind of a graphical example of what a patient-reported outcome measurement tool does.

And basically, you would establish at the time that you're seeing the patient, how is the condition impacting what they do? And, you know, so you can see here that there are a bunch of different domains. And then you would track this over time. So you'd see where they were at this point in time, and then look at it again when they come back, and hopefully you're going to be seeing some improvement. And you can also use prompts to set goals with patients. Next slide.

So you could ask about daily activities, like what are you doing? Are you getting up and working on the computer? Are you involved in the hobbies that you love? Are you able to do any household chores? And then, you know, some temporality, how often are you able to do that? Some days, most days, you know, never. Including socializing is very important. This is not all about work. It's about a person's participation in their life. Next slide.

Now, when we're thinking about work, a lot of times medical records don't include any information about work. So it's important to ask the patient not just what their job is, but what a typical workday is for that patient. What are their job duties? What are the tasks in those duties? Where do you do your work? How do you get there? You know, sometimes transportation and being able to drive could be a problem. Some patients have shift work, and that can be a problem, particularly with long COVID and the disordered sleep that goes along with it sometimes. Are there exposures or protective equipment that need to be considered? Now, working through these kinds of questions, usually you can get the information that you need from your patient, but there are some resources that you can turn to as well.

One of them is the website that I've offered here, where you can look up different jobs and get descriptions, actually very detailed descriptions, of what that job typically entails. You could also consider requesting a job description from the employer. Most of the time, you're not going to need to go to those links. Just having a good discussion with the patient will get you the information that you need most of the time. Next slide.

So how do you assess how a condition is impacting a patient? Asking the patient is probably the most important, but also there are things that you can observe. So observe how the patient is getting around, how they're moving, the ability to get onto the exam table, you know, whether they need to use their arms to help them. You could consider simulating work activities, and a lot of this depends on what the condition is. With Long COVID, one of the most important things to think about is the ability to think, right? The ability to stay focused on the conversation, the ability to think clearly, you know, normal judgment, able to recall things that you've spoken with

them about. So these are all things that go into identifying what the limitations may be. Next slide.

And then, kind of summarizing what you've learned, alright, so how does this translate into limitations that are getting in the way of the patient's life and the patient's job? And then, specifically, what job tasks are a problem as a result of the limitations? And for some patients, they may be able to do a lot of the parts of their job, but maybe not all the parts of their job. And you have to understand their job to be able to make that connection. Once you understand what the limitations are, then you can also think about, well, can any of this be accommodated? Are there things that could be done to allow my patient to continue doing these important tasks at work and, you know, succeed at work? So what accommodations? And I'll give you some examples of this, and I think my colleague, Greg, has some as well. Next slide.

So some of the steps in supporting return to work, and again, this is for all kinds of conditions, but make sure that work is part of your discussion with the patient. So establishing the expectations about work and this as a goal as early as possible, not like long after everything's over, but it's something that could be addressed at every visit. And it's important to recognize that your patients may have some worries about returning to work. Employers also may resist bringing people back who are not at 100% productivity. However, as a medical provider, you are a trusted authority and your recommendations actually carry a lot of weight with employers and they carry weight with patients, too.

So talking frankly with your patients about work issues is an important part of your role. And recognize that getting back to work in some way, even if it's not fully back to work, can really help your patients. Now, one of the things that's important with this is to plan very close follow-up, because there may be setbacks and you may have to plan for those setbacks. And so you wouldn't want to -- you know, if somebody's been off for a long period of time putting them back at 100% full time, that may be a recipe for disaster. And we're going to share some specific strategies about this shortly. But progressing activities slowly and keeping a close eye on patients is important. Next slide.

