

## **COVID-19's Lingering Tail:** Long COVID's Symptom Burden and Treatment Options

### **Episode 1 – Long COVID Prevention**

*The following transcript has been lightly edited for clarity.*

#### **Guest**

Daniel Griffin, MD, PhD

- Physician-scientist, board certified in internal medicine and infectious disease
- Expertise in global health, tropical medicine, parasitology, virology (including SARS-CoV-2)
- Co-host of 5-star-rated podcasts, *The Week in Parasitism* and *This Week in Virology*
- Co-author of *Parasitic Diseases, 7<sup>th</sup> edition*, distributed to more than 100 countries

#### **Host**

Deborah Martin, DNP, MBA, RN, NE-BC, FACHE

- Director of Learning Innovation, Elite Learning
- Certified nurse executive and fellow of the American College of Healthcare Executives
- More than 25 years of experience in healthcare, including as system director of professional practice and development at a large healthcare system

#### **Reviewer**

Lisa Simani, APRN, MS, ACNP

- Editor, Nurse Regulatory/Compliance Planner for Elite Learning
- 20 years of publishing experience
- Lead author of peer-reviewed articles for print- and web-based nursing continuing education provider companies

#### **Transcript**

(SOUNDBITE OF MUSIC)

DR. DANIEL GRIFFIN, GUEST:

I like to say, long COVID can be prevented. The best way to not get long COVID is to not get COVID.

DR. DEBORAH MARTIN, HOST:

Hello and welcome. I'm Dr. Deborah Martin for Elite Learning. I'd like to tell you the story of a young man named Isaiah. He was infected with COVID-19 in October 2020. More than a year later, Isaiah, age 26, is one of tens of thousands of Americans who grapple with lingering health problems associated with SARS-CoV-2 infection.

Isiah is a so-called long hauler; he struggles with the fatigue, dyspnea, nausea, tachycardia, and brain fog associated with a cluster of post-infection symptoms commonly known as long COVID. A former fit person who was a member of the Air Force and who loved dancing, Isaiah says he now struggles lifting anything over 5 lbs.

In a video for a [Voices of Long COVID](#), an online resource, Isaiah said, "The best way I can describe it ... you have an elephant on your chest, and you have no way to move it, no way to relieve the pressure of it. It's just there, constantly."

The misery that Isaiah and other people with long COVID report is a reason our guest, Dr. Daniel Griffin, highlighted at the top of this episode why prevention measures remain important, even as the number of COVID-19 cases fall across the country. Although much is yet to be learned about long COVID, researchers estimate as much as [30% of people](#) who contract COVID-19 will develop at least one protracted, debilitating health issue following infection. With that many people enduring lasting health issues from the virus, chances are you will see patients with long COVID in your practice. How you effectively respond to their needs starts, Dr. Griffin says, with recognizing that long COVID exists — and so do ways to help alleviate the suffering it causes.

Dr. Griffin is an internationally known physician board certified in internal medicine and infectious disease with expertise in global health, tropical medicine, parasitology, and virology, including SARS-CoV-2. He talked with us about what we've learned about COVID-19 prevention and the recognition, diagnosis, and treatment of long COVID. You can learn more about Dr. Griffin, as well as Voices of Long COVID and other resources, in the show notes for this episode.

(SOUNDBITE OF MUSIC)

GRIFFIN: Very happy to be here and very happy to talk about long COVID. So I will take it away, but, hopefully, we'll have some back and forth. We'll get some questions here, but there's a couple of objectives I jotted down, things I'm hoping people take away from today's show.

MARTIN: Great.

GRIFFIN: One is, what is this PASC? What is this post-acute sequela of SARS-CoV-2? And I want people, at the end of this, to be able to articulate the meaning of this broad, umbrella term.

And, then I also think clinicians, patients, all of us during this pandemic, I would like people to be able to recognize the clinical syndrome of long COVID because, unfortunately, a lot of people are suffering. And one of the first steps in getting help is recognizing the problem.

