

## The COVID-19 Impact: Exploring the Long-Term Effects and Management of COVID-19 Cases Webinar FAQs

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**1) Is there a direct correlation between COVID-19 and cardiovascular issues if the patient was not severely ill and on a ventilator?**

Being on a ventilator due to lung involvement does not necessarily indicate that the ill person will have cardiovascular impairments. COVID-19 infection can cause myocarditis and other cardiovascular dysfunctions, with or without lung issues.

**2) We have heard a lot about the Alpha and Delta variants. But what about the Lambda variant?**

Great question. The Lambda variant has been identified in Peru. And it was initially considered to be a Variant of Interest (VoI) due to its high rate of prevalence in South America, where it seemed to be the dominant variant in Peru. Additionally, it was found to be more transmissible than the Alpha and Gamma variants, with some ability to avoid neutralizing antibodies from vaccinations. Although it is new to the U.S., with the first case in Texas, so far, it is not as prevalent in the U.S. as the Delta variant and has not reached the level of being a Variant of Concern (VoC).

**3) Is there a “U.S. variant?”**

Yes, there are currently two—also assigned the Greek term “Epsilon variants of concern.” They are B.1.427 and B.1.429, which originated in California and New York. They are felt to be about 20% more transmissible than the original Wuhan virus, and more resistant to monoclonal antibody therapies.

**4) Do we have any indication of how long immunity lasts after full vaccination?**

So far, there’s good evidence of lasting immunity from natural infection from COVID-19 for up to 12 months, but this is for the initial COVID-19 infection or the Wuhan version. The variants are showing to be more likely to cause “reinfections” and vaccination effectiveness seems to vary from one variant to another. However, to date, the immunity protection from vaccination seems to be good and effective after being fully vaccinated with two doses. The future variants and their ability to be neutralized by the vaccination are not yet known.

**5) How does the Johnson & Johnson (J&J) vaccine compare in efficacy compared to the Moderna vaccine?**

Vaccine effectiveness results varied from a number of factors, including when the vaccine was tested among the population. Specifically, J&J vaccine testing was done during the time when the South African variant or Beta variant was present versus when the Moderna vaccine was tested. Such variants were not present and the primary coronavirus was mainly the initial viral strain. With this said, both vaccines have been given Emergency Use Authorization (EUA) by the FDA due to their efficacy. Hence, they both should be considered effective.

**6) How long does protection from a COVID-19 vaccine last?**

There's no standard answer to this question since it depends on several factors. What is well accepted is that the immune response from vaccinations is strong and the antibody levels seem to be good for at least nine months, but exactly how long the immunity will last is not yet known. In addition, some variants could escape humoral immunity more easily and can change the overall effectiveness. So, time will tell and more research will need to be done.

**7) Is it possible the infection rates on health care workers followed by UCLA are low because of the access and use of personal protective equipment (PPE), as opposed to the vaccine stopping reinfection?**

That is a great point. The study looked at only health care workers, who are impacted by the fact that PPE use could produce different outcomes. There have been other studies done that are population-based in Qatar looking at 261K people (vaccinated and non-vaccinated). There, the rate of infection within the vaccinated group was 0.82%, which is still very low, albeit higher than the rate noted in the UCLA study, which was 0.02%.

**8) Are individuals who are on immunosuppressant medications like Humira less likely to develop a successful immune response after having two shots of an mRNA vaccine? Are these clients at risk of having a weaker immune response to the vaccines, and will they require a third booster shot?**

Yes, currently people who are considered to be immunocompromised are at a higher risk for having a lower-than-required immune reaction from the vaccine; hence, considerations are being given to give a third booster shot, and other countries are currently considering this approach.

**9) I have some family members (one who is an ICU nurse) that are reluctant to take the vaccine. Their basis is misinformation about the side effects of the vaccine. Given you've likely encountered this, I'd like some high-level but easily understood talking points (evidence-based) that you all have found effective to dispel the risk of vaccination versus the risk of not receiving the vaccine.**

Everyone will have his or her perspective on this. My view is that there have always been risks associated with vaccinations—even with flu vaccines, there are cases of Bell's palsy and Guillain-Barre syndrome. So there should be a presumption for complications and adverse reactions with COVID-19 vaccines as well. The benefit/risk analysis should be done for any medical treatment/interventions. Consequently, for the vaccination decision, one should consider the risks associated with getting a COVID-19 infection and experiencing severe complications, the likelihood of getting infected or infecting others, and even any conveniences and challenges associated with vaccination. The bottom line, however, is that the vaccination is effective in preventing COVID-19 infections and for now even against the variants for those who are fully vaccinated.