Definitely communicate with your patients about work and what you think they're able to do. You know, starting with what they're already able to do is a very good starting point. They've already demonstrated they're able to do some things. And if the employer is not able to bring them back, I think it's important for the patient to know that this doesn't mean that they're totally disabled. And so if they can't go back to work because of an employer policy, you could still recommend activities that your patients can do at home to progress their function and to be able to move toward, you know, full life participation. Setting very small stretch goals and using an activity log that you ask the patient to bring back and discuss with you can be really helpful tools. And again, closely spaced return visits so that you can identify any problems, but also gradually progress your patient. Next slide.

Some legal considerations. What about the ADA? The Americans with Disabilities Act defines a person with a disability as someone who has a physical or mental impairment that substantially limits one or more major life activities, has a record of such an impairment or is regarded rather as having such an impairment. And if an employee meets that definition, then the employer

needs to make accommodations if those accommodations would let the person perform their essential job functions and if the employer determines they're reasonable to make. Now, let's look at an example. Next slide.

So maybe we have an accountant and accountants have to concentrate, right, who has post-COVID brain fog. One of the things that you could recommend for somebody like that is frequent breaks, giving the patient a quiet space to work, maybe using memory aids and checklists. And those are the kinds of things that I think most employers would probably find are reasonable accommodations. They don't cost a whole lot, but the reasonableness, again, is up to the employer to decide. Now, what about if you can't come up with any accommodation that would let them perform their essential job duties, but you don't think your patient is totally disabled? A lot of times, the ADA doesn't apply that they have to be able to perform their essential job duties with or without accommodations for the ADA to apply.

But in my experience, a lot of employers will still try to work with employees if the recommended restrictions are temporary, if they're clearly communicated and if they're closely followed by you so you can facilitate progression toward hopefully full recovery and return to regular work. Next slide.

There is a wonderful resource called the Job Accommodation Network. They have a whole section on Long COVID accommodations, and the link is provided here. When working with patients in return to work planning, it's a good idea to make your recommendations in writing, and the Job Accommodation Network offers an example of how to do that at the second link.

JAN provides specific recommendations for a variety of different Long COVID related symptoms, including excessive coughing, low stamina, cognition problems, breathing problems, problems with sleeping or staying awake, and others. Next slide.

If recommendation, if restrictions or accommodations are needed, then putting together a letter that would be delivered via your patient, unless you have permission to share, is usually the most successful approach. And the things that you would document would be the disability, the major life activity, the work activity that is affected by the condition, and the accommodations that might make a difference, as well as the follow-up plan. This is personal health information, but it is also something that the employee, your patient, can share with their employer in asking for accommodations. And in the interactive process with ADA, there is a need for some level of detail for the employer to be able to work with the patient. But it is up to the patient to share. Next slide.

Oh, next slide is my colleague, Dr. Greg Vanichkachorn. So I'll turn it over to him.

Great. All right. I'm trusting that everybody can hear me at this point. So I'm going to just get rolling right into it. So thank you for that background, Marianne.

And with that, I'm now going to take the presentation and turn this to more specifically dealing with Long COVID. I want to go over what we typically see here in our programs at Mayo Clinic,

briefly discuss our treatment paradigm, and then talk about some strategies that we have used to help people get back to their livelihoods in the setting of Long COVID. Next slide, please.

Now, before I get too far into the presentation, though, I have to start with the elephant in the room, and that is how an occupational and medicine physician got to be the one championing Long COVID here at Mayo Clinic. At the time of the pandemic, our colleagues and I in occupational medicine were already working with our ICU to help patients who were coming out of the ICU get back to work and recover.

And it was only a matter of time as the pandemic went on that we began working with patients who were coming out of the ICU after COVID. And what we saw from the very beginning was that some individuals were having difficulties with their recovery, more than what we expected, troubles with fatigue and shortness of breath. With that, we put together an informal treatment procedure using expertise from multiple different specialties here at Mayo. As more and more patients came complaining of their recovery, we created a formal program for patients of Long COVID in June of 2020, and it's known as the COVID Activity Rehabilitation Program. Since that time, we've had the opportunity to visit with almost 700 patients from across the world with Long COVID. Next slide.

