

Team finds myocarditis caused by infection on rise globally

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Credit: Mayo Clinic

Myocarditis, an assortment of heart disorders often caused by infection and inflammation, is known to be difficult to diagnose and treat. But the picture of who is affected is becoming a little clearer. Men may be as much as twice as likely as women to develop severe and possibly fatal reactions. And the risk of sudden cardiovascular death in the young is relatively high. Myocarditis accounts for about 5 percent of sudden

cardiovascular infant deaths and up to 20 percent of sudden cardiovascular death in adolescents. And the chronic disease is responsible for up to 45 percent of heart transplants in the U.S.

This assessment of the global state of myocarditis, published Nov. 29 in the *Journal of the American College of Cardiology*, points to the need for advanced therapies and prevention strategies, says Leslie Cooper Jr., M.D., cardiologist and chair, Cardiovascular Department, on Mayo Clinic's campus in Florida.

Along with Dr. Cooper, who is an internationally recognized expert on myocarditis, researchers from the Netherlands, Switzerland and Finland contributed to the study. Dr. Cooper also authored the myocarditis section for the 2015 Global Burden of Disease Study, which was published Oct. 7 in the *Lancet*, and the American Heart Association scientific statement on specific dilated cardiomyopathies, which was published Nov. 3 in *Circulation*. Cardiomyopathies, which often feature enlarged hearts and [heart failure](#), can result from myocarditis.

Dr. Cooper reported in the *Lancet* global disease study that cases of myocarditis have increased from about 1.5 million annually to 2.2 million cases from 2013 to 2015. Although the exact incidence of myocarditis in the U.S. has not been reported, it is estimated that several thousand patients—most of them 40 or younger—are diagnosed.

In the *Journal of the American College of Cardiology* study, he found that the rate of myocarditis and associated death is much higher in men than in women. This is likely due to testosterone-driven inflammation.

Early diagnosis is key to preventing long-term heart damage from myocarditis, Dr. Cooper says. If chronic disease results, scarring in the heart can promote heart failure. Although standard therapies are used to control symptoms of heart failure, new investigational therapies soon

may enter clinical trials, and new management of the disorder is being discussed, Dr. Cooper says.

"We are on a quest for advances in treating this disorder," he says.

Myocarditis is a difficult disorder to diagnose and treat, Dr. Cooper says. The most common cause of myocarditis is an infection ? usually viral ? that can damage heart muscle chronically or acutely in otherwise healthy people, Dr. Cooper says. Infections that affect the heart differ around the globe. In the U.S., a dozen common pathogens can be responsible. An example is coxsackie virus, which up to 70 percent of U.S. residents have been exposed to by the time they are 30. "But only 1 to 2 percent of people with acute coxsackie virus infection develop cardiac symptoms," Dr. Cooper says.

Myocarditis has other causes, including autoimmune diseases, environmental toxins, and adverse reactions to medications. The most clinically important symptoms of the disorder are shortness of breath, which can indicate the start of heart failure, and chest pain ? a sign of heart inflammation, he says.

To prevent the disorder from worsening in children, Dr. Cooper suggests that aerobic exercise be limited for several weeks after a suspected coxsackie virus infection, and "if a child or adolescent develops breathing difficulties or chest pain with evidence of myocarditis, my recommendation is to avoid competitive sports for at least three months," Dr. Cooper says.

A cardiac MRI within two weeks of symptom onset is 80 percent effective in diagnosing cardiomyopathy, but diagnosis is difficult at more chronic stages.

Most people (60-70 percent) with acute cardiomyopathy from

[myocarditis](#) get better. About 10-15 percent develops irreversible chronic disease due to scars in the heart created by the infection, Dr. Cooper says. These patients are treated with standard heart failure therapies, but 20 percent die during the decade following infection due to heart failure.

"I see patients everyday with this disorder," Dr. Cooper says. "We are on the cusp of trying more tailored treatment, and it can't come soon enough."

Provided by Mayo Clinic

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