

Research on the impact of ACEIs and ARBs for patients with COVID-19 continues to evolve

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Reducing or eliminating high blood pressure medications if blood pressure becomes hypotensive, falling below 120/70 mm Hg, could

prevent acute kidney injury and death in COVID-19 patients, according to new research to be presented Sept. 10-13, 2020, at the virtual American Heart Association's Hypertension 2020 Scientific Sessions.

Early in the COVID-19 pandemic, the American Heart Association issued a joint statement with the Heart Failure Society of America and the American College of Cardiology to address the use of ACEI and ARB medications among patients at risk for developing COVID-19. Recommendations called for the continuation of ACEI or ARB medications among patients already taking them for indications such as heart failure, [hypertension](#) or [ischemic heart disease](#). Cardiovascular disease patients who are diagnosed with COVID-19 should be fully evaluated before adding or removing any treatments, and any changes to their treatment should be based on the latest scientific evidence and shared-decision making with their physician and health care team.

"While we continue to learn more about the complex impact of COVID-19 every day, we know that people with cardiovascular disease and/or hypertension are at much higher risk for serious complications including death from COVID-19," said Mariell Jessup, M.D., FAHA, chief science and medical officer of the American Heart Association. "We continue to monitor and review the latest research, and we strongly recommend all physicians to consider the individual needs of each patient before making any changes to ACEI or ARB treatment regimens. The latest research findings do suggest, however, that these medications should be discontinued in patients who develop hypotension in order to avoid severe kidney damage."

"Acute kidney injury, also known as acute kidney failure, is a serious COVID-19 complication, and many people with the virus are at risk," according to study author Paolo Manunta, M.D., Ph.D., chair of nephrology at San Raffaele University in Milan, Italy.

To determine which COVID-19 patients are most at risk for kidney damage (#P145), Manunta and colleagues studied 392 COVID-19 patients hospitalized between March 2 and April 25, 2020, treated at one center in Italy (#P145).

They found:

- Nearly 60% had a history of hypertension, making it the most common co-occurring health issue in these patients.
- More than 86% of patients with [high blood pressure](#) were taking anti-hypertensive medications daily.
- Overall, 6.2% of the patients came into the emergency department with acute kidney injury—kidney function and hypertension were the main determinants of whether a person had acute kidney injury.
- Having a history of hypertension increased the risk of acute kidney injury by about five-fold.
- Patients presenting to the emergency department who had severe hypotension, meaning blood pressure lower than 95/50 mm Hg, were nine times more likely to have acute kidney injury; while those who had mild hypotension, blood pressure lower than 120/70 mm Hg but not in the severe range, were four times more likely to have acute kidney injury.
- COVID-19 patients who were more likely to develop acute kidney injury while hospitalized were elderly, hypertensive or had severe respiratory distress.
- However, overall, in-hospital death was twice as likely in patients with mild hypotension when they arrived at the emergency department, regardless of age, other diseases and COVID-19 severity.

"Our study suggests [low blood pressure](#) in a person with a history of high blood pressure is an important and independent signal that someone with

COVID-19 is developing or has [acute kidney injury](#)," Manunta said. "This also suggests that people with high blood pressure should carefully monitor it at home, and their kidney function should be measured when they're first diagnosed with COVID-19. If they or their doctors notice blood pressure levels going down to the hypotensive range, their doctors may consider reducing or stopping their [blood](#) pressure medications to prevent [kidney](#) damage and possibly even death."

Study limitations include its relatively [small sample size](#) in a single-center population and the brevity of the study period.

Pre-existing high blood pressure common in those hospitalized for COVID-19 (#P135)

In another study presented at the meeting, researchers confirmed previous findings that hypertension is the most common co-existing disease among hospitalized COVID-19 patients.

They analyzed 22 studies from eight countries with more than 11,000 total, hospitalized COVID-19 patients. Researchers found 42% of patients had hypertension, followed by diabetes mellitus, which affected 23% of patients.

Hypertension, alone, was associated with a higher likelihood of death. Surprisingly, hypertension was notably more common than the lung disease chronic obstructive pulmonary disease (COPD) among hospitalized COVID-19 patients, according to the researchers.

"More randomized studies are needed to assess the effect of hypertension on mortality in COVID-19 patients," said researchers in the abstract.

Common blood pressure-lowering drugs may pose increased risks for COVID-19 patients (#P144)

In a third study from the meeting, researchers at the University of Miami/JFK Medical Center in Atlantis, Florida, studied hospitalized COVID-19 patients to determine the effects of taking the [blood pressure](#)-lowering prescriptions angiotensin-converting enzyme inhibitors (ACEI) and/or angiotensin receptor blockers (ARBs). They found that patients taking the medications were more likely to die than those who were not taking them.

In the single-center, retrospective study, researchers studied 172 patients hospitalized for COVID-19 between March and May 2020. They found 33% of patients taking one or both of the anti-hypertensive medications (ACEIs, ARBs) died in the hospital, versus 13% of those not taking either of the medications. Admission to the intensive care unit was also higher—at 28% among those on the medications versus 13% of patients not taking ACEI and/or ARB medications.

The higher risk of death among patients taking the antihypertensive medications could be because people prescribed those medications tend to be older and are more likely to have diabetes mellitus and hypertension, researchers noted in the abstract.

More information: Joint Statement: newsroom.heart.org/news/patients-with-covid-19-are-more-likely-to-die-if-they-are-taking-blood-pressure-lowering-drugs

Provided by American Heart Association

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