So with that, I want to just go into a little bit about what actually is Long COVID or what we now call post-COVID condition here at Mayo Clinic. Next slide, please.

Now, we've heard some definitions by Dr. Howard at the very beginning, but I wanted to give you a flavor of what we actually see on a day-to-day basis. In this slide, you can see the most common symptoms that we have encountered in patients who are presenting for care for Long COVID. Right at the very top is fatigue. 80% of our patients report fatigue and experiencing post-exertional malaise. Now, that's what most people think about when they think about Long COVID, but as you can see on this slide, there are a lot of other things that we commonly see. We also hear about respiratory complaints like shortness of breath, neurological issues like headaches.

Almost half of our patients report troubles with their thinking, often referred to as brain fog. We also see a lot of sleep disturbance issues and mental health concerns. Now, while these are the most common symptoms that we see, there's also a group of more unique but certainly not rare symptoms that we encounter. Next slide.

So for example, many of our patients complain of new ringing in their ears, otherwise known as tinnitus. There can be prolonged loss of taste and smell. Some patients experience hair shedding or even passing out episodes. We hear complaints about sinus issues. And lately, we've been hearing a lot about GI symptoms. The important takeaway for these two slides is that Long COVID is not just fatigue and shortness of breath.

There are a whole bunch of other symptoms that we encounter regularly as part of this condition, and it seems like we are encountering more and more as time goes on and the research gets deeper. Next slide.

Now, everyone talks about the symptoms of Long COVID, but what is often forgotten is how those symptoms affect a person's ability to live their lives, both at home and at work. At the time of presentation to our clinic, 34% of our patients reported having troubles with some of the most basic activities of life. So that would be things like putting on your clothes in the morning, taking a shower, or using the bathroom even. 82% of our patients report having difficulties with some of the more routine things, like going grocery shopping, doing household chores, and of course, going to work.

Now, 63% of our patients at the time that they presented to the clinic reported being back at work in some form. Now, that sounds very promising, but it's important to know that the average time between infection and presentation to Mayo was three months. So another way to look at this data is that three months out after an infection, only a little bit more than half of patients were back at work. Of those individuals that were back at work, only about half of them were doing their original baseline work. The rest required some form of work restriction, like reduced hours. Next slide.

And unfortunately, these functional limitations with work, they don't get better over time automatically. In a study that was done of patients with Long COVID to see how they were doing with their work seven months out after their infection, it was found that the number of individuals who were fully employed went from 72% down to 44%. The number of individuals who were working reduced hours or out of work also increased over time.

So it's important to remember that Long COVID, it's not just about the symptoms. This is a condition that can greatly affect a person's ability to live their lives, can greatly affect their work, and our economy as a whole. Next slide.

All right, with that, I'm going to switch gears in here and now just talk briefly about what we do for treatment here at Mayo for Long COVID. Now, the disclaimer I have to give is that there is currently no gold standard treatment for Long COVID. The program that we have here is based on the combined expertise of multiple different medical experts. But then again, someone else may do it differently. Next slide.

When we think about the Long COVID process, we basically look at the condition in three distinct phases. First is the post-acute phase, between zero to four weeks after infection. Then is the early post-COVID condition phase, between five and 12 weeks. After that, then we have the true Long COVID phase, which is 12 weeks or three months more out after the infection. Now, we have programs for each of these different phases. And my program focuses primarily on the five- to 12-week window. Now, our experience intervening early on in this window can help prevent some of the long-term symptoms of Long COVID. Next slide.

If we zoom into that area, this is what our treatment paradigm looks like. It basically is four distinct steps. Step number one is an in-depth interview with psychosocial support. Step number two is basically looking for conditions that could be causing the patient's symptoms, including serious conditions. Step number three is a targeted evaluation. And step number four is rehabilitation. And I want to give a little bit more depth into each of these steps. Next slide. All right.