**10) Why do you think we are not doing more studies on therapeutics? Hydroxychloroquine, Ivermectin, and budesonide?**

There have been ongoing studies on therapeutics, as noted above, and the bottom line is that there is no "silver bullet" therapeutics for COVID-19. Additionally, their effectiveness has not been proven, or they have only produced mixed results. So, more work must be done and hence, the focus on vaccinations for now.

**11) Can pulmonary fibrosis as a result of COVID-19 lead to lung transplant? Or once the patient is diagnosed and discharged to home, does it progress to needing a lung transplant?**

Pulmonary fibrosis by itself does not require an automatic lung transplant. The need for a lung transplant is based on and dependent upon the extent of pulmonary fibrosis as well as its overall impact on a functional physical level. An additional consideration is the existence of other comorbidities.

- 12) What specific cognitive deficits are showing up on comprehensive neuropsychological testing? In the absence of cerebrovascular accidents (CVAs), are any specific areas of the brain targeted by the virus?**

Many patients with COVID-19 are showing neurological signs and symptoms, with approximately 40% of those who are hospitalized falling into this category. In addition to strokes, some patients experience cognitive changes due to encephalitis as well as oxygen deprivation. The research is continuing to evolve, but because of the decrease in oxygen that occurred for many patients with COVID-19, the reports on issues with short-term memory are fairly consistent, particularly with those who required an ICU stay. Individuals with ICU stays have also been commonly reporting PTSD-type symptoms as well as increased anxiety and depression. Other issues include sustained attention, verbal fluency (rapid production of verbal information), and executive function.

- 13) I have one patient that is starting EMDR therapy for her PTSD. Have you seen this and is it typically successful?**

Eye Movement Desensitization and Reprocessing (EMDR) is a recognized treatment for PTSD and may be helpful in that regard if it is a contributor to the patient's current presentation. I would not expect it to directly impact their cognitive status, although because anxiety does have an impact on how someone perceives and experiences cognitive dysfunction, the patient may improve in regard to their ability to utilize compensatory strategies and cope with cognitive symptoms if their PTSD is successfully addressed.

- 14) I realize this is not related to our webinar; however, have you ever heard of people who are fully vaccinated no longer having severe migraines? My father has had very severe migraines for over 50 years of his life and has not had one since he has been vaccinated. Have you heard of this before?**

No.

- 15) What are they finding with the loss of taste and smell?**

Loss of taste and smell recover over time, with 50% recovering within 30 days, although recovery can take up to six months.

- 16) Does getting the vaccine help lessen the complications?**

Yes.

- 17) Can COVID-19 "cause" diabetes?**

Yes. Other viruses can lead to diabetes, but the coronavirus seems to have some predilection for the pancreatic beta cells, which are involved in producing insulin.

- 18) Have any studies been done yet to evaluate whether fully vaccinated people who get breakthrough COVID infection can get long-hauler symptoms?**

As far as I know, not yet. I am interested in keeping tabs on this topic. There is a study published in NEJM that followed health care workers post-vaccination and monitored for breakthrough infections and the rate was around 3% but about 1/5<sup>th</sup> of the 3% had persistent symptoms > 6 weeks. There is no indication that these individuals had symptoms greater than 3 months or longer but we will need more studies.

**19) How does COVID-19 impact the thyroid?**

The quick answer is yes but it is considered to be transient and would be similar to how thyroid inflammation would present from other conditions like autoimmune conditions and viral infections causing transient hyper-thyroid-like symptoms.

**20) Are there Centers of Excellence (COE) in the U.S. that are on the cutting edge of treatments for long-haulers?**

There are centers across the U.S. that are focusing on treating long-haulers, and they are beginning to come up with some guidelines for approaching and managing these individuals, but it is still a bit early to say that one center is a COE and certainly not clear as to what the criteria should be. Except for some of the items noted in the presentation, criteria might include access to a wide range of specialists and allied health providers, along with connection with the National Institutes of Health (NIH) and peer support groups.

**21) So does getting the vaccine cause the same disease complication or complications due to unknown comorbid complications as getting the virus itself?**

The vaccine should mitigate the rate of infections and hence should lower the rate of complications in general. Certainly, the premise is that vaccination will induce immunity response proactively to neutralize the coronavirus or limit the extent of the infection.

**22) Is there truly any way to separate preexisting psychological conditions from post-acute COVID-19 psychological symptoms? This is always a challenge with work injuries, even without the added complications from COVID-19 exposure.**

(Dr. Choo) I definitely agree with the degree of challenge in sorting through the psychological conditions, but certainly doing a good investigation as to the pre-infection or pre-morbid status of the IW's psychological status would be beneficial.

