How do blood pressure medications affect outcomes among patients with COVID-19?

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A new trial led by the Perelman School of Medicine at the University of Pennsylvania will evaluate whether the use of medications to treat high blood pressure affect outcomes among patients who are prescribed the medication and hospitalized with COVID-19. As part of the multi-center, international trial called REPLACE COVID, investigators will

examine whether ACE inhibitors (ACEI) or Angiotensin Receptor Blockers (ARBs)—two classes of medications to treat high blood pressure—help to mitigate complications or lead to more severe symptoms and worse outcomes. The study (NCT04338009) is enrolling patients now.

Through the trial, investigators will randomly assign patients who are hospitalized with COVID-19 to either stop or continue taking their prescribed medication. The team will closely monitor the patients to evaluate the effect of temporarily stopping the therapy. Julio A. Chirinos, MD, Ph.D., an associate professor of Cardiovascular Medicine, and Jordana B. Cohen, MD, MSCE, an assistant professor in the division of Renal-Electrolyte and Hypertension, are the study's co-principal investigators.

"While some data suggests patients with underlying health conditions, like heart disease and high blood pressure, have a higher risk of developing a more severe form of COVID-19, we don't know whether ACE inhibitors or ARBs are beneficial or harmful," Chirinos said. "There's an urgent need to understand how these medications may alter the disease course so we can better guide our treatment for patients who are prescribed these therapies and infected with COVID-19."

High blood pressure, defined as a top reading of at least 130 or a bottom one of 80, affects nearly half of American adults. If left untreated, the condition increases one's risk for severe complications, including heart attack and stroke. More than one-third of people with high blood pressure are prescribed ACEIs or ARBs. Past research has shown that these medications may enhance the virus' ability to bind to cells in the body. However, separate studies have found that the medications may, in fact, result in an improved response in the kidney, lung, and heart to protect against the virus.

For this trial, investigators plan to enroll 152 patients who are hospitalized with a suspected diagnosis of COVID-19 and who already use one of the medications. The team, which also includes Thomas C. Hanff, MD, MPH, a Cardiovascular Medicine fellow at Penn, will perform the study on a pragmatic intent-to-treat basis, meaning clinicians can change the dose or discontinue the medications if there is a compelling clinical reason.

Ultimately, investigators aim to develop a global risk score that ranks patient outcomes based on four factors: time to death, the number of days supported by mechanical ventilation or extracorporeal membrane oxygenation (ECMO), length of time on renal replacement therapy, and a modified sequential organ failure assessment score.

"Many people are changing their usual medical management right now based on limited or incomplete information," Cohen said. "Until we have high quality evidence, we recommend that patients continue to take these medications as prescribed unless they are told to stop them by their medical provider."

Given the study's expedited timeframe, investigators are pursuing a variety of funding mechanisms. The team also established a social fundraising campaign to help support the study.

Provided by Perelman School of Medicine at the University of Pennsylvania