Step number one, psychosocial support. Now, this is a slide that I've had in my slide deck since 2020. But unfortunately, it's still worth repeating. If there's one universal feature I have seen amongst all patients of Long COVID, it's that they have felt abandoned. And it's unfortunately very easy to see how this may have occurred.

Long COVID is a condition that's not well understood by providers, by patients, their family members, their friends. And because of that, patients with Long COVID often get told very unhelpful things, like what you're experiencing simply isn't possible. This is all in your head. And perhaps the worst is, you just need to toughen up and get with the program like the rest of us. Because of that, patients often turn in on themselves. They begin to ask, what's wrong with me that led me to have this kind of recovery? Why am I weaker than everybody else? And with that, that leads to guilt, self-doubt, sometimes even clinical depression, anxiety, and even PTSD.

So one of the first things that we do for our patients when they come to the clinic is we simply listen to them. We'll let them tell their story without bias, and we do it with empathy. And after they're finished sharing their story, we let them know that their symptoms are consistent with the symptoms that we have seen in hundreds of other patients with this condition, that we believe what they are going through, and that we are going to help them as best as we can. In my opinion, this listening and validation is the first step in helping patients with Long COVID recover. Next slide.

All right. After we establish that relationship, the next step is to rule out other conditions. And why is this important? We have research that shows that individuals after their acute COVID infection can have complications like heart inflammation or blood clots. Perhaps most alarming was a study done of roughly 1,300 patients with COVID to see how they did in the first 60 days after discharge from the hospital.

And what they found was that roughly 11% of the patients who were in the ICU died, about 7% of the general ward patients died, and 15% were readmitted. So again, things can go terribly wrong in the first few weeks after a COVID infection and not be related to Long COVID. So because of that, we often do a very in-depth interview as well as diagnostics that are clinically indicated. Next slide.

Targeted evaluations. What do I mean by this? Next slide.

Well, we see quite a few medical conditions commonly associated with Long COVID, things such as autonomic dysfunction, or headaches, or even pulmonary fibrosis. But we don't see those conditions across everybody that presents with Long COVID. And the reason we call this a targeted evaluation is that we don't go chasing some of these conditions unless we have a clinical indication to do so. So for example, if someone is not suffering from shortness of breath, we're not going to do an x-ray of their lungs or do a pulmonary function test just because they have Long COVID.

What we have found overall is that less is more when it comes to expensive diagnostics for Long COVID. This is especially true because many individuals out there suffering from Long COVID have very nebulous insurance coverage of this condition. Next slide.

All right. So after we make sure that nothing else is going on and we manage conditions that we commonly see associated with COVID, then comes rehabilitation.

Now, any medical condition out there can cause someone to be deconditioned and tired after just a few days. But this appears to be especially true for acute COVID. In fact, studies have shown that 41% of patients after COVID report having some form of reduced exercise capacity. And that can make it difficult to do a lot of things, including physical things like walking, using the stairs. It can also affect mental functions, such as using a computer. So what do people do when they experience this kind of fatigue? Next slide.

Well, many will actually just lace up their shoes, put on the 80s movie training montage music, hit the gym to no pain, no gain, their way back to recovery. But unfortunately, this is the exact last thing that people with Long COVID want to do. Next slide.

And that's because individuals with Long COVID experience post-exertion malaise, as mentioned by my colleague, Dr. Howard. Post-exertional malaise is the onset of fatigue and flu-like symptoms after physical or mental activity. Now, if that sounds strange, this is something that has been well documented in those folks who have myalgic encephalomyelitis or chronic fatigue syndrome. In fact, 30% of patients with those conditions report having post-exertional malaise. Next slide.

So the important thing to remember about reconditioning and rehabilitation with Long COVID is that rehabilitation does not equal exercise. Rather, what we recommend to patients is an individualized, adaptive-paced therapy, otherwise known as low and slow. And I mean very low and slow. So just to kind of give a background here, we've had some elite runners who have come through our program. And when it comes to starting their recovery, we will have them just sit in a chair and do leg extensions against gravity alone as a start of their recovery.

