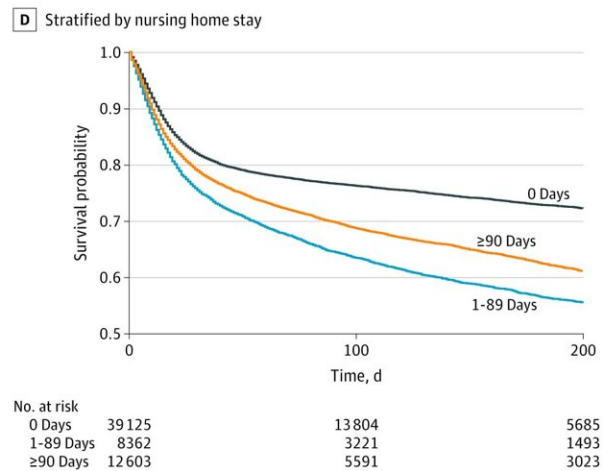
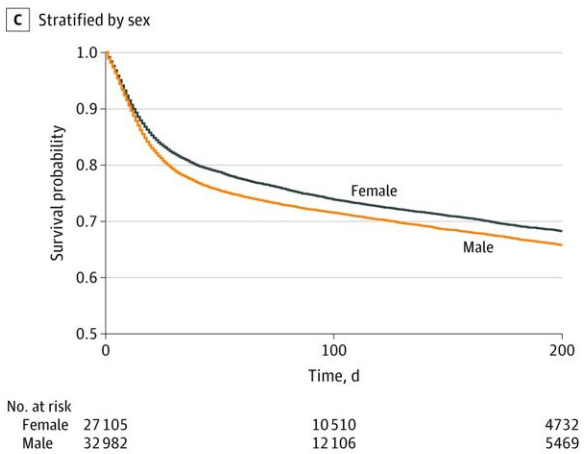
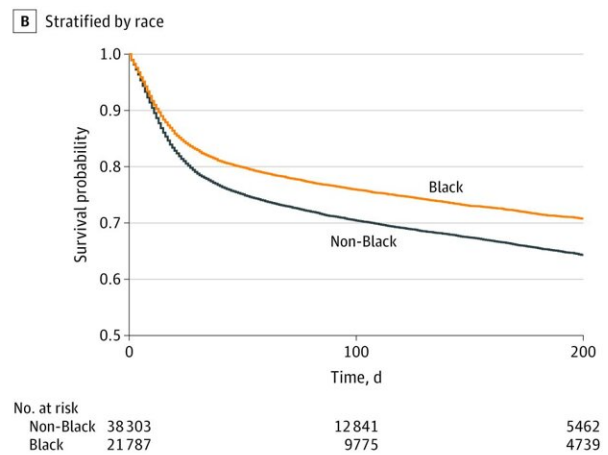
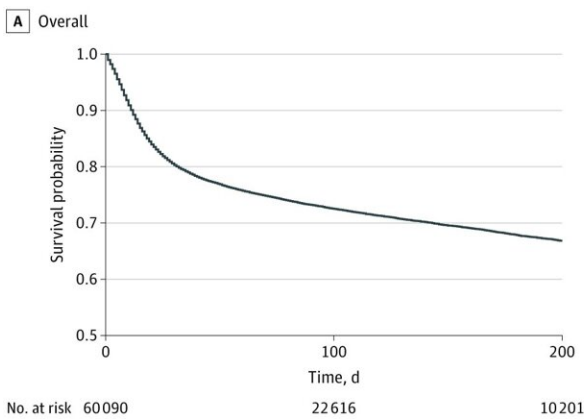


End-stage kidney disease patients show increased risk of infection, mortality from COVID-19

November 24 2021, by Nardy Baeza Bickel



Kaplan-Meier Curves for All-Cause Mortality Among Medicare Dialysis Patients Diagnosed With COVID-19. Time at risk was taken from the date of a patient's first Medicare claim carrying a COVID-19 diagnosis until kidney transplantation, death, or administrative censoring on December 31, 2020.

