



IMMUNITY SECRETS IN A POST-COVID WORLD



**INTERVIEWS WITH MOBEEN SAYED, M.D.
AND JESSICA DRUMMOND, DCN, CNS, PT**

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INTRODUCTION

This eBook is a compilation of 2 informational interviews with a world-leading medical doctor and practitioner who have worked hands on with thousands of patients, dealing with a range of chronic diseases from autoimmune disease to cancer.

The interviews are from recent events held by DrSummits They were then transcribed and condensed into this eBook to help disseminate this information as widely as possible with the hope of helping as many people as possible improve their health.

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COVID LONG HAUL PATHOLOGY & MANAGEMENT

MOBEEN SAYED, M.D.

Disclaimer: This article is based on the interview and not a word-for-word transcript with Dr. Mobeen Syed. To watch the full interview, [click here](#).

MOBEEN SYED M.D., MS graduated from King Edward Medical University in 1994. After practicing clinical medicine for a few years, he continued his studies in Computer Science with the goal of merging innovative technologies and healthcare. Dr. Mobeen's dedication for teaching began at Horizon Medical Institute, where he and his world-renowned brother Dr. Najeeb, focused on teaching basic sciences to medical students.

Why some patients get long haul COVID

Causes of long COVID remain murky, but researchers continue to discover possible explanations

It's estimated that some 10-30 percent of COVID cases result in long-haul COVID. Even a mild SARS-CoV-2 infection can cause long COVID. The high transmissibility of the Omicron variant means this number could continue to increase.

Research by Dr. Bruce Patterson et. al. shows that chronic COVID-19 symptoms termed post-acute sequelae SARS-CoV-2 infection (PASC) may affect up to 30 percent of all infected individuals.

Dr. Mobeen Syed, CEO of Drbeen Corp, a modern online medical education marketplace, says, "That is a pandemic in itself.

Whether it's brain fog, loss of smell, fatigue, heart palpitations or many other combinations of ailments, the symptoms of long COVID are disruptive and even debilitating. In some cases, they can last for months or more.

With so many patients affected, doctors and researchers are trying to identify the reasons some patients develop long haul COVID and determine the best course of treatment to help them.

What causes long COVID

Researchers are still studying what causes some COVID patients to recover while others suffer from long haul COVID. However, there are some theories about the cause of long COVID.

Following are some theories why some patients suffer from long COVID:

- Viral “hit and run” that leads to immune dysregulation
- S1 protein segments in monocytes
- Blood cell morphology change
- Auto-antibodies to ACE2
- Blood supply interruption to the vestibulo cochlear system
- RNA-less virion persistence in other tissue
- Mast cell activation syndrome (MCAS)
- Macrophage activation syndrome (MAS)

The “hit and run” theory for long COVID

Dr. Syed describes the first hypothesis for the cause of long COVID in some patients based on a theory in immunology of a virus “hit-and-run” mechanism. This theory proposes that a virus can trigger a chronic disease, resulting in lasting immune abnormalities that cause some pathology. Even once the virus is wiped out by the immune system response, the immune system itself remains dysregulated. As this continues, it becomes the basis for a chronic disease.

“I think the hit and run theory is very much possible with COVID,” says Dr. Syed.

S1 protein segments in monocytes theory for long

The second possibility is that the spike protein piece remains in the monocyte. Monocytes are a type of white blood cell (leukocytes) that reside in the blood and tissues to find and destroy germs. The monocytes carry pieces of spike protein for a long period of time.

Here’s how the spike protein works in normal immune function:

1. On the SARS-CoV-2 virus, the spike protein is divided for its functional pieces. It has a receptor binding domain (RBD). This is where it binds to ACE2.
2. The remaining part of the spike protein is made up of two parts, an S1 unit and an S2 unit. When the virus docks with the ACE2, the surface protein cleaves a part of the S1 from S2, which causes the spike protein to become separated.
3. S1 remains stuck to the ACE2. It gets recycled or downregulated and brought into the cell for digestion. The S1 part is sitting in the monocyte.
4. The S2 portion acts as a fusion protein, connecting with the cell membrane. Then, it allows the virus to fuse and send the RNA in.

