

# 1 in 10 COVID-19 patients return to hospital after being sent home from ER

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Roughly 1 in 10 patients diagnosed with COVID-19 needed to return to the hospital within a week of discharge from an emergency department visit, according to data from the first three months of the COVID-19 outbreak in the Philadelphia region—March, April and May 2020. Researchers in the Perelman School of Medicine at the University of Pennsylvania also found that factors like lower pulse oximetry levels and fever were some of the most telling symptoms that resulted in return trips that resulted in admission. This information, published in *Academic Emergency Medicine*, could prove invaluable to clinicians working to fight a disease.

"We hope this study helps emergency clinicians have more informed conversations with patients suspected to have COVID-19," said the study's lead author Austin Kilaru, MD, an Emergency Medicine physician at Penn Medicine. "It can be difficult to make this diagnosis and send patients home without knowing if they will get sick in the coming days. This study gives clinicians a few signposts to know how often and when patients may need to return, and what risk factors to pay attention to."

The study looked at 1,419 patients who went to an emergency department (ED) between March 1 and May 28, 2020, were discharged, and tested positive for COVID-19 in the seven days surrounding that visit. Data showed that 4.7 percent of the patients returned to the hospital and were admitted within just three days for their initial ED visit, and an additional 3.9 percent were hospitalized within a week. In total, that meant that 8.6 percent of patients were coming back to the hospital after their first ED visit due to COVID-19.

"We were surprised with the overall rate that patients return and need admission, which is twice that of other illnesses," Kilaru explained. "The concern is not that emergency physicians are making wrong decisions, but rather that COVID can be unpredictable and turn severe rather quickly."

A population that the study showed was particularly vulnerable were patients over 60 years old. Compared to patients in the 18 to 39 years of age range, those over 60 were more than five times as likely to require hospitalization after being discharged from their initial emergency department visit. Those in the 40 to 59 age range were found to be three times as likely to require hospitalization than the younger group.

When it came to individual symptoms, the study showed that patients of any age with low pulse oximetry readings were about four times as likely to require hospitalization upon return as compared to those with higher readings, while patients with fevers were more than three times as likely as compared to those without.

"If the patient had other factors such as an abnormal chest X-ray, the likelihood of needing to come back to be hospitalized goes up even more," said the study's senior author, M. Kit Delgado, MD, an assistant professor of Emergency Medicine and Epidemiology.

The study collected demographic data for patients, which showed no signs of differences along racial or gender lines.

"This further contributes to the evidence that the known [racial disparities](#) in COVID mortality are not related to differences in care and outcomes among patients once treated in the same hospital system. Rather, the disparities are structural related to the higher rates of infection and access to care in low-income communities, which are disproportionately Black and Hispanic."

With the hope that their findings can better inform doctors on who is most appropriate for home recovery, the researchers called out remote monitoring as a useful tool for looking after COVID-19 patients.

An example of this is Penn Medicine's COVID Watch system, a text-message-based system that sends daily check-ups on known COVID-19 patients recuperating at home to make sure their symptoms aren't worsening. To date, more than 5,500 [patients](#) have been enrolled in the system, which is the subject of a new Patient-Centered Outcomes Research Institute (PCORI) study for which Delgado, Kilaru and the other researchers on this study are also serving as investigators.

"We are eagerly awaiting the result of this study, which focuses specifically on pulse oximetry," Delgado said.

Other authors on the completed hospital readmission study included Kathleen Lee, MD; Christopher K. Snider; Zachary F. Meisel, MD; David A. Asch, MD; and Nandita Mitra, Ph.D.; all of Penn.

**More information:** Austin S. Kilaru et al, Return Hospital Admissions Among 1419 Covid-19 Patients Discharged from Five US Emergency Departments, *Academic Emergency Medicine* (2020). [DOI: 10.1111/acem.14117](https://doi.org/10.1111/acem.14117)

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