The other is, what are the diagnostic criteria? How do you pin down this diagnosis if it's being, if it's being considered? Is there a length of time, are there certain symptoms that we think about? And then, what are those features that we can do something about?

Is it in the insomnia? Is it the gastrointestinal, or the migraines, like, what can we do? And we can do things. And I'm going to, hopefully, offer some hope as we go forward. And that hope is going to be discussing and, hopefully, people are going to be remembering and being able to ask about, what are the therapeutic approaches that are currently being used?

What are the current therapies that are actually making a difference because I know a lot of people, this is just so difficult, so frustrating. We've actually had people not only suffering from long COVID, [but] we've actually had people take their lives because it's just so miserable. There's a lack of hope, but I'm hoping to bring some hope here by talking about what those options are because we can do things here. And I'm going to start with a case study.

MARTIN: That sounds great, let's start with that case study.

GRIFFIN: We going to talk about some real people. And that's actually one of the – that's why I like being a clinician. I get to spend time with real people, not just things we make up for textbooks. And so this was a couple that I saw, husband and wife, and they came to see me. And they had started developing symptoms back in April of 2020, the early days here in New York.

They developed, during that time, acute issues; but the problem, the reason they were coming and seeing me, was that the wife was reporting she was developing insomnia. She was having, she said, brain fog. She was feeling tired, headaches, and these were just really persisting after this acute illness she had back there In April.

Now, the husband, who's about 10 years older than his wife, also reporting fatigue. When he would try to be active, he [was] just really exhausted afterwards. Something we'll talk about is post-exertional malaise. And he was actually developing quite a bit of GI distress, heartburn, some loose stools, and they had both heard that vaccination might be beneficial. And they're coming to see me to discuss. Should they go ahead with that?

So I always like when I have these conversations before I even offer up therapy. It's just spending time talking with patients about COVID, trying to understand COVID. Unfortunately, we're all hearing, COVID is probably here to stay. So if you haven't had COVID yet, at some point you may.

So it's important to be thinking about, what can I do before? What can I do should I get exposed? What can I do if it turns out I'm infected? And so we really, early on in the pandemic, actually a number of us, about 30-plus from all around the world, got together, started sharing our clinical experience, looking through the research, and we came up with defined COVID-19 stages.

So I'm going to go through a little bit [of] those stages. And then, we'll talk about what we can do at each one of these stages; but the real focus today is going to be preventing and treating long COVID. So I'm going to talk about three periods and then five phases. So I'll just list them for everyone first. And I think we're going to have some of these slides up in the show notes for our visual learners.

MARTIN: Absolutely, we will have show notes available for our visual learners. I understand you have some great graphics that are going to help explain it; and I think it's, like you said, for visual learners it's going to be great.

GRIFFIN: And I am a visual learner, so if you're driving, pull off to the side of the road; don't look at these while driving. Even if you have one of those special new cars that claims it can drive for itself. But let's start, let's go through this. So if you have this in front of you, great. What are those three periods?

So there's the pre-exposure period. This is when you have yet to be exposed. You're doing all those right things; we're going to talk about what those are. Then there's this potential incubation period. Something happened, you had an exposure; we'll talk about what that is. And then there's that period we call the detectable viral replication period. This is maybe when you test positive, and it all starts.

Now, you move into the five clinical phases. The viral symptom phase, later followed by the early inflammatory phase. This might be when you start having trouble breathing. This might be when you end up in the hospital. People start to get a little bit better, then we actually can have a second phase when we see infections. We call this second infection phase.

Unfortunately, first described in children, we'll talk about this in adults, as well: multisystem inflammatory phase. And then, unfortunately, for far too many people, the tail phase. So let's go through. Let's start off with

the periods. Let's start off with that pre-exposure period. And I like to say, long COVID can be prevented. The best way to not get long COVID is to not get COVID. All right.

MARTIN: Right.

(LAUGHTER)

GRIFFIN: You did well on that.