It's also not simply a stop when it hurts type of treatment philosophy. It's important to remember that many individuals, they are resting for long periods of time in between bouts of activity. So it can be very difficult for patients to tell when they've done too much. So for example, I've had some patients state that, well, I felt good after resting for about four days and then I decided to go for a 20-block walk around New York City. And of course, they weren't able to walk for the rest of the week.

Rather, what we use are patients' individual experiences, either with exercise activities or also household duties or work duties, to set a baseline and then we slowly increase from there. So let's say someone can walk for 10 minutes at a time or do a load of laundry and not experience any post-exertional malaise. We will start there, and then if they tolerate that for a good week, increase maybe 13 minutes of walking the next week and or doing two loads of laundry. It's important to remember that this pacing strategy applies not just to mental activities, but also physical activities and activities at work. This may seem simple, but this pacing strategy is something that we spend a lot of time helping patients adapt to and reiterate during the recovery process. We also sometimes involve physical therapy and occupational therapy as part of this process. Next slide.

So that's the medical treatment of Long COVID that we do in the program here at Mayo, but that's really only half of our focus. The other half of our focus deals with work. As an occupational medicine physician, of course, one of the things I want to do for all people is help them get back to their livelihoods.

I've had the pleasure of treating lots of different workers out there with Long COVID, including many of our own here at Mayo Clinic. What I'm going to present here are some of the strategies that we have found that have worked very well in our patient population. Next slide.

So the first overall strategy is the use of titrated work hours. One of the most common things that I hear from patients when I ask them, how's your return to work going? They will say, well, my boss said, don't come back to work until you are 100%.

Now, that sounds like a very helpful thing on the surface, but in actuality, that's quite the opposite. It can be very difficult for someone to go from not doing any work at all back to their full duty work just overnight. I can barely make it through a weekend myself. So what we have found to be much more useful is doing a gradual return. So for example, if I want to return somebody and start them off, I will say try working four hours of work three days a week with a day of rest in between.

And if that goes well, then we'll gradually increase, say, over two weeks to four hours of work, four days a week. This has been much more successful in helping our patients of Long COVID slowly recondition their bodies and get back to work in a successful fashion. Next slide.

Now, that being said, there is an important nuance to note here. It can be difficult for some employers to offer only 12 hours of work per week to an employee, but all is not lost in that situation.

If we have that situation, what I remind patients is that home activities can also simulate work. So if a person can't go back to work on site for 12 hours, I'll say, all right, I'd like you to wake up in the morning at the same time that you normally do get dressed like you normally do as if you're going to work. But then turn to your household activities as your work. Do four hours of chores like doing the dishes, yard work and so forth, paying bills. And we titrate up that work just as if the person was on site with the hope that eventually they will be able to tolerate enough hours that their employer can accommodate them back on site. In addition to the home activities, another area that has been very helpful is having patients engage in volunteer activities to give us an idea of how their function is going. Next slide.

Like my colleague Marianne mentioned, another big overall strategy is communication. One of the most worrisome things that I can hear from a patient when I ask them about their work is that they haven't talked to their employer for two months. This is not a good sign. Both patients and providers need to be proactive about communication.

As Dr. Cloeren mentioned, the patient themselves, they actually only have to share their work restrictions and limitations with their employer. But if they feel comfortable sharing other things, they can. For the providers, the way we be proactive about the communication is we visit with

our patients very frequently, roughly every two to four weeks, and we update work recommendations at the same interval.

In addition, we also remind our patients that they don't have to wait until their follow-up visit in order to change their work restrictions. If a patient is feeling better and they feel like they can do more or vice versa, they're feeling worse and need to dial it back down a little bit, we encourage them to message us in between visits and we can adjust their work restrictions as needed. This can help reduce unnecessary time away from work. Next slide.

