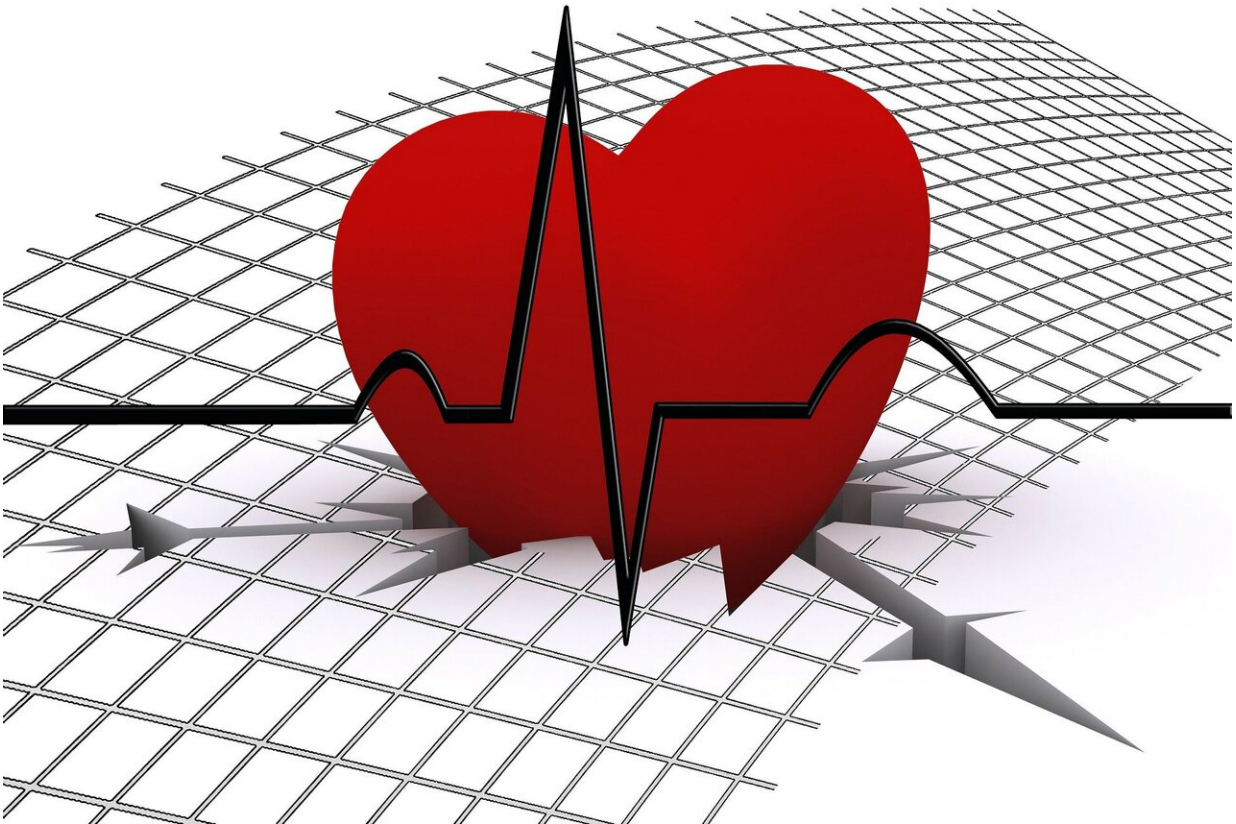


COVID-19 infection linked to heightened risk of poor cardiovascular health and death

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COVID-19 infection is linked to a subsequent heightened risk of poor

cardiovascular health and death, particularly among those whose infection is severe enough to require hospital admission, finds a large UK Biobank study, published online in the journal *Heart*.

The risk, which is independent of known contributory factors, is greatest within the first 30 days of infection, but remains heightened for some time afterwards, the findings indicate.

Emerging evidence suggests that people who have had COVID-19 infection are at heightened risk of subsequent cardiovascular problems. But these studies have tended to be mostly retrospective, to include only a few selected [health outcomes](#), and to have excluded consideration of COVID-19 severity.