MARTIN: I was going to say, don't get COVID. And one of the questions, I think you're going to answer but I'm going to ask anyway is, I'm sure you're going to talk about masks. And is there a type of mask that makes a difference with exposure?

GRIFFIN: Perfect. Number one on our list.

MARTIN: Oh, great.

GRIFFIN: How do you protect yourself from COVID? Masks. And there's really two types of masks. There [are] masks that are preventing other people from getting COVID. So a person has COVID, they're coughing, they're sneezing, they're talking, they're singing, they're doing what normal people do. They've got COVID. Those surgical masks, to some degree those cloth masks, there's a certain amount of source control. They're really altruistic. Someone who has COVID is protecting others, but let's say we want to protect ourselves.

We maybe don't trust everyone around us. We want personal protection. That's where we actually talk about the N95s and the KN95s. These are really termed in the medical respirators. You're actually breathing through this material. That's what we have been using for the last two years in these high-exposure settings – really great protection for ourselves.

I think that now, we're starting to hear a little bit more discussion about this. The N95s manufactured here in the U. S. are now much more accessible than they were early on. The KN95s being imported, those are another, I think, very similar, as far as effectiveness, not quite that level of the N95.

Those surgical masks, they do something, but it's really when everyone's wearing them – we're trying to look out for our neighbors. So if you really want to protect yourself, let's say you've got an 80-year-old mom or dad, they've got medical problems, maybe you are an 80 or 90-year-old mother or dad with some medical issues. If you really want to protect yourself, it's those N95s that are going to offer you the best mask for personal protection.

And the other is distancing. I still remember an interview early on and it was a young lady in her 20s and this whole six feet apart, couldn't it just be three feet? Six feet is just so far from my friends.

MARTIN: She said as she was texting, correct?

(LAUGHTER)

GRIFFIN: No, I still remember, like walks with my daughter and her friends when there was, I called it, the teenage drift. The six feet becomes 5, 4, 3, 2, I'm like, ah! So distance makes a difference. Three feet is great, six feet is much better. We talk about 80%, 90%. So distancing works.

And tied with this is being outdoors. So if you've got a couple individuals, they're outdoors, there's separation, there's fresh air. We've clearly learned that outdoors it's much safer than indoors. And we can actually do something about making our indoors a little bit more like the outdoors – better ventilation, opening those windows.

We think, and we've given the numbers on this, the majority of the transmission is occurring in those indoor, poorly ventilated spaces.

MARTIN: And I think it's interesting what impact this might have on the building industry, in construction.

GRIFFIN: Yeah, I'm hoping that this reduces my chance of all the respiratory things.

MARTIN: Exactly.

GRIFFIN: Right? Yeah, we can, hopefully, expect less common colds in the future, less runny noses, less flu, just because we're now getting better ventilation in our schools and our workplaces, hopefully in our homes, as well.

The next is the size of those gatherings. If you've got one, or two, or a couple couples together, once you start getting to larger numbers, every single person you introduce, particularly into one of those indoor, poorly ventilated settings, is one more person who might have the virus, who might put us at risk.

So think about masks, distancing, outdoors safer than indoors, limiting the size of gatherings. We still are encouraging people to wash those hands. You go to a restaurant: that's not just for the staff, that's for you, too. That is not a major player in COVID, but we still encourage it. And then, a couple of our last few things. Testing, people are starting to wake up to testing. Even those rapid antigen tests, those rapid tests, those are really good at picking up people who are potentially infectious.

So you're getting together, you've got a bunch of people, maybe someone there is at higher risk, and you want to increase the safety. Consider those rapid tests. We worry a little that those PCR tests are maybe a little too sensitive. People continue staying positive for weeks and weeks. So when you test someone and they turn positive, was that an infection from Thanksgiving? From Christmas? From the Hanukkah party? Or are they really sick now? And that's one of the challenges. So we have to use those tests, but we want to do it wisely.