Another thing that's been very helpful is remote work. Now, we all know that now more than ever, there are individuals working at home, and this is one of the silver linings of the pandemic, in my opinion. And remote work can be very helpful for patients with Long COVID. So for example, many patients with Long COVID, they have troubles working in a loud environment or tolerating warm environments. Working at home allows them to carefully control such environmental variables. In addition, working remotely can also make pacing and break time more effective.

It can be really hard for someone to take a five-minute break and lie down while they're working on an automobile assembly line. Now, I know the employers out there are listening. And one thing that we have encountered is that employers are sometimes hesitant to offer remote work to their employees because this may indicate that, okay, you can just work from home forever. And then everyone else starts wanting to work from home as well. This is where that communication bit comes into play. If this is something that an employer is worried about, I will make sure to document on my work recommendations that the short-term use of remote work does not equal long-term use. Next slide.

Now, when it comes to more specific recommendations, you know, all those things I mentioned are more general strategies, but more specific recommendations for Long COVID symptoms, really the sky is the limit. Here in this table, you can see some of the most common specific recommendations we can give in work restrictions and the related Long COVID symptoms. So for example, if someone says, you know, I'm really having trouble with my sleep, we'll have them avoid an early morning start time, maybe work a later shift.

If someone has hoarseness, which is something that we have seen quite a bit in Long COVID, we will recommend that they do limited speaking or engagement with customers. The list that you see here is not inclusive by any stretch of the imagination. What I would want everyone to remember is that there are specific recommendations that can be found. And to remember that website that Dr. Cloeren had mentioned, www.askjan. org. That is a great resource. You can go there, put any medical condition that you want into that website, including Long COVID, and it will spit out all sorts of recommendations for all sorts of nuances. Next slide.

All right. So for the last point that I would like the audience to take away today is I'm going to discuss something that is often overlooked when it comes to the relationship of Long COVID and work. As I mentioned earlier, there are a whole bunch of conditions that we commonly see associated with Long COVID, and three of them are mentioned here. One are mental health

issues. It's very easy for a person to experience anxiety and depression, even PTSD, because of the long-term nature of Long COVID.

We treat those conditions like we treat any mental health conditions. Sometimes there's therapy, and sometimes there's medications like antidepressants or even sedatives. We also see sleep problems, either too much or too little, and we've had quite a few patients get diagnosed with obstructive sleep apnea. One of the unique neurological findings of Long COVID can be disturbed taste and smell. In fact, almost a third of patients, especially with the earlier variants, will experience some prolonged loss of taste and smell. The good thing about that is it does get better for most folks after about six months. Now, why do I point these out? Well, these are all conditions that have safety implications. Next slide.

It's important to remember that Long COVID can not only make it difficult for someone to go back to work, it can also make it unsafe. So for example, if someone is not sleeping well and they're falling asleep behind the wheel while driving, well, maybe we don't want them driving early in the morning one hour to a remote work site or hauling a container of propane down the highway.

If someone is dizzy, we may not want them to work on, say, on top of an antenna tower or on top of a dam around exposed water. Here's something that most people don't think about. If someone can't smell well, perhaps we don't want them to work in an area where they need to rely on the ability to detect smoke or something burning or, say, hydrogen sulfide. Now, it can be really difficult to encompass all of the safety nuances of a person's job. So if I'm concerned about this aspect of a person's work and their return, what I'll do with the work recommendations is simply put up no safety-sensitive duties.

I leave it up to the employer and the employee who know their job the best to make the necessary adjustments. With that, that concludes my recommendations for return to work, and I will turn it back to our wonderful host.

Presenters, thank you so much for providing this timely information to our audience. We will now go into our Q&A session. For our audience, please remember to ask a question using Zoom, click the Q&A button at the bottom of your screen, then type your question. Please note we often receive more questions than we can answer during our webinars. So let's move on to our first question.

And the question asks, in your experience, have you found any correlation between patients that had symptomatic COVID, developing Long COVID, versus patients who had asymptomatic COVID?

