

# **The Nature of Long COVID and its Solution**

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## **Abstract**

Logical conclusions from observations have been unable to verifiably account for the nature of long COVID or the nature of its solution. In this paper, a verifiable hypothesis emerges from the reality we have illustrated with a superior method of obtaining knowledge which makes logical deductions only to obtain consequences, those predictions which must agree perfectly with observations if indeed our hypotheses are the knowledge we require to solve longstanding problems.

**Keywords:** Immunity; infection; COVID-19; SARS-CoV-2; vaccination

The results of the illustrated reality in the previous investigation<sup>1</sup> lead to a very interesting and important consequence. And with the goal of eliminating difficulties such as those presented by long COVID, we shall deduce this consequence here.

Let illness follow infection with a well-known pathogen such as SARS-CoV-2 but without the clinical manifestations we expect from the disease the pathogen causes.<sup>2,3</sup> Our clinicians must necessarily be tempted to dismiss patients who report this phenomenon<sup>2,3</sup> if they assume that these expected clinical manifestations are necessary for the illness that follows infection with the pathogen to occur since they must necessarily be unable to verifiably explain how illness could occur without such manifestations.

But when we view the phenomenon in the context of the reality so far illustrated,<sup>1</sup> a verifiable hypothesis emerges without the need for logical deductions. The clinical manifestations that follow infection with the pathogen are not manifestations of the disease it causes but an outcome of the consequences of as many diseases as are brought about by pathological mechanisms through the same pathway as the disease the pathogen causes if their causes are present when the conditions that permit immune mechanisms to obstruct this shared pathway disappear, whether one or more.

Since the clinical manifestations we expect in those who are infected with the pathogen require the presence of certain diseases among those that are immunologically linked with the disease the pathogen causes, it follows as a logical consequence of our hypothesis that when the causes of such diseases are absent, such expected manifestations will be absent even upon the disappearance of the conditions that permit immune mechanisms to obstruct the pathway through which the consequences of such diseases are brought about through the same pathway as the

disease the pathogen causes. Yet, the individual suffers from the consequence of the disease caused by the pathogen if it is present or the consequences of other diseases that are immunologically linked with the disease that the pathogen causes but which we will not expect to follow infection as the case has been in long COVID patients.

It also follows that what appears to be the disease that the pathogen causes, such as COVID-19 which appears to be a single disease that SARS-CoV-2 causes, is in reality the outcome of those that are present among the diseases in the immunological spectrum of the disease the pathogen causes upon the disappearance of the conditions that permit immune mechanisms to obstruct the pathway through which the consequences of such diseases are brought about through the same pathway as the disease the pathogen causes. It further follows that instead of a single outcome which should be observed if the clinical manifestations that appear in the infected are those of a single disease that the pathogen causes, what must be observed is a spectrum of outcomes.

And it ultimately follows that the more diverse the diseases that are immunologically linked with the disease the pathogen causes are, the broader such spectrum of outcomes will be so that diseases that are caused by pathogens such as SARS-CoV-2, which are immunologically linked with diseases that are so diverse that the outcome in long COVID is totally different from what clinicians expect it to be, must necessarily be linked with the broadest spectra of outcomes. This consequence has found representation in reality<sup>4,5,6</sup> and the range of clinical abnormalities in the long-term consequences of COVID-19 have been described as unprecedented.<sup>6</sup>

It was recently concluded that additional research is needed to describe the natural history of long COVID and characterize symptom clusters, their pathophysiology and clinical outcomes and ultimately to develop targeted treatments.<sup>5</sup> But in reality, what research must do to solve the entire COVID-19 problem is to enable us to completely understand the conditions that permit immune mechanisms to obstruct the pathway through which pathological mechanisms respond to SARS-CoV-2 and the different causes that are immunologically-linked with it. Only such complete understanding of the conditions that give rise to immunity by means of prior infection and vaccination<sup>7</sup> will enable the development of vaccines and treatments that are capable of decisively putting an end to the deaths and suffering that follow SARS-CoV-2 infection.

Therefore, our topmost research priority now ought to be an illustration of reality which will lead us to a complete understanding of such protective conditions which, when brought about and stabilized, will permit immune mechanisms to obstruct the pathway through which pathological mechanisms respond to SARS-CoV-2 and immunologically-linked causes and prevent the deaths and suffering that follow infection irrespective of what kind of variants and sub variants this coronavirus mutates into.

### **Declaration of Competing Interest**

I declare that there are no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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