Symptom checking is starting to help again. And this is a little bit of a change. Early on we talked about how about half of the spread was occurring in people without symptoms or in that one or two days before symptoms. But now, and we think because of vaccines and maybe people seeing this before, it doesn't take much virus before we start getting symptoms.

So a lot of times, we're seeing symptoms before a person even tests positive, before a person even becomes contagious. I think that will help us, but we have to make sure we do it correctly. You don't necessarily want to test that first day of sniffles. Give it a day, see how you're doing. It's not getting better, then consider a test on that second day.

If there's been exposure, don't let a negative test dissuade you; you[ve] got to do this wisely.

MARTIN: I was going to ask, if you have that negative test, but you have the sniffles, do you assume that you, or do you act as if you would have the virus?

GRIFFIN: So I think that that's an important decision. It's not black and white. If you've been doing all the right stuff and you've been isolating and you have the sniffles and you get a negative test and you've had the sniffles for a couple of days, well, one thing, you're probably not contagious. We have seen some recent data that those rapid tests are over 97% sensitive at picking up acutely infected infectious people.

But it's going to be a high-risk situation. You may say, let's check again tomorrow. Let's get even a little bit higher. I mean, 97% sounds great, but that means you get 30 people, you're going to miss one. So continue to use judgment.

If there's been an exposure, if you have a high suspicion, oh, my gosh, I'm worried about this, definitely go ahead and get that other test. Start making some decisions because those tests are going to miss. No test is 100%.

And vaccines ...

MARTIN: Our friends the vaccines.

GRIFFIN: Our friends the vaccines. I mean, and this is something I think we can say is really encouraging, vaccines have two powers. The traditional power of the vaccine is to prevent us from getting sick, keep us from

ending up dying of a disease, keep us from ending up in hospital. One of the things we've seen about our vaccines is this new vaccine efficacy against infection. Vaccinated people, given the same exposure, are at significantly less risk of getting infected.

People are torn about this. Those of us who are concerned about long COVID, we don't want to get infected at all. Unfortunately, this is a high bar. And it may be a vaccine every four to five months. It may be a routine of getting vaccinated every fall to get that boost in our vaccine efficacy against infection, but we are seeing that superpower with these vaccines.

And we do have some encouraging science and some encouraging experience that people who get COVID after being vaccinated ... or even get vaccinated after getting COVID, those vaccines seem to be reducing the risk, not to zero, but reducing the risk of long COVID. And then when we do see it, it looks like a shorter duration, less severity. But I don't want to overplay. The vaccines are tremendous tools, but we are not confident that we have 100% eliminated long COVID.

MARTIN: That's a good point. So vaccines along with the other variables that we have within our control, of this social distancing, and I say physical distancing as opposed to social distancing, that's my own personal ...

(LAUGHTER)

MARTIN: Because we can be social, virtually. So, yes, the physical distancing, the masking, the testing, all of that and vaccines are what's going to help us turn the corner, or at least not have the long COVID as bad. Is that what I'm hearing you say?

GRIFFIN: I think it will reduce the risk. We break down, we say vaccines can reduce your risk of infection, they can reduce the risk of severe disease and death, and they look like they may also be reducing your risk of long COVID.

MARTIN: That's great.

GRIFFIN: All right, so now, you've entered the incubation period. You've had that exposure. And what is a high-risk exposure? So this, we still say, being within 6 feet for, we say 15 minutes, but in some places it's 10 minutes, in some places they've lowered the threshold – cumulative. You can't walk away for five, come back and just sort of – it's five plus five plus five. It all adds up.

You're not wearing a mask, you're indoors, there's poor ventilation. So think of, what are your high-risk exposures? This would be the classic: I had dinner with my friend. You're sitting across the table, you're indoors, you're talking, you're within that six feet. We talk about it, incubation period. And this is the period of time from when you were exposed to when you may start having symptoms or when you may test positive. And that is really two to 14 days, but the average has changed over time.