This is the normal immune function. However, for some people with long COVID, the S1 part ends up in monocytes for months. One study found persistence of SARS CoV-2 S1 protein in monocytes in patients for up to 15 months post-acute infection compared to healthy controls.

Having this antigen inside the monocyte causes the cells to become dysregulated. It continues to be triggered and make cytokines, which causes continuous inflammation.

Monocytes normally have a short lifespan. This study discusses the possibility that the continuous irritation of the monocyte keeps it from becoming cleared out. Or as one monocyte is eaten up by another, in some cases, perhaps the spike protein just transfers from cell to cell.

Blood cell morphology change theory for long COVID

Another theory of what causes long COVID is a blood cell morphology change. This is where the shape of blood cells change, especially the red blood cells (RBC). Researchers in this study were able to observe that COVID-19 infection causes significant changes in the size and stiffness of red and white blood cells, sometimes lasting several months.

Findings show there is a change in the membrane lipids, which makes the cell a little more rigid. There may be microtubular changes as well. The exact pathology is still not clear, but researchers observed the shape changes.

The end result is that the cells become a little more rigid, and their shapes become dysmorphic. This makes it harder for blood cells to move around in the blood vessels, instead getting stuck and causing issues. Dysmorphic cells have a propensity toward clotting as well.

These findings may help to explain why some patients suffer from long haul COVID symptoms caused by inflammation, long after first contracting the virus.

The researchers found that the red blood cells and white blood cells can lose their morphological structure during COVID, becoming a little rigid. When this happens, red blood cells can get stuck in various blood vessels, causing clotting and blood flow disruptions.

Dr. Syed explains two simultaneous problems for the blood vessels that is a possible mechanism for what is happening in long COVID:

1. Inside the blood vessels, there are issues with the clotting because the blood cell shape changes.
2. Outside of the blood vessel, there are monocytes that are dysregulated.

“The blood vessel is attacked from both sides, it’s inflamed, the blood flow is disrupted and clotting is occurring,” says Dr. Syed.

Auto-antibodies to ACE2 theory for what causes long COVID

The auto-antibodies to ACE2 is another mechanism that may be leading to long COVID. ACE2 is angiotensin converting enzyme-2, which has been identified as the receptor for the SARS-CoV-2 viral entry.

According to this theory, the body produces anti-idiotypic antibodies as it tries to return to homeostasis. Anti-idiotypic antibodies bind to the variable region of another antibody, working against it. This is because this antibody’s binding region looks like the spike protein’s binding region. When it starts binding to the ACE2 receptor, this causes dysregulation.

This is how the homeostatic mechanism normally works:

1. A pathogen enters the body
2. The body produces antibodies to the pathogen
3. The body produces auto-antibodies to the antibodies
4. The pathogen leaves
5. The antibodies to the pathogen leave
6. The auto antibodies leave.

That is the normal sequence. But in some people, the sequence fails, and the auto-antibodies remain, binding to ACE2 and causing dysregulation.

Researchers in this study, Development of ACE2 autoantibodies after SARS-CoV-2 infection, found an abundance of Ang II, which causes a proinflammatory state that triggers symptoms of PASC, or long COVID.

Researchers found that 93 percent of hospitalized patients had these auto-antibodies, and 40 percent of outpatients had them. Most of them got cleared out within a couple of months, but for some people, these auto-antibodies persisted.

Some percentage of people cannot eliminate those anti-antibodies, or anti-idiotypic antibodies. They instead continue to attack the body because they look like the original antigen.

Dr. Syed says, "ACE2 has a hugely important function in our body to manage inflammation. As soon as we disrupt ACE2, we put the body in a chronic inflammatory state. And that is the underlying problem with chronic diseases."

RNA-less virion persistence in other tissue theory for long COVID

There are studies like this one that indicate that debris of the virus can continue to stick in the gastrointestinal tract cells for up to 59 days after the virus symptoms have subsided, says Dr. Syed.

