

# COVID: Risk of diabetes and heart disease is higher after infection, but maybe only temporarily

July 20 2022, by Emma Rezel-Potts

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Credit: Karolina Grabowska from Pexels

Since the pandemic began, we've learned a great deal about the disease behind it. We now regard COVID-19 as not just a respiratory disease,

but a [multi-system condition](#).

Many studies have reported on complications that can occur as an immediate result of a serious COVID infection, such as [heart failure](#) or the worsening of [existing diabetes](#).

Heart disease and [diabetes](#) fall under a group of common but often preventable conditions called cardiometabolic diseases. While these immediate complications remain a priority, we also know the virus can affect people's health many months after [initial infection](#).

Findings from the databases of the U.S. Department of Veterans Affairs identified [an increased burden](#) of various conditions, including [heart disease](#) and diabetes, for up to six months after COVID infection. Meanwhile, a [U.K. preprint](#) (a study yet to be peer-reviewed) reported cardiovascular complications were elevated for up to 49 weeks after infection.

Overall though, very few studies have considered long-term cardiometabolic outcomes following COVID. So in our [new study](#), we sought to learn more about heart disease and diabetes risk for one year after COVID infection. We found that while the risk was higher soon after COVID, it declined again within the year.

We used a national database of electronic primary care records covering more than 13 million people in the U.K. From these, we identified over 428,000 COVID patients, and selected the same number of control participants (who didn't have a recorded COVID diagnosis), matched by age, sex, and GP clinic.

We then looked at whether the COVID patients developed diabetes and heart disease at higher rates. We analyzed data in the year prior to their COVID infection (from the date of their equivalent participant's

infection for the matched controls) and up to one year afterwards. Accounting for this baseline measurement meant we could identify any changes after COVID more accurately.

We found that heart disease and diabetes were slightly higher among COVID patients in the year before infection, compared with the controls. We included this baseline risk and other key factors that could affect the results, such as BMI and [blood pressure](#), in our analysis.

The risk of being diagnosed with heart disease and diabetes was most elevated in the first four weeks after contracting the virus. We identified 81% more diabetes diagnoses in that period compared with the controls. The risk remained elevated by 27% between four and 12 weeks after infection, and returned to baseline after 23 weeks.

Meanwhile, we saw a six-fold increase in heart disease diagnoses in the four weeks after COVID infection. The biggest risk was for pulmonary embolism (a blood clot in the lungs) which saw an 11-fold increase. Heart disease diagnoses declined from five to 12 weeks after infection and returned to baseline levels from 12 weeks to one year afterwards.

We actually observed that the risk of heart disease fell below baseline levels during the year after COVID infection. This may be because of increased engagement with healthcare related to COVID.

## **How does this work?**

Studies indicate that SARS-CoV-2 might [directly infect pancreatic cells](#) leading to reduced insulin production. When we don't have the right insulin levels to regulate our blood sugar, this can lead to diabetes. COVID infection could also reduce physical activity, another factor we know can affect blood sugar levels.

It's also worth noting that medical consultations related to COVID may have offered extra opportunities to detect previously undiagnosed diabetes. So it might not be that COVID infection brought on diabetes in all cases.

Regarding heart disease risk, similarly, there are probably a variety of factors at play. We know COVID can lead to organ damage, including to the heart. The [immune response](#) to COVID infection, which triggers a process called inflammation, is also important. This process can affect some of our cells which are important [for heart function](#).

The differences we observed in the timing of heart disease and diabetes risk are perhaps unsurprising given what we know about how these conditions typically present. Heart conditions are associated with incidents (such as a heart attack) that may lead to more immediate diagnosis, whereas diabetes can take time to diagnose, possibly contributing to the more delayed decline in risk.

## Some limitations

While [electronic health records](#) have been a powerful tool to allow us to analyze a large group of people over time, a limitation of this type of source is that we can only use the data available within it. For example, we had no information on [alcohol use](#) or [physical activity](#), which could have affected the results.

It's also possible that risk status was incorrectly classified in some instances. For example, control patients may have had COVID but didn't get tested or notify their GP.

Further, we must be aware of the limitations of observational studies. We can't say that COVID necessarily caused this uptick in heart disease and diabetes diagnoses—just that there was a link.

Although we don't understand precisely why we saw the trends we did, the fact that the risks of heart disease and diabetes declined within a year of COVID infection is reassuring.

It seem that patients are at greatest risk during the first four weeks after COVID infection, particularly of [pulmonary embolism](#) and diabetes diagnoses. As the risk of diabetes remains high for at least three months, clinical and public health interventions to reduce [diabetes risk](#), such as advice on [healthy diet](#) and exercise, could be directed towards recovering COVID patients.

And if you're someone who has recently recovered from COVID, it's worth being particularly vigilant about your health. Seek medical attention if you feel something isn't right.

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