We originally, we'll call it the ancestral Wuhan strain, it was about seven days from the time you're exposed to the time you had symptoms. We started seeing, with the different variants, that shortening down to five days. With Delta it was four. We're now seeing with Omicron, it's about two to three days. So a much shorter time from exposure to you becoming sick, to you potentially spreading it to others.

So you could just imagine how that accelerates the spread. So instead of spreading it to three people in a week, you've spread it to three people and nine people and 27 by the end of that one week. So really accelerating the transmission, the spread.

MARTIN: Does that mean the viruses are getting smarter?

[LAUGHTER]

MARTIN: Do viruses get smarter?

GRIFFIN: Viruses become more fit. This is Darwinian. This is survival of the fittest, not necessarily the smartest. So this is if a viral variant has a fitness advantage over another, if it can evade the immune system, if it can get

into more people quicker, pretty soon you're going to see, as we've seen with Omicron, that you've got more Omicron and not too much Delta.

So that fitness is really something we need to think about. And we care for public health. We care for our patients. We care as virologists, what is that mechanism? What is it doing? And we'll get a little into Omicron. But we think Omicron has a few tricks in its bag.

One, it looks like this quicker incubation period. It also looks like immune evasion. So before, we were seeing really good vaccine efficacy against infection. With Omicron, we're not seeing that. Also, we're seeing a lot of reinfection. So a couple tricks that Omicron has.

What do we do during this incubation period? Now, we have shortages at the moment, but for a period of time, and I hope we're going to get back here, we were using monoclonals during this period of time, trying to keep people from going on. And really, really doing quite a good job.

We're in short supply right now, so in most areas we're not using our monoclonals here. We're waiting, unfortunately, until the next phase, which you can guess, is the viral replication phase, so the period of detectable viral replication. And this is going to overlap with the viral symptom phase.

And as I discussed, this has changed a little. With Delta we shortened, with Omicron, maybe it's with vaccines, maybe it's with prior exposure. Instead of there being a day or two of viral replication before symptom onset, a day or two when people were contagious and not knowing it, we're starting to see, in most cases, the symptoms come first and then we can pick up the virus.

And we're also seeing, and I think this is positive, with our vaccinated individuals, that period, that height of viral replication is shortening. It could reach the same peak perhaps, but it's not going to go on quite as long. So we're probably not going to be as contagious, as able to spread it to others, as much as the unvaccinated individuals, should we actually get infected.

And what do we do? What do we do during this period of time? And I want to focus a little, what do we do that might prevent long COVID? One of the things we have been doing is the monoclonals. Monoclonals as treatment. That was the Regeneron cocktail, that was the Eli Lilly cocktail, and now we've got the Sotrovimab by Vir GSK.

We do not know how much those do to prevent long COVID. We certainly know that they have good efficacy for keeping people out of hospital. There is some efficacy at preventing us from dying, but we're not sure. By the time we get those monoclonals in there, has the virus already gotten enough headway to prevent long COVID? The other thing we're starting to do during this time is the oral antivirals. So the molnupiravir, the Paxlovid. Again, Paxlovid by Pfizer, really good data, taking this twice a day and keeping people from progressing to hospitalization, to severe disease to death.

The molnupiravir, twice a day for five days, maybe about a 30% reduction in progression. We don't have the data yet. How much long COVID can we prevent with these medicines? Still really good data on the vaccines, [but] we're not sure with these medicines. We're hopeful, but we're not sure yet.

Are there things we can do that make it worse? Certainly and these are the things to avoid. Occasionally, I see a patient and I don't understand, how did you end up in the hospital? You were vaccinated, you got your booster. Oh, well, I started feeling crummy on day two and this friendly doctor gave me a whole bunch of steroids to take, basically shut down my immune system. I'm like, well, why do we bother to vaccinate you if he's going to shut down your immune system with steroids?

So steroids during that first week when the virus is replicating, that is not helpful. It's actually harmful. About a three- to six-fold increase in your chance of ending up in hospital or dying.