To explore these issues further, the researchers drew on 53,613 UK Biobank participants 17,871 of whom were diagnosed with COVID-19 infection between March 2020 and March 2021, and 35,742 of whom weren't.

The COVID-19 cases included more men, less affluence, and poorer cardiometabolic profiles.

The UK Biobank tracks the health and survival of its participants through [medical records](#) and death registration data.

Of the 17,871 COVID-19 cases, 2,701 required hospital admission for their infection; 866 were admitted to hospital for another condition; and 14,304 didn't need hospital treatment.

All participants were tracked until a cardiovascular problem arose, they died, or until the end of March 2021, providing 141 days of monitoring, on average, but ranging from 32 to 395.

The cardiovascular outcomes considered included heart attack; stroke; heart failure; atrial fibrillation ([irregular heartbeat](#)); VTE (blood clot in a vein); pericarditis (inflammation of the heart lining); death from any cause; death from cardiovascular or ischemic heart disease.

Compared with their matched peers who hadn't caught the virus, those who didn't require [hospital admission](#) for COVID-19 infection were nearly 3 times as likely to have a blood clot in a vein (VTE) and more than 10 times as likely to die of any cause.

But those admitted to hospital because of COVID-19 had higher risks of all the outcomes considered irrespective of potentially influential demographic and cardiometabolic factors.

They were more than 27 times as likely to develop VTE, more than 21.5 times as likely to be diagnosed with heart failure, and 17.5 times as likely to have a stroke. And the risk of newly diagnosed atrial fibrillation was nearly 15 times higher, that of pericarditis nearly 14 times higher, and that of a heart attack nearly 10 times as high.

The risks of all the outcomes measured among those admitted for other reasons but who had COVID-19 were also higher than those of people who hadn't caught the virus.

But their risk of death from any cause was lower than those admitted for COVID-19, although their risks of death from cardiovascular or [ischemic heart disease](#) were higher, which likely relates to the original reason for admission rather than COVID-19 itself, suggest the researchers. They also had higher risks of atrial fibrillation and [heart attack](#).

Unsurprisingly, deaths were higher among people with COVID-19 infection: Those admitted with the virus as a primary reason were 118

times as likely to die as those who didn't need hospital treatment, while those for whom COVID-19 was a secondary diagnosis were 64 times as likely to die.

Most cardiovascular disease diagnoses, especially atrial fibrillation, VTE, pericarditis, and [death](#) from any cause occurred within the first 30 days of infection and among those admitted to hospital for COVID-19 as the primary reason.

But heightened risk remained beyond 30 days, particularly for [heart failure](#), [atrial fibrillation](#), VTE, pericarditis and all-cause deaths, although to a lesser extent.

This is an observational study, so no definitive conclusions can be drawn about cause and effect. Nor did the analysis consider other potentially influential factors such as the impact of vaccination, new virus variants, or serial infections.

But the researchers note, "The long-term sequelae of past COVID-19 exposure is emerging as a dominant public health concern. Our findings highlight the increased cardiovascular risk of individuals with past infection, which are likely to be greater in countries with limited access to vaccination and thus greater population exposure to COVID-19."

They add, "Such risks are almost entirely confined to those with disease requiring hospitalization and highest in the early (first 30 days) post-infection period."

In a linked editorial, doctors from the Centre for Cardiovascular Science, University of Edinburgh, UK, consider the therapeutic implications of the findings.

"The prothrombotic effects of COVID-19 do raise the question of

whether antithrombotic strategies are required to prevent this large excess of events," they write. "Perhaps a broader question is whether antithrombotic therapies should be considered in all individuals, including the initiation of antiplatelet or anticoagulant therapies."

"Clearly, duration of therapy is relevant, and these data do question whether 7 days of prophylactic anticoagulation is sufficient for patients with COVID-19," they conclude.

More information: Cardiovascular disease and mortality sequelae of COVID-19 in the UK Biobank, *Heart* (2022). [DOI: 10.1136/heartjnl-2022-321492](https://doi.org/10.1136/heartjnl-2022-321492)

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