Broken RNA pieces inside the cells help build the immune system's strength against future exposure by affinity maturation. This is a process where the antigen is exposed through follicular dendritic cells to B and T cells, making them more capable of attacking this antigen in the future.

Some studies say that this continuous presence of messenger pieces of RNA are actually disrupting the local immune system, and causing local inflammation, says Dr. Syed. "This creates a lot of GIT-related long COVID symptoms. So far, the studies have not shown viable virus, but they have shown invisible pieces of virus, which may be immune dysregulating."

MCAS theory for long COVID

One possible reason patients experience long COVID is because mast cell activation syndrome (MCAS) could be unmasked by dysregulation of the immune system. Mast cells are allergy cells responsible for immediate allergic reactions.

With long COVID, a patient who actually has allergies and is not aware of it, may suddenly start experiencing MCAS. Some people who already have MCAS prior to contracting COVID may get flare ups post acute infection.

Long COVID symptoms can persist for months

Whatever the cause of long COVID, it's clear that millions of people deal with the aftermath of COVID for weeks, months and even more.

Long COVID can affect whole systems, including any one or combination of the following:

- Gastrointestinal (GI)
- Respiratory
- Musculoskeletal
- Cardiovascular
- Autonomic
- Neurological

Dr. Syed says the course of the disease has hills and valleys where a patient feels better and then they feel worse. "They just keep going through that process. There's persistent low intensity, persistent relapse to high intensity, temporary improvement with intervention and eventually permanent improvement."

Loss of smell in long COVID

One particularly frustrating symptom of long COVID for those who otherwise recover from all other symptoms is anosmia. Anosmia, or loss of smell, was first recognized as an indicator of COVID and now is also known as a common outcome of long COVID.

Anosmia or hyposmia, which is reduced smell, are both common symptoms of long COVID. Researchers have shown that the epithelium of the olfactory bulb and the supporting cells – not the neurological pieces or the olfactory nerve – become infected.

That local inflammation presses on the olfactory neurons and causes them to dysfunction. Plus, because there is an inflammation of the epithelium. If there is damage to the epithelium, that damages the whole system's function.

Like every other symptom of long COVID, anosmia gradually goes away on its own for many people. Others can recover with medical intervention. But for some patients, loss of smell persists for months or more.

Doctors, scientists and patients themselves who suffer from long COVID will continue to seek answers both for what causes long COVID and what cures it.

Dr. Mobeen Syed, "Dr. Been," is CEO of drbeen.com, and host of DrBeen Med Ed, medical lectures on YouTube.



LONG COVID AN INTEGRATIVE RECOVERY STRATEGY

JESSICA DRUMMOND, DCN, CNS, PT

Disclaimer: This article is based on the interview and not a word-for-word transcript with Jessica Drummond, DCN, CNS, PT. To watch the full interview, [click here](#).

JESSICA DRUMMOND, DCN, CNS, PT Drummond is the CEO of The Integrative Women's Health Institute and author of *Outsmart Endometriosis*. She holds licenses in physical therapy and clinical nutrition and is a board certified health coach. She has 20 years of experience working with women with chronic pelvic pain, facilitates educational programs for women's health professionals in more than 60 countries globally, and leads virtual wellness programs for people with endometriosis. Dr. Drummond lives and works with her husband and daughters between Houston, Texas, and Fairfield, Connecticut.

Long COVID symptoms and recovery

One integrative health expert shares her story of long COVID recovery

Two years into the pandemic, doctors and researchers continue to study why some patients with no other comorbidities recover completely from COVID-19, while others suffer from long COVID. Lingering symptoms can last for weeks or months after contracting COVID-19, leaving many feeling hopeless about long COVID recovery. Experts have coined a new term for it: post-acute sequelae SARS-CoV-2 infection (PASC).