(Stan Smith) I agree with Dr. Choo and would also emphasize that this specific issue is an excellent example of the efficacy of completing a comprehensive neuro-psych assessment by a licensed clinical psychologist. One component of a comprehensive neuro-psych battery is to investigate and assess a patient's pre-infection/pre-morbid status from a variety of sources, i.e., patient report of prior medical history, family member report, and medical record review. This multi-faceted approach to assessing an injured worker's neuro-psych status required with a comprehensive battery, competently performed, is likely the best option to determine potential neuro effects caused by COVID-19 infection.

Any serious illness or injury will interact with the pre-morbid status of the individual and may exacerbate previous psychological conditions or result in new clinical diagnoses. That being said, it is possible, with a thorough history, to help discern what was interfering with functioning previously and come to some reasonably solid conclusions on the etiology. Specific psychological tests also help with this discernment.

**23) Is there a test to determine if you had COVID-19 without being aware back about a year ago if you have also had the vaccine series in the past few months? (If a patient exhibits many of the**

**CASC items for seemingly no reason, is it possible to determine if they had asymptomatic COVID-19 before being vaccinated?)**

There is no specific test to determine immunity from asymptomatic infection versus vaccination.

**24) Ventilator patients go into what position? Prone?**

Yes. Prone or proning helps with oxygenation.

**25) How likely is it that someone would suffer these types of long-term effects when their initial contact with COVID-19 was very minimal, not requiring any medical care? And if some of these long-term effects can occur, which ones are most likely?**

Great question. This is why the studies published about long-haulers are interesting, in that up to 80% of the people with persistent symptoms are those who only had mild infection symptoms from COVID-19, or even 10% have been asymptomatic. The challenge is that these are based upon surveys and are subjective, which makes it that much more difficult. As noted in the presentation, severe fatigue that is especially activity-associated seems to be the primary issue. Other symptoms include brain fog and palpitations, along with general malaise and body aches. Importantly, sleep disturbances are also a prominent symptom.

**26) Would someone address A-fib with COVID-19 infection and the need for ablations?**

Atrial fibrillation is a common arrhythmia in the population, but COVID-19 can cause arrhythmias from inflammation and myocardial deaths. I would answer this question by saying that the etiology of A-fib needs to be carefully evaluated before assuming COVID-19 etiology for arrhythmias and once validated, then consideration should be given for ablations. Remember that there are great medications that are effective for A-fib and ablations are not necessarily the only and best option. In addition, ablations do not eliminate the need for anticoagulation for preventing strokes.

**27) Would complications with DVT be a part of the medical issues associated with the COVID virus?**

Yes, DVT can result from thrombotic complications associated with COVID-19. This would be due to hyperinflammation response related to cytokine as well as endotheliitis.

**28) Since there are so many unknowns with the long-term effects of COVID, does that mean that the injured worker whose claim was accepted for a positive COVID-19 claim will have any future medical conditions covered under their workers' compensation claim? For instance, if the claimant has a heart attack 10 years after recovering from COVID-19, would that be considered one of the long-term effects of the work injury?**

This is where I would say that workers' compensation can be difficult to predict since some of WC is clinically based, while other facets are legislatively driven. With that said, I would be inclined to say that future medical issues will need to be linked to current conditions to be correlated. Hence, with the given question, if the troponin is normal during the time of acute COVID-19 infection, or not known, it would be unlikely to be correlated with MI or heart attack in the future. This is my opinion, of course, as the CMO of Paradigm.

**29) If a post-COVID-19 employee has returned to work at a regular work schedule for months and is more than one-year post-COVID diagnosis, is pulmonary rehab still indicated?**

If the employee is functioning well at work, pulmonary rehab would not likely be necessary.

- 30) We have not been hearing much about reinfection without vaccinations. Are there any studies regarding the likelihood of reinfection and whether the second or third infections are likely to be less severe, or worse?**

In general, reinfection rates following an acute initial COVID-19 infection are relatively low and uncommon. The presumption is that reinfection rates are more a function of variants where the spike protein mutations allow the evasion of immunity responses from initial infection; hence, the severity of the reinfections will depend upon the variant type.

- 31) Are these symptoms, including those without organ dysfunction seen in post-COVID-19 patients in other countries—U.K., Israel, etc.?**

Yes. Studies are being published around the world that indicates persistent symptoms that are long-lasting—over six months and longer. These are noted in Europe as well as Asia, but I am not aware of any comparisons between the U.S. and other countries.