So this is Dr. Van. I will go ahead and take that question. What we have seen is that individuals, when I say seen, both anecdotally and in research, individuals who have more severe acute COVID appear to be more at risk for having Long COVID. Now, that being said, 75% of our patients here in the Mayo Program actually had very mild illnesses.

They didn't have to go to the hospital or even see their primary care doctor. So while the acute severe COVID can make you more at risk for Long COVID, it's not a requirement for Long COVID.

Thank you very much. Our next question is regarding some of the terminology that was shared earlier in the presentations. Can you please reiterate the relationship between the classifications of impairment versus disability?

Yes. So impairment refers to something that can be objectively measured, typically. Loss of function, mental impairment -- well, I'm going to use the word impairment again, but kind of objective loss of anatomic or mental kind of capacity. Whereas disability -- and I just want to point out, disability is actually a really complicated word, right? The word disability is used to request accommodations, meaning that you can work. When I use the word disability, though, in this presentation, I'm referring to work disability. The impact of the condition and other factors on a person's ability to participate fully in their work. I hope that helped.

Thank you very much. That is very helpful. Our next question asks, is CDC maintaining a registry of Long COVID patients?

So okay. This is Dr. Vanichkachorn and I will take that again. I can't speak on behalf of the CDC, so I'm not quite certain, but I do know that several programs, institutions around the country, are keeping a registry, both just of patients as well as with bio samples, like blood work and so forth, in order to help future research into this condition.

Yeah, this is John Howard. I'll mention that the NIH is doing a substantial study called the RECOVER trial, R-E-C-O-V-E-R, in which they're recruiting Long COVID patients. So I do not believe that CDC itself is maintaining a registry, so to speak, of Long COVID patients.

Thank you very much, both. Our next question asks, can you share about the role of different demographics, such as gender, ethnicity, age, when it comes to risk for Long COVID?

So this is Dr. Vanichkachorn, and I'll go ahead and take that one. Very good question. So what we have seen with COVID, acute COVID, is that all of the disparities and discrepancies that preexisted in healthcare were worsened by COVID. And I would say that this is also true for Long COVID.

What we have also seen is that there has not been equal access to medical care for various ethnic groups and socioeconomic groups. So one thing we are focusing on, especially my colleagues here at Mayo right now, is how do we reach those groups? What are the groups? What are the reasons why it's difficult for such parties to gain care? How do we reach them better and understand the nuances of their treatment and their experience? So it's very much an issue that's close to our hearts right now. I don't have an answer for you exactly why and what the risk is right now, but hopefully we'll know more soon.

From your experience, can you please talk about the role of behavioral therapy as part of treatment for Long COVID?

Okay, I'll go ahead and take that one again, too, as well, since I'm the treatment guy here. Sorry, it's not supposed to be all about me, but I'll go ahead. So behavioral therapy can be helpful for patients coping with their illness. Now, I will admit that a lot of patients, they have a hard time accepting the idea of therapy or treatment for things like anxiety and so forth. And it's easy to see why, right? Because in a way, if someone gets treated for that or gets labeled with those conditions, that everyone maybe just assumes, oh, well, there was no such thing as Long COVID.

This is all just in their head. They're just suffering form anxiety. This is not true, though. What I remind patients is that Long COVID, it's a condition that affects both the mind and the body. Anybody that has an ongoing medical condition, whether it be cancer, diabetes, or Long COVID, can start to feel depressed and anxious about their medical state.

And in order to treat Long COVID, we have to treat both the mind and body together. So techniques like this therapy, again, they can help with coping mechanisms, how to deal with chronic symptoms and so forth. But, again, it's only one part of the picture of the treatment.

Thank you very much. We do have mostly either symptom or treatment questions, but here's a general, more overarching question about Long COVID that I was able to find in the list. Can you talk a little bit about, from your experience in your study, the occurrence of Long COVID in the United States compared to other countries globally? Do you find the sort of information that you've been able to deduce or study in the U. S. representative of Long COVID internationally?