For one fit and health conscious integrative health expert, Jessica Drummond, DCN, CNS, PT, the research became personal when she became a COVID long hauler. Drummond has worked for 25 years as founder of the Integrative Women's Health Institute, helping women with chronic illness.

Her deep knowledge of chronic illness was invaluable in her own journey to long COVID recovery. On Christmas morning of 2020, 46-year-old Drummond was on day nine of what had been a mild COVID-19 infection. That day, though, she says, "Something shifted, and I literally just couldn't breathe. It was as if someone poured hot tar in the lower parts of my lungs, and my resting heart rate just skyrocketed into the 130s and the 150s."

She headed to the hospital for steroids, hydration and IV fluids. Drummond says she was surprised by her body's sudden severe reaction to COVID-19. "I was in a really good place to confront this virus from a host resilience standpoint."

Drummond's COVID-19 story didn't end after that initial two weeks of acute infection. She presented with post-COVID pericarditis that required three months of medical treatment, ibuprofen, colchicine and rest to recover from long COVID. "I was one of those people who didn't get better after two weeks. I went right on into my long haul experience."

What is long COVID or PASC?

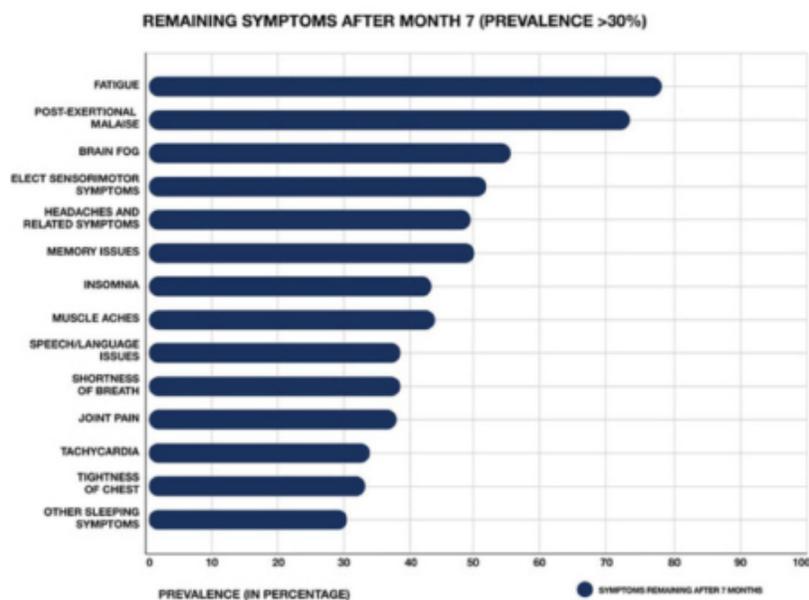
Long COVID is defined as the presence of various symptoms weeks or months after acquiring SARS-CoV-2 infection, irrespective of the viral status. It's continuous or relapsing and remitting in nature. Post-COVID-19 conditions occur in individuals with a history of probable or confirmed SARS-CoV-2 infection. A patient is considered to have a diagnosis of long COVID when symptoms last for at least two months and cannot be explained by an alternative diagnosis.

Common symptoms of long COVID

There are typically two patterns of symptoms in people with long COVID.

One is fatigue, headache and upper respiratory complaints (shortness of breath, sore throat, persistent cough and loss of smell). The other is multi-system complaints, including ongoing fever and gastroenterological symptoms.

- Symptoms of long COVID generally have an impact on everyday functioning.
-
- Drummond experienced many of these symptoms, including:
-
- Air hunger due to difficulty perfusing her cells at the cellular level with oxygen
-
- Constant full-body burning vascular pain
-
- Brain fog and reduced cognitive endurance
-
- Visual changes
-
- Elevated resting heart rate, reduced heart rate variability and dysautonomia
-
- Exercise intolerance



Results obtained via an international web-based survey.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8260991/#B50>

Some patients, like Drummond, have COVID symptoms that never go away following acute infection. Others fully recover, return back to their lives – albeit a little tired or short of breath – and then a few weeks to a few months later present with long COVID symptoms. There can be the persistence of one or more symptoms of acute COVID or the appearance of brand new symptoms. The time lag between the microbiologic recovery – once a PCR test is negative – and clinical long COVID recovery can vary.

