Study finds commonly used blood pressure medications safe for COVID-19 patients

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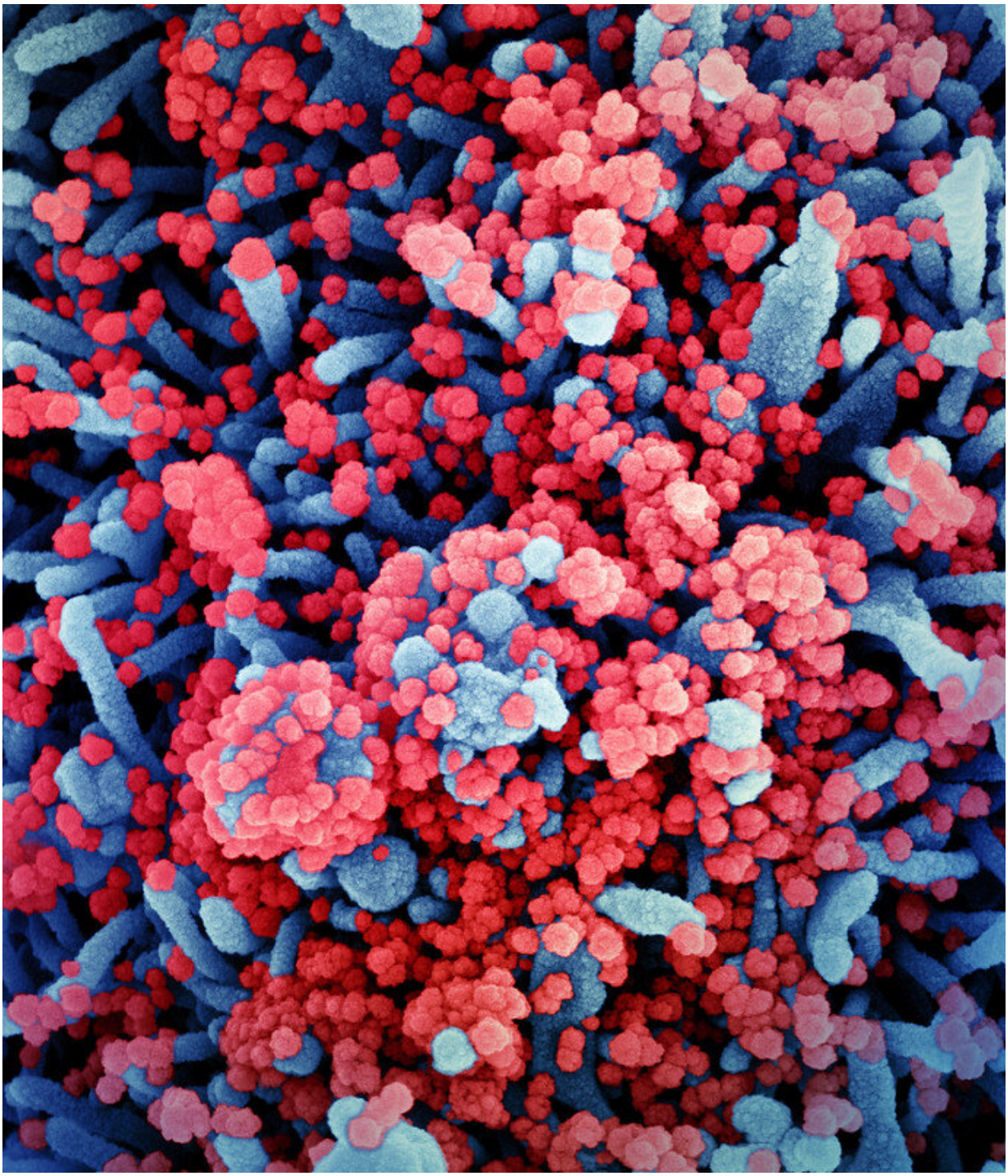

Colorized scanning electron micrograph of a cell (blue) heavily infected with SARS-CoV-2 virus particles (red), isolated from a patient sample. Image captured at the NIAID Integrated Research Facility (IRF) in Fort Detrick, Maryland. Credit: NIAID

Medications to treat high blood pressure did not affect outcomes among patients hospitalized with COVID-19, found an international team led by researchers in the Perelman School of Medicine at the University of Pennsylvania. The study, published today in *The Lancet Respiratory Medicine*, is the first randomized controlled trial to show there is no risk for patients continuing these medications while hospitalized for COVID-19.

As part of the REPLACE COVID trial, investigators examined whether ACE inhibitors (ACEIs) or Angiotensin Receptor Blockers (ARBs)—two classes of medications to treat high blood pressure—could help mitigate complications or lead to more severe symptoms. More than 49 million U.S. adults take medication to treat hypertension, and among those, about 83 percent (41 million) take an ACEI or ARB, according to the Centers for Disease Control and Prevention.

Early during the pandemic, a concern arose regarding the use of ACEIs or ARBs in the setting of COVID-19, since some studies had suggested that these medications could upregulate cellular receptors for the SARS-CoV-2 virus potentially aiding viral replication. However, it was also considered that some effects of these medications could be protective against the virus.

"Observational studies were rapidly done, but randomized trials are important to establish a definitive answer regarding the potential impact of these commonly used blood pressure medications in the setting of COVID-19," said study corresponding and senior author Julio A. Chirinos, MD, Ph.D., an associate professor of Cardiovascular Medicine in the Perelman School of Medicine. "Our trial results importantly show that these medications can be safely continued for patients hospitalized with COVID-19."

ACEIs and ARBs are among the most commonly prescribed medications in the world, and a potential link between those medications and COVID-19 outcomes has large global health implications, the authors say. Several observational studies suggested no association between outpatient ACEI or ARB use and risk of COVID-19 hospitalization, but high-quality randomized trial evidence was lacking, until now.

For the trial, investigators enrolled 152 participants across several countries between March 31 and August 20, 2020, who were hospitalized with COVID-19 and already using one of the medications. The participants were randomly assigned to either stop or continue taking their prescribed medication and closely monitored to evaluate the effect of temporarily stopping the therapy.

Investigators developed an innovative global rank score to classify patient outcomes based on four factors: time to death, length of time supported by mechanical ventilation or extracorporeal membrane oxygenation (ECMO), length of time on renal replacement therapy, and a modified sequential organ failure assessment score. Through analyzing the patient outcome data, the team found discontinuation of ACEIs and ARBs compared with continuation of these medications had no effect on the global rank score.

This evidence supports international society recommendations for continuing ACEI and ARB therapy in patients admitted to the hospital with COVID-19, unless there is a clear, alternate medical issue with ongoing therapy.

"At the start of the pandemic, patients were worried about perceived harm based on limited and incomplete information, and unfortunately, some insisted on stopping their medications. However, stopping these medications unnecessarily can increase the risk for severe complications, including heart attack and stroke," said first author Jordana B. Cohen,

MD, MSCE, an assistant professor in the division of Renal-Electrolyte and Hypertension, and a co-principal investigator with Chirinos. "Now we have high quality evidence to support our recommendation that patients continue to take these medications as prescribed."

Currently, trials are underway to determine if use of these medications is effective for the treatment of COVID-19.

More information: *The Lancet Respiratory Medicine*, DOI: 10.1016/S2213-2600(20)30558-0 , www.thelancet.com/journals/lan … (20)30558-0/fulltext

Provided by Perelman School of Medicine at the University of Pennsylvania

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