

Statin use associated with increased survival in severe COVID-19

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People who took statins to lower cholesterol were approximately 50% less likely to die if hospitalized for COVID-19, a study by physicians at Columbia University Vagelos College of Physicians and Surgeons and NewYork-Presbyterian has found.

"Our study is one of the larger studies confirming this hypothesis and the data lay the groundwork for future randomized [clinical trials](#) that are needed to confirm the benefit of statins in COVID-19," says Aakriti Gupta, MD, a cardiologist at NewYork-Presbyterian/Columbia University Irving Medical Center and one of the co-lead authors of the study.

"If their beneficial effect bears out in randomized clinical trials, statins could potentially prove to be a low-cost and effective therapeutic strategy for COVID-19," adds co-lead author Mahesh V. Madhavan, MD, also a cardiologist at NewYork-Presbyterian/Columbia University Irving Medical Center.

Why Look at Statins?

Gupta, Madhavan, and the study's leadership

group are cardiologists who cared for hospitalized COVID-19 patients in the spring and summer of 2020 when the first wave of the pandemic swept through New York City.

"We observed that patients who got very sick and required hospitalization had high rates of hyperinflammation and clotting," says Elaine Wan, MD, the Esther Aboodi Assistant Professor of Medicine in Cardiology and Cardiac Electrophysiology and a cardiac electrophysiologist at NewYork-Presbyterian/Columbia University Irving Medical Center, one of the study's senior authors.

"As cardiologists, statins naturally came to mind," Gupta says. "In addition to their well-known cholesterol-lowering effect, statins are known for their anti-inflammatory, anticoagulant and immunomodulatory properties."

Study Analyzed Data from Electronic Health Records

Based on their observations, the authors looked at outcomes for 2,626 patients with COVID-19 who were admitted to a quaternary academic medical center in Manhattan during the first 18 weeks of the pandemic.

The researchers compared 648 patients who regularly used statins before developing COVID-19 to 648 patients who did not use statins. Patients in each group were matched so that there were no significant differences in demographics, comorbidities, or use of other medications at home.

50% Fewer Deaths among Statin Users

Among the [statin](#) users, 96 (14.8%) died in the hospital within 30 days of admission compared with 172 (26.5%) of patients who did not use statins.

When other differences among the patients were

factored in, the researchers found that statin use was significantly associated with a 50% reduction in in-hospital mortality (within 30 days). Patients on statins also tended to have lower levels of C-reactive protein, a marker of inflammation.

Statin use was not associated with a statistically significant decrease in the use of invasive mechanical ventilation (18.6% in statin users vs. 21.9%), days on a ventilator (13.5 vs 12.8), or length of hospital stay (7 vs 7).

Comparison with Other Studies

Other studies and meta-analyses from China have also suggested a survival benefit from statins among COVID-19 patients. However, these results may not apply to patients in Western countries who generally have more cardiovascular disease.

The current study is one of the larger studies confirming the association. Smaller retrospective studies out of North America and Europe have found similar results.

Randomized Clinical Trials Needed

Although the study compared closely matched participants and adjusted for other variables, as a retrospective analysis, unknown factors could explain the results.

"Only randomized controlled clinical trials can evaluate the benefits of statins in COVID-19 patients," says senior author Sahil A. Parikh, MD, associate professor of medicine and a cardiologist at NewYork-Presbyterian/Columbia University Irving Medical Center.

Several randomized trials are underway, including studies to determine if statins can prevent hospitalization in outpatients, and lower the risk of death when given to hospitalized patients.

One of the study's authors, Behnood Bikdeli, MD, a former cardiology fellow at Columbia now a fellow in vascular medicine at Brigham and Women's Hospital, is leading a randomized clinical trial looking at the impact of statins in hospitalized ICU patients in Iran.

More information: Aakriti Gupta et al, Association between antecedent statin use and decreased mortality in hospitalized patients with COVID-19, *Nature Communications* (2021). [DOI: 10.1038/s41467-021-21553-1](https://doi.org/10.1038/s41467-021-21553-1)

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