Why long COVID happens

It's not clear why long COVID happens to some patients and not others. However, some people are at a higher risk for long COVID. Females ages 35 to 64 with a history of allergies or atopic conditions are at higher risk for long COVID.

In males there's a higher risk of severe illness and death from COVID-19. In women, there's less risk of severe illness and death but a higher risk of specific autoimmune activation.

There also can be serious organ injury, even in very mild presenting cases in individuals at low risk of COVID-19 mortality – younger people who are not obese, have no metabolic syndrome issues, no asthma or other preexisting conditions.

One root cause of long COVID for some patients is that there's actual organ damage from the initial infection, such as heart, kidney, pancreatic, immune system or brain issues. According to a March 2021 study by Andrea Dennis, Malgorzata Wamil and colleagues, "In individuals at low risk of COVID-19 mortality with ongoing symptoms, 70 percent have impairment in one or more organs four months after initial COVID-19 symptoms."

Long COVID exercise intolerance symptoms may be caused by damage to the skeletal muscles

Exercise intolerance from long COVID may be caused by cellular damage in the actual skeletal muscles. These cellular level changes of skeletal muscles post COVID-19 infection resemble heart failure in the cardiac muscle.

While this is not being seen in long COVID cardiac muscles, it is seen in skeletal muscles. This explains why Drummond still struggled with exercise fatigue even after fully recovering from her initial bout of pericarditis. Her lung function tests and oxygenation looked fine all along. The problem was that the oxygen at the level of the capillaries was not perfusing into the cells normally and instead circulating right back up to the heart and lungs.

This triggers hyperventilation, or a breathing pattern disorder, which lowers carbon dioxide levels. This makes it even harder for cellular oxygen uptake and causes lowered filling pressures on the left side of the heart. This can change blood pressure and reduce the ability for people to be active upright without fatiguing.

One of the theories why this happens is that where arterial and venous capillaries are meeting at the cellular level, they're innervated by small nerve fibers. That helps capillaries vasodilate and vasoconstrict without you having to consciously think about it. Research out of South Africa and Germany has shown that essentially 100 percent of long COVID patients they've studied have tiny micro clots that could be gumming up the works and triggering a small fiber neuropathy locally. This makes it harder for those nerves to function correctly.

How to improve exercise tolerance for long COVID recovery

Drummond says nutrition and a cautious return to exercise is key to supporting the peripheral neurons with nerve and mitochondrial nourishing nutrition. “We can learn a lot from things like concussions and also from nutritional treatment to support Epstein-Barr virus or any other mitochondrial dysfunction. We also see this in diseases like fibromyalgia.”

Exercise is not a form of treatment for COVID long haulers. While getting back to exercise is a goal for many patients, forcing it can extend the problem. Drummond says, “As people heal, their window of energy each day expands, and they can start doing more. This is good for these patients in general, but it’s not a treatment to actually fix mitochondrial function. Exercise when they’re hypoxic, essentially at the cellular level is going to actually exacerbate the condition.”

This is because a person with long COVID would be forcing the body to perform certain functions at the cellular level that would be aerobic to do them anaerobically. This is difficult and stressful to the system. Instead, the patient needs to save that anaerobic action for things that are necessary for survival.

A better plan is to practice movement in horizontal positions, such as Pilates moves or dysautonomia exercise protocols that can help train the autonomic nervous system (ANS) to start gently functioning more appropriately in terms of vasodilation, vasoconstriction and heart rate regulation. This is better than strength training or endurance training.

Why rest can improve long COVID symptoms

Research shows it’s not uncommon for a long COVID patient to experience something like postural orthotic hypertension (POTS) or other dysautonomia conditions. This means that healing ANS signaling and toning the vagus nerve is important for long COVID recovery. The abrupt health shift and uncertainty that comes with long COVID can cause the sympathetic nervous system activation of fight, flight, freeze for good reason. That state makes it harder for the body to heal. Focusing on rest, digest and heal will retrain that ANS to spend more time in parasympathetic activation.