This is John Howard. When you look at studies of Long COVID internationally, certainly you look to the U. K. They have done a number of studies. A recent study from Brazil in healthcare personnel with Long COVID, they all seem to show the same symptomatology.

They also show the same risk factors, female sex, increased age, folks with two or more SARS coronavirus infections. There seems to be a consistency throughout the international literature in terms of both risk factors, symptomatology, and length or duration.

Thank you very much. That is very helpful. Our next question asks, are there any Long COVID symptoms associated with a higher mortality rate or mortality risk?

So this is Dr. Vanichkachorn. I would say right now, no, I have not seen a particular symptom be associated with increased mortality. That being said, though, even though the pandemic seems like it was forever ago, we've only been working with this condition now for three years. So the long term sequelae of Long COVID, sorry to play on words there, we just don't know yet.

Thank you. This is John Howard. I would just echo what Dr. Van said, because, you know, we're at the beginning of this process. There's lots of interesting leads, so to speak, both in terms of risk factors, as well as outcomes, treatments.

You see a number of different treatments. You read various trials about Paxlovid, for instance, in Long COVID, Metformin in Long COVID. You see all of these things. We're just at the beginning of the Long COVID story, I think.

Thank you very much. That is a very good point. And based on the time, we have time for perhaps one last question. And the question asks, in your experience, have you found autoimmune disease or a decreased immune function in a patient to increase the risk of developing Long COVID?

This is John Howard. I would turn to Dr. Van, who has seen more patients in this regard. But certainly, you know, one of the pathophysiological mechanisms that is a theory in terms of the pathophysiology of Long COVID is immune dysregulation persisting after acute COVID-19. So certainly, again, I would emphasize it's an intriguing lead, but I don't think we'll be able to know for sure at this time.

I'll second with that, too, as well. We do think that there is an immunological process that's going on that's causing all of the symptoms of Long COVID, and maybe that's due to parts of the virus still flying around in people's bodies. It remains to be determined. But despite that immunological basis, we have not seen more patients come down with Long COVID who also experience things like rheumatoid arthritis or Sjogren's disease or lupus and things like that. We just haven't seen a clear relationship, nor have we seen a relationship with some of the blood work that's used to test for those conditions.

Thank you very much.

Yeah, this is John Howard. I would just add, you know, to that, you know, that's one of the issues is trying to find a test or a biomarker of immune dysregulation. That's really, again, another lead that we're going to be investigating in the next months or years to provide us more answers here to all these great questions.

Thank you very much. And with that, I want to thank everyone for joining us today with a special thanks to our presenters. Please note that all continuing education for COCA Calls is issued online through the CDC Training and Continuing Education online system at tceols. cdc. gov.

Those who participate in today's live COCA Call and wish to receive continuing education, please complete the online evaluation and post-test before July 17, 2023, with the course code WC4520-061523. The access code is COCA061523. And those who will participate in the on-demand activity and wish to receive continuing education should complete the online evaluation and post-test between July 18, 2023, and July 18, 2025, and use course code WD4520-061523. The access code, again, is COCA061523. Continuing education certificates can be printed immediately upon completing your online evaluation.

A cumulative transcript of all CDC/ATSDR continuing education obtained through the CDC Training and Continuing Education Online System are maintained for each user. Today's COCA Call will be available to view on-demand a few hours after the live COCA Call at emergency. cdc. gov/coca. A transcript and closed caption video will be available on-demand on the COCA Calls webpage next week.

We invite you to join us Tuesday, June 20, at 2 p. m. Eastern for our next COCA Call. The topic will be What Clinicians Need To Know About Zoonotic Influenza. You can visit

emergency.cdc. gov/COCA for more details about this COCA Call and other upcoming COCA Calls. We invite you to subscribe to receive announcements for future COCA Calls by visiting emergency. cdc. gov/COCA /subscribe.asp. You will also receive other COCA products to help keep you informed about emerging and existing public health topics. Again, I want to thank you for joining us for today's COCA Call, and have a great day.