

Why is COVID-19 so hard to treat? Growing evidence points to unique infectious profile

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A comprehensive review into what we know about COVID-19 and the way it functions suggests the virus has a unique infectious profile, which explains why it can be so hard to treat and why some people experience so-called "long COVID," struggling with significant health issues months after infection.

There is growing evidence that the [virus](#) infects both the upper and lower respiratory tracts—unlike "low pathogenic" human [coronavirus](#) sub-species, which typically settle in the upper respiratory tract and cause cold-like symptoms, or "high pathogenic" viruses such as those that cause SARS and ARDS, which typically settle in the lower respiratory tract.

Additionally, more frequent multi-organ impacts, [blood clots](#), and an unusual immune-inflammatory response not commonly associated with other similar viruses mean that COVID-19 has evolved a uniquely challenging set of characteristics.

While animal and experimental models imply an overly aggressive immune-inflammation response is a key driver, it seems things work differently in humans: Although inflammation is a factor, it is a unique dysregulation of the immune response that causes our bodies to mismanage the way they fight the virus.

This may explain why some people experience "long COVID" and suffer severe lung damage after infection.

Ignacio Martin-Loeches, Clinical Professor in Trinity College Dublin's School of Medicine, and Consultant in Intensive Care Medicine at St James's Hospital, is a co-author of the review just published in leading medical journal *The Lancet*. He said:

"The emergence of severe acute respiratory syndrome coronavirus two (SARS-CoV-2), which causes COVID-19, has resulted in a health crisis not witnessed since the 1918 Spanish flu pandemic. Tragically, millions around the world have died already.

"Despite international focus on the virus, we are only just beginning to understand its intricacies. Based on growing evidence we propose that

COVID-19 should be perceived as a new entity with a previously unknown infectious profile. It has its own characteristics and distinct pathophysiology and we need to be aware of this when treating people.

"That doesn't mean we should abandon existing best-practice treatments that are based on our knowledge of other human coronaviruses, but an unbiased, gradual assembly of the key COVID-19 puzzle pieces for different patient cohorts—based on sex, age, ethnicity, pre-existing comorbidities—is what is needed to modify the existing treatment guidelines, subsequently providing the most adequate care to COVID-19 patients."

The review article was produced by the European Group on Immunology of Sepsis (EGIS) in which Professor Martin-Loeches is one of the funding members. EGIS is a multidisciplinary group of scientists and doctors with special interest in severe infection in patients admitted to ICU.

More information: Marcin F Osuchowski et al, The COVID-19 puzzle: deciphering pathophysiology and phenotypes of a new disease entity, *The Lancet Respiratory Medicine* (2021). [DOI: 10.1016/S2213-2600\(21\)00218-6](https://doi.org/10.1016/S2213-2600(21)00218-6)

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