The ANS actually triggers sickness symptoms to encourage the human organism to rest. Rest is what the body needs to heal those mitochondria, to calm inflammation and resolve the infection.

Why long COVID causes brain fog

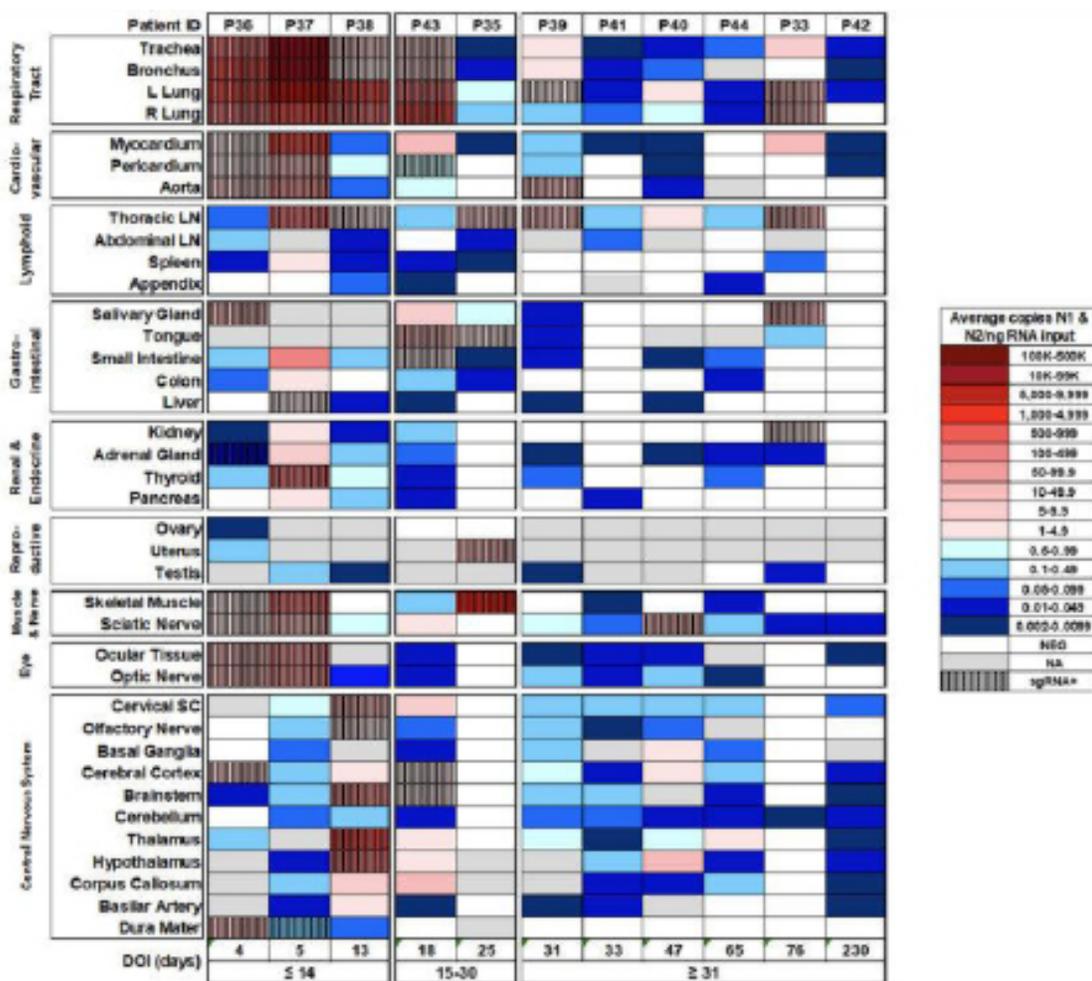
Dysfunctional brainstem signaling may be an important driver of long COVID symptoms. The functions of the vagus nerve align with the most common symptoms of long COVID.

