The early months of the COVID-19 pandemic in the United States appear to have brought as many as 10,000 excess deaths among the nearly 800,000 U.S. patients with end-stage renal disease (ESRD), according to an analysis by the Centