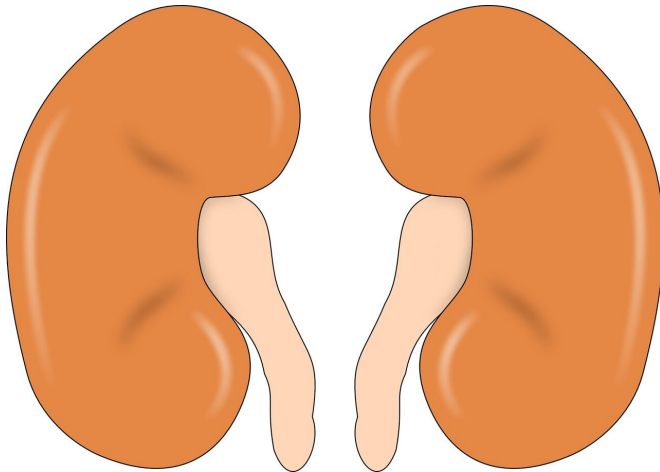


Kidney disease leading risk factor for COVID-related hospitalization

2 December 2020



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An analysis of Geisinger's electronic health records has revealed chronic kidney disease to be the leading risk factor for hospitalization from COVID-19.

A team of Geisinger researchers studied the health records of 12,971 individuals who were tested for COVID-19 within the Geisinger system between March 7 and May 19. Of this group, 1,604 were COVID-positive and 354 required hospitalization. The team analyzed the records for association between specific clinical conditions, including [kidney](#), cardiovascular, respiratory and metabolic conditions, and COVID-19 hospitalization.

Overall, [chronic kidney disease](#) was most strongly associated with hospitalization, and COVID-19 patients with end-stage renal disease were 11 times more likely to be admitted to the hospital than patients without [kidney disease](#).

The results were published in *PLOS ONE*.

"Previous studies have identified a variety of health

conditions associated with an increased risk of COVID-related hospitalization, including diabetes, [heart failure](#), hypertension, and chronic kidney disease. What is significant here is the magnitude of the kidney disease-related risk," said Alex Chang, M.D., Geisinger nephrologist and co-director of Geisinger's Kidney Health Research Institute. "These findings highlight the need to prevent COVID-19-related illness in patients with kidney disease and other high-risk conditions."

How underlying medical conditions increase the risk of COVID-19-related complications is not yet fully clear; however, the study suggests that the physiological stress caused by an excessive inflammatory response to COVID-19 infection could destabilize organs already weakened by chronic [disease](#), or that organ injury from the virus could act as a 'second-hit' to these organs.

"Consistent with this hypothesis, kidney and heart are among the tissues with the highest expression of ACE2, a SARS-CoV-2 receptor," the team wrote.

While the sample size studied was relatively small, Geisinger's resources as an integrated health system allowed for a fairly comprehensive analysis of available data.

"Our team used a novel approach made possible by our extensive [electronic health records](#), unique demographic data and integrated [health](#) system," said Tooraj Mirshahi, Ph.D., associate professor for Geisinger's Department of Molecular and Functional Genomics. "We were able to perform this study despite having a much lower number of COVID-19 cases compared to large hospitals in metropolitan areas."

More information: Matthew T. Oetjens et al, Electronic health record analysis identifies kidney disease as the leading risk factor for hospitalization in confirmed COVID-19 patients, *PLOS ONE* (2020). [DOI: 10.1371/journal.pone.0242182](https://doi.org/10.1371/journal.pone.0242182)

Provided by Geisinger Health System

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