The vagus nerve does some of the following:

- Sensory: Innervates the skin of the external acoustic meatus and the internal surfaces of the laryngopharynx and larynx. Visceral sensation to the heart and abdominal viscera, which explains why some patients with long COVID experience heart rate irregularities, slowed gut motility, SIBO and bloating.

- **Special Sensory:** Provides taste sensation to the epiglottis and root of the tongue, which helps to explain why people with long COVID can't taste or instead can't tolerate certain tastes.
- **Motor:** Provides motor innervation to the majority of the muscles of the pharynx, soft palate and larynx, which explains why dysphagia is common with long COVID.
- **Parasympathetic:** Innervates the smooth muscle of the trachea, bronchi and gastrointestinal tract and regulates heart rhythm. It controls the smooth muscles of the esophagus, gallbladder, pancreas, and small intestine, stimulating peristalsis and gastrointestinal secretions.

Research from Daniel Chertow et al shows, "Our findings, therefore, suggest viremia leading to body-wide dissemination, including across the blood-brain barrier, and viral replication can occur early in COVID-19, even in asymptomatic or mild cases."



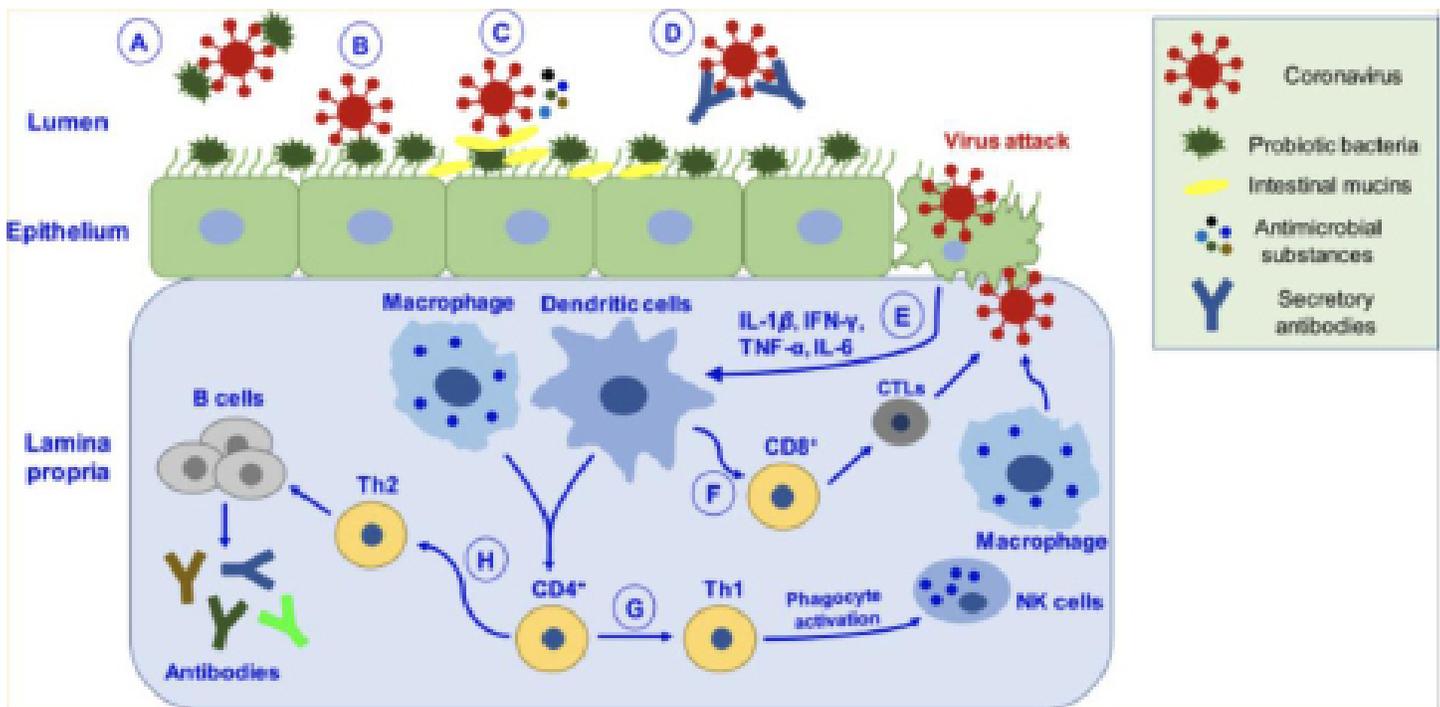
From <https://www.researchsquare.com/article/rs-1139035/v1>