- 32) When a health care worker contracts COVID-19 while caring for a patient with COVID-19 while wearing a mask, shield, and gloves, what is your take on causation as it relates to that exposure?**

This is a very complex question, and most likely will depend upon many factors, including compliance with PPE, duration/type of exposure to infected patients, exposure outside of the hospital/health care setting, etc. Just because a health care worker got COVID-19 does not and should not automatically indicate exposure to the threshold of viral load at work.

- 33) How are you measuring the cost savings of care?**

The PAC network determines savings for the cost of care purposes as follows:

- First, we validate the declared claim's jurisdiction for the injured worker's compensable claim.
- Next, we verify the precise health care reimbursement formula defined by that jurisdiction's workers' compensation fee schedule that applies to the specific PAC providers utilized.
- Next, we apply that reimbursement methodology to each PAC provider bill and render the maximum allowed charges eligible for payment per fee schedule for each provider bill.
- Next, we calculate the provider reimbursement determined using Paradigm PAC network's proprietary reimbursement agreement. Finally, subtracting "iv from iii," we're able to calculate the total cost of care savings generated by Paradigm's PAC network for each bill.

This process is then duplicated for each PAC provider bill incurred during treatment and totaled to generate the total cost of care savings.

- 34) Is there any difference in symptoms, and or care between male and female patients?**

There is a tendency for long-COVID or long-hauler symptoms to be more present in the female gender, according to one of the studies done by the University of California, Davis.

- 35) Is there a list of clinics in the states mentioned?**

The Post-COVID recovery clinics are making themselves known in the media, and there's a running list on the website [surviorcorps.com](http://surviorcorps.com).

- 36) **Are the post-COVID, long-haulers' symptoms, with and without system disruptions, seen in other countries, like the U.K., or Israel?**

Yes. More publications are alluding to the existence of those with persistent symptoms across the world.

- 37) **Per today's webinar, The COVID-19 Impact: Exploring the Long-Term Effects and Management of COVID-19 Cases, the highest number of cases are mild COVID-19 with the largest percentage of long-haulers.**

- i. **What do we look for in medical submitted to determine if a mild COVID-19 case will develop into a long-hauler case?**

As the initial filter, I would suggest that you approach the claims from their first claim filing with those claims with continued medical bills/indemnity payments that are active beyond 6-9 months.

- ii. **How much time would be considered reasonable before registering a case as a long-hauler versus a worker who does not wish to return back to work?**

Always difficult to know for sure, but would compare the ongoing existence of medical bills versus simply indemnity payments.

- iii. **What should we be looking at in the submitted medicals to determine if a case is a legitimate long-hauler case?**

Would need to evaluate the medical records and claim detail to determine pre-morbid conditions as well as current symptoms. It may be helpful to do medical canvassing of some of these claims.

- iv. **Today's webinar indicated the medical specialties of pulmonologists, neurologists, cardiologists, endocrinologists treating long-haulers. Is it reasonable for a Family specialty; or a general practitioner; or an internist?**

In general, the above types of physicians are also able to lead the management of the long-COVID patient as long as they approach the management from a holistic or bio-psychosocial perspective and they feel comfortable. The important element is that there are specialists available to address any relevant, specific symptoms to ensure comprehensive evaluation—for example, cardiologists for assessing postural hypotension or pulmonologists for assessing pulmonary function tests (PFTs) and lung status, etc.

- v. **To be treating a long-hauler and providing periods of disability, the patient not being able to work in his/her position of employment?**

We need to be working closely with the treating physician to help facilitate recovery, regardless of specialty. So family practitioners, general practitioners, and internal medicine physicians are fine as long as they are comfortable with rehabilitation approaches.

- vi. **Or should it be the specialist providing the periods of disability, treatment plan(s), and prognosis?**

It depends upon the primary symptom driving disability.

- vii. **On average, what would be the medical costs of a long-hauler (one year) with "outpatient" services?**

At present, there are no published studies seeking to analyze the claims expense for Post-Acute Sequelae COVID (PASC) or “long-hauler” symptom sets.

That would be very difficult to state, given that some patients may only need minimal interventions in one area (such as strength and conditioning with PT), while others who had more serious illness requiring ventilation may need an entire interdisciplinary team to address changes in vocal functioning, monitoring of exertion, anxiety, etc. We do know that most individuals who have been symptomatic this long will need multiple services, including counseling, to comprehensively address their issues and concerns. Once the initial assessments have been completed, estimates of costs would be easier to predict, but still dependent upon the individual’s response.