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Patients undergoing long-term dialysis, especially Black and Hispanic patients and those living in nursing homes, were severely impacted by the COVID-19 pandemic, according to a nationwide study by University of Michigan researchers.

The study, published on *JAMA Network Open*, examined nearly the entire Medicare [dialysis](#) population—almost 500,000 patients—in the United States across the entire year of 2020. It found that these patients were hit hard by a worsened prognosis of COVID-19 in the first year of the pandemic, with an infection rate of 12 percent and a post-infection [mortality](#) rate of 26 percent—compared to a mortality rate of 17 percent for noninfected dialysis patients.

The U-M researchers also found nursing home residence to be a significant risk factor associated both with COVID-19 infection and death. They found a 36 percent COVID-19 infection rate among patients with extended stays in a long-term care or skilled nursing facility. After infection, these patients also had a 12 percent higher mortality rate than those without prior time in a long-term care or skilled nursing facility.

"While regional studies have shown that patients with end-stage kidney disease were at a higher risk of severe COVID-19 infection and death, we were among the first few who had looked at the whole national data," said senior author Yi Li, professor of biostatistics and global public health at U-M's School of Public Health.

"Our COVID-19 outcome analysis among the nationwide dialysis patients could inform policy decisions to mitigate the significant extra burden of COVID-19 adverse events in this population."

Li and colleagues looked at the data to investigate risk factors associated with infections among all patients, then looked at risk factors that affected mortality among all infected patients. As a comparison, they also looked at mortality by race, sex and urban residence in the years prior to the pandemic.

In their analysis, the researchers used several survival regression models to examine associations of a variety of risk factors, including race, ethnicity, age, sex, urban residence, nursing home status, body mass index, years receiving dialysis, type of dialysis treatment, and comorbidities such as cardiac disease, diabetes and cerebrovascular disease, with COVID-19 infection and post-infection mortality.

They found that COVID-19 infection rates were higher among Black (13 percent) and Hispanic patients (16 percent) compared to non-Black (11.5 percent) and non-Hispanic patients (11 percent).

Prior to the pandemic, Black patients receiving dialysis had lower mortality rates than non-Black patients. That trend, however, changed beginning in March 2020 when Black patients' mortality surged, reaching almost the same level as non-Black patients.

"The most striking difference that we saw comparing previous years to 2020 was in spring of 2020, when COVID-19 was more limited to localized hot spots, particularly a few urban areas in the United States," said first author Stephen Salerno, U-M doctoral candidate in biostatistics.

"You can see that, historically, there were very clear parallels in mortality rates between Black vs. non-Black patients. That disappears in March, April and May. We see elevated mortality rates in both groups, consistently, but really, that first wave is really where we see those striking differences."

Another significant result, Salerno said, was that after adjusting for the other demographic and co-morbid conditions, Black patients had a 25 percent higher risk for being infected than non-Black patients, but their post-infection mortality risk was 13 percent less than non-Black patients.

The most prominent differences in COVID-19 rates were observed between patients with prior short (14 percent) and extended nursing home stays (36 percent), compared with patients who did not receive nursing home care in the prior year (10 percent).

"One of the unique appeals of this work was by leveraging the national data, the investigation of both infection events and subsequent mortality events, it gave us the opportunity to possibly infer the disease progression mechanism among this vulnerable population," Li said. "If you see increased deaths from the Black population during the pandemic, is that because they were at a higher risk for infection or because the virus was more deadly among them?"

"I think this study helps address this important question. According to the data, the surge of Black dialysis patients' mortality in the early phase of the pandemic was likely due to that they had a much higher [infection](#) rate, rather than that the virus was more lethal for them."

As the study focused on the experiences of dialysis patients during the first year of the pandemic, the researchers cautioned that additional follow-up studies might be needed to evaluate how the pandemic's effects evolve over time.

More information: Stephen Salerno et al, COVID-19 Risk Factors and Mortality Outcomes Among Medicare Patients Receiving Long-term Dialysis, *JAMA Network Open* (2021). [DOI: 10.1001/jamanetworkopen.2021.35379](#)

Provided by University of Michigan

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