This means that a person may have had an asymptomatic or mild case, but the virus has snuck into the brain and started replicating there, infecting the brain tissue directly. This is why some people experience cognitive issues such as brain fog, reduced cognitive endurance and even dementia-like presentations.

How to treat long COVID

Just like with every chronic illness, key to long COVID recovery is to optimize systems rather than chase down symptoms. Drummond says a good starting point is with the nervous system and vascular system, and then quickly roping in the digestive system concurrently.

The oral microbiome of patients with prolonged symptoms of long COVID show a dysbiotic pattern of increased pathobionts. Those are essentially viruses that can infect the gut bacteria and increase inflammation-inducing and LPS-producing microbiota. Gut persistence can last for months post-infection, which could keep triggering a pathologic immune response.



From <https://pubmed.ncbi.nlm.nih.gov/33592454/>

Improving the gut biome with probiotics could help eliminate COVID from being such a problematic factor. The probiotics species will depend on each person's bacterial irregularities.

Cardiovascular and pulmonary healing for long COVID recovery

Drummond says the most distinctive experience of long COVID for her was a sensation of her entire vascular system feeling like it was on fire. "I could almost imagine all the vessels through my body."

Days after her second mRNA vaccine dose, that pain cleared. After her first vaccine dose, her heart rate stabilized. The links between COVID-19 and vascular pain weren't clear at the time Drummond experienced it in early 2021, but new research is showing that potential therapies that address vascular system dysfunction and its sequelae may have an important role in treating COVID-19 and long COVID.

Drummond's deep knowledge of chronic disease meant she was more empowered to treat her own symptoms by what she calls "optimizing the system."

She says the key is to keep inflammation low, nourish the vascular epithelium and the small fiber neurons, regulate the autonomic nervous system, and keep studying the vagus nerve.

Drummond says, “What’s gumming up the works is still in discussions from a research standpoint, but we can still use our functional nutrition strategies to help clearing and cleaning the blood to keep kind of resetting the nervous system and the immune system to clear any persistent virus or viral proteins of the virus.”

How to treat fatigue from long COVID symptoms

One of the most common symptoms of long COVID is fatigue. Drummond says, “Any time I think of fatigue, I start to think about what’s going on in the mitochondria.”

Numerous studies are looking to understand the role that mitochondria, oxidative stress and antioxidants may play in the understanding of the pathophysiology and treatment of fatigue that comes with long COVID.

Drummond says, “There are lots of medical therapies under consideration, all of which I think are really important to keep in mind. We want to be integrative, and there’s some real value here in some of these medical therapies. But what we can do with our tools in functional medicine is help people use what we know now to start actively healing patients.”

Drummond recommends the following for long COVID recovery:

Exercises that strengthen the autonomic nervous system, such as breath work and Pilates.

A low-carb, plant-based diet

Good quality animal protein

Intermittent fasting

Convalescence time for recovery and pacing the return to work and exercise

As Drummond’s story shows, long COVID is challenging, even traumatic, and it happens to people who were very healthy before their COVID infection, as well as people with comorbidities. There’s absolutely hope for complete recovery from long COVID, though, it might take a little while for many people.

Drummond says, “That hope is really important and vigorously needed right now because people with long COVID after a year or almost two years are becoming a bit hopeless.”



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