

Common medication used to reduce cholesterol levels may reduce COVID-19 severity

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In a new study from University of California San Diego School of Medicine, researchers have confirmed that patients taking statin

medications had a 41 percent lower risk of in-hospital death from COVID-19. The findings were published July 15, 2021 in *PLOS ONE* and expand upon prior research conducted at UC San Diego Health in 2020.

Statins are commonly used to reduce blood cholesterol levels by blocking liver enzymes responsible for making cholesterol. They are widely prescribed: The Centers for Disease Control estimates that 93 percent of patients who use a cholesterol-lowering drug use a [statin](#).

"When faced with this virus at the beginning of the pandemic, there was a lot of speculation surrounding certain medications that affect the body's ACE2 receptor, including statins, and whether they may influence COVID-19 risk," said Lori Daniels, MD, lead study author, professor and director of the Cardiovascular Intensive Care Unit at UC San Diego Health.

"At the time, we thought that statins may inhibit SARS-CoV-2 infection through their known anti-inflammatory effects and binding capabilities, which could potentially stop progression of the virus."

Using data from the American Heart Association's COVID-19 Cardiovascular Disease Registry, the research team at UC San Diego applied their original findings to a much larger cohort: more than 10,000 hospitalized COVID-19 patients across the United States.

Specifically, researchers analyzed anonymized [medical records](#) of 10,541 patients admitted for COVID-19 over a nine-month period, January through September 2020, at 104 different hospitals.

"From this data, we performed more advanced analyses as we attempted to control for coexisting medical conditions, socioeconomic status and hospital factors," said Daniels. "In doing so, we confirmed our prior

findings that statins are associated with a reduced risk of death from COVID-19 among patients hospitalized for COVID-19."

Daniels said it appears most of the benefit is among patients with good medical reasons to be taking statins, such as a history of cardiovascular disease or high blood pressure. According to the research team, the use of statins or an anti-hypertension medication was associated with a 32 percent [lower risk](#) of death among COVID-19 inpatients with a history of cardiovascular disease or hypertension.

In the study, statistical matching techniques were used to compare outcomes for patients who used statins or an anti-hypertension medication with similar patients who did not.

"We matched each patient to one or more similar patients, using hospital site, month of admission, age, race, ethnicity, gender, and a list of pre-existing conditions, in order to make the two groups as comparable as possible" said Karen Messer, Ph.D., study co-author and professor of biostatistics at UC San Diego School of Medicine.

The ACE2 receptor—the regulatory target of statins—helps control blood pressure. In 2020, it was discovered that SARS-CoV-2 virus primarily uses the same receptor to enter lung cells.

According to researchers, statins and anti-hypertension medications stabilize the underlying diseases for which they are prescribed, making patients more likely to recover from COVID-19.

"As with any observational study, we cannot say for certain that the associations we describe between statin use and reduced severity of COVID-19 infection are definitely due to the statins themselves; however, we can now say with very strong evidence that they may play a role in substantially lowering a patient's risk of death from COVID-19,"

said Daniels. "We hope that our research findings are an incentive for patients to continue with their medication."

The [initial study](#) included 170 anonymized medical records from patients receiving care at UC San Diego Health. Researchers found that statin use prior to hospital admission for COVID-19 resulted in a more than 50 percent reduction in risk of developing severe infection.

The American Heart Association's COVID-19 Cardiovascular Disease Registry contains de-identified health data on patients treated for COVID-19 at more than 140 participating hospitals across the country. As of July 2021, data from more than 49,000 patient records had been contributed into the platform.

More information: Lori B. Daniels et al, Relation of prior statin and anti-hypertensive use to severity of disease among patients hospitalized with COVID-19: Findings from the American Heart Association's COVID-19 Cardiovascular Disease Registry, *PLOS ONE* (2021). [DOI: 10.1371/journal.pone.0254635](https://doi.org/10.1371/journal.pone.0254635)

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