MARTIN: Oh my.

GRIFFIN: So don't take those steroids. Thank that friendly doctor, but don't take those steroids and see someone else next time. Antibiotics, don't do that. This is a virus. The antibiotics are not helpful. You're just going to mess up your stomach. They're not going to help you. They're not going to prevent long COVID.

MARTIN: We've done a lot of work around not using antibiotics for viruses in general, but it's still a medication that patients sometimes ask for because they feel crummy, and they want some kind of relief, and they feel that it's going to come from that. And so doctors just have to say – providers need to say, no.

GRIFFIN: Yeah, I agree with you. You just say no. Remember all those ads, it might have been for something else, but—

(LAUGHTER)

GRIFFIN: They know.

MARTIN: I think we're showing our age.

(LAUGHTER)

GRIFFIN: And for patients, just say no.

MARTIN: Just say no.

GRIFFIN: Yeah, so the monoclonals are reducing our hospitalization rates, reducing your chance of death – we're not sure. And I certainly have a number of patients that I take care of who were not vaccinated, got infected with COVID, got monoclonals, but are still struggling with long COVID. So monoclonal, we're not sure.

And they are – it's operationally challenging. What are you doing, limited supplies, sending people who are sick out to these places for hours and hours to get set up and get bloodwork and get infused? So really making it tough.

MARTIN: What about things like zinc.

GRIFFIN: Yeah, so –

MARTIN: That's something, when you get a cold, a lot of times people want to take over-the-counter zinc to feel better.

GRIFFIN: Yeah, so we've done big studies. We've looked at vitamin D, we've looked at vitamin C, we've looked at zinc. Zinc has not been shown to be helpful and it does increase diarrhea, GI upset, nausea, and vomiting. So we actually recommend against zinc.

MARTIN: Interesting.

GRIFFIN: Yeah, zinc, in low doses, is helpful for some of our diarrheal diseases. We've not seen that it's helpful in COVID.

MARTIN: And it is such a new disease. As you're talking about what's helpful, what's not helpful, how long has long COVID been a diagnosis?

GRIFFIN: I think that's a great question. A lot of us started to recognize it in April of 2020. And, basically, what we were seeing, and myself among them, a lot of the early people that were getting ill were healthcare workers. They were people that we knew. They were physicians. They were nurses. They were medical assistants. They were people who got sick. They were told, oh, it's two weeks, you live or you die. You come out the other side.

Now, it's four weeks later. Now, it's 6 weeks later, we're in April, and our friends and colleagues are saying, you know what? I'm not better. So a lot of us started to first recognize this as early as April 2020.

MARTIN: OK.



GRIFFIN: It did, unfortunately, take a while, I think, for a lot of the public, a lot of the medical profession, to appreciate, to stop being dismissive of these individuals. But, no, this is something that we first started to see as soon as it had been four weeks past acute illness and people were not getting better.

So but, no, we are – this is new. And I should mention why I threw a couple of things in there. We don't know if starting vitamin D after you get sick makes a difference, but there's no reason to be vitamin D-deficient. So don't go into this – take your vitamin D. Most of us do not get enough sun, myself included. So yeah, being vitamin D-deficient is not a good thing. No reason to do that.

MARTIN: Thank you.

(LAUGHTER)

GRIFFIN: Think, but don't wait. Don't wait to get COVID before you start taking it. Just take your vitamin D. And vitamin D in the medicine cabinet does not help, it's got to be taken. If you don't take it, it's not doing anything.

(SOUNDBITE OF MUSIC)

MARTIN: Dr. Griffin's insights have started us on a path to better understanding of long COVID. Please be sure to view the show notes for this episode, which provide a number of helpful graphics and other information.

In our next episode, we continued our conversation with Dr. Griffin and explored ways in which healthcare professionals can provide support and treatment options for patients diagnosed with long COVID. We hope you'll join us.

This is Deborah Martin for Elite Learning.

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