

# Patients combatting SARS-CoV-2 may develop myocarditis

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Sometimes, when you're fighting off a virus or bacterial infection, your immune system starts a fight with your heart. When that happens, the heart muscle may become inflamed, a condition called myocarditis.

Myocarditis can affect anyone, even healthy young adults and children. Adenoviruses and enteroviruses, such as Coxsackieviruses (hand, foot and mouth disease), are among the most common culprits. But SARS-CoV-2 (COVID-19) may cause [heart inflammation](#), too.

And, as we are learning, COVID-19-related inflammation can have a long-term impact on heart health.

## Severe myocarditis can lead to heart complications

"Fortunately, most people who have a viral infection and develop some inflammation of the heart never know they have it. And they recover just fine," says Daniel Luger, MD, a preventive cardiology specialist at Rush University Medical

Center.

But if the inflammation is severe, it may lead to a heart rhythm disorder (arrhythmia), heart failure, or even death.

"Arrhythmia is one of the most feared complications of viral myocarditis," Luger says.

The risk of COVID-19-related heart problems, especially arrhythmia, is of such great concern that several colleges are requiring that athletes who had COVID-19 be screened for heart inflammation and cleared before they can begin working out or playing. Back in fall 2020, some athletic conferences, including the Big 10, actually delayed the start of their football season as they weighed the risks.

"The good news is that most people who have a viral infection and develop some inflammation of the heart never know they have it," Luger says. "And they recover just fine."

Screening for myocarditis involves looking for elevated levels of the protein troponin in the blood and checking electrocardiogram (EKG) readings for unusual changes.

Doctors don't yet know how often SARS-CoV-2 causes myocarditis, but heart inflammation has been seen in both seriously ill COVID-19 patients and patients who had no symptoms of the virus, sometimes showing up after the patient recovered.

"There's no really strong data, but we're seeing a lot of people with these elevated biomarkers and changes in their EKGs," Luger says.

## How COVID-19 wreaks havoc on the heart

Viruses cause myocarditis when they infiltrate the [heart muscle](#). In the case of SARS-CoV-2, the body's robust immune response to the virus can

actually injure the heart further, causing additional swelling.

Provided by Rush University Medical Center

"COVID is not just a respiratory virus. It can really do a number on the heart," says cardiologist Dinesh Kalra, MD, director of advanced cardiac imaging at Rush University Medical Center. "COVID-19 causes a lot of inflammation in the heart and [blood vessels](#), and your body's effort to fight that inflammation can cause [collateral damage](#) to the heart."

That overwhelming inflammation causes a lack of oxygen in the blood or produces such a heavy physiological stress that it directly damages the heart, a condition called stress induced cardiomyopathy," Luger adds.

"There's also some thought that the very [small blood vessels](#) deep in the heart muscle may be forming small clots, disrupting how the blood flows, all of which can injure the heart," he says.

### **Treating myocarditis**

When heart inflammation is diagnosed, treatment begins by addressing the cause and then taking measures to protect the heart. Most of the time, that supportive care includes monitoring blood pressure and oxygen levels and preventing the heart from getting over-excited.

"That means vigorous exercise is out of the question for a while, and all activity should begin gradually, increasing intensity and duration month by month," Kalra says. "Then, the patient is checked for signs of inflammation six months later."

Less commonly, the heart is damaged to the point that it isn't functioning as well as it did before the infection. In those cases, the heart condition is treated with whichever treatments are needed, from medication to procedures to repair the damage or more advanced measures.

Because COVID-19 patients frequently have long-lasting effects from the virus, including heart issues, Rush opened a post-COVID care clinic where patients are connected with the specialists for their individual needs.

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