

Unvaccinated COVID-19 survivors face higher risk of heart complications, Singapore study finds

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Unvaccinated people who have recovered from COVID-19 are at heightened risk of heart complications almost a year later, a national

study led by Nanyang Technological University, Singapore (NTU Singapore) and affiliated faculty has found.

The study, based on testing and medical claims records of 106,012 people resident in Singapore and diagnosed with COVID-19 between 1 September and 31 November 2021, was carried out during the period of the delta variant predominance. The study found that many (912 patients) who have recovered from COVID-19 have reported lingering after-effects, consistent with the long COVID syndrome. These may include symptoms of fatigue, shortness of breath, problems with memory, and [heart](#) complications like cardiovascular, cerebrovascular and thrombosis.

This COVID-19 positive group was compared with a group of nearly 1.7 million in the community who were not known to be infected with the virus during that time. Both groups were tracked over an average period of 300 days, looking at whether they developed long COVID syndrome and, specifically, heart complications.

The [study](#), published in *Clinical Infectious Diseases* in September, is the first and largest to examine the risk of long COVID-19 in a highly vaccinated, multi-ethnic Southeast Asian population.

The study was carried out by researchers from NTU's Lee Kong Chian School of Medicine (LKC Medicine), Ministry of Health, Singapore, Singapore General Hospital, and National Center for Infectious Diseases, Singapore.

It is supported by the Program for Research in Epidemic Preparedness and Response (PREPARE), a national initiative by the Ministry of Health to support and strengthen Singapore's key essential research capabilities, translational platforms, and expertise to develop tools, methods and products that can be tapped on to detect, respond to, and

contain future infectious disease threats.

Lead author of the study, Assistant Professor Lim Jue Tao, Infectious Disease Modeling at LKCMedicine, said, "We were motivated to conduct our study after hearing of increasing reports of long COVID syndrome. Even though we are now in the post-pandemic period, our findings remain relevant as COVID is here to stay with evolving variants, and the world will continue to need to understand its effects and safeguard ourselves. Our study underscores the need for people to get vaccinated and boosted as a vital means of protection."

Infected but unvaccinated individuals face a 56% higher risk of heart complications post COVID-19

The researchers' statistical analysis of their data found that unvaccinated survivors of COVID-19 face a 56% higher risk of developing new heart complications a year following the infection than uninfected individuals. For example, the study observed that 311 people or 0.297% (vs. test-negative group of 3,071 people or 0.184%), who did not have dysrhythmias, or abnormal heartbeat, prior to infection developed dysrhythmias a year following the infection than uninfected individuals.

Risk refers to the percentage chance of developing a specified heart [complication](#) in the 300 days following testing positive or negative for COVID-19.

In separate analyses comparing boosted, vaccinated, and unvaccinated COVID-19 survivors and the uninfected group, the research team also found that risk was lowered when individuals were vaccinated or boosted. Vaccinated COVID-19 survivors had an 11 percent risk of heart complications versus uninfected individuals, while boosted COVID-19 survivors had the same risk of heart complications when

compared with uninfected individuals. The findings show the importance of vaccination and boosting to attenuate potential complications of long COVID.

Commenting as an independent expert, Associate Professor Alex Cook, Vice Dean (Research), Saw Swee Hock School of Public Health, National University of Singapore, said, "This is an important study that sheds new light on the under-studied issue of long COVID in Singapore. Although the COVID-19 pandemic may be past, COVID-19 as an illness remains with us, and the NTU-led study re-emphasizes the need to stay up to date with your COVID-19 boosters."

The researchers noted that there are limitations to the study. The uninfected group tracked in the analysis includes those who were asymptomatic or did not seek medical care, which may have led to misclassification. Individual health measurements such as blood pressure and body mass index, which are associated with the risk of [heart complications](#), were not considered.

In future research, the team of researchers will be looking at neuropsychiatric and respiratory complications and the effect of long COVID on health care utilization.

More information: Lim Jue Tao et al, Long-term cardiovascular, cerebrovascular and other thrombotic complications in COVID-19 survivors: a retrospective cohort study, *Clinical Infectious Diseases* (2023). [DOI: 10.1093/cid/ciad469/7276646](https://doi.org/10.1093/cid/ciad469/7276646).
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Provided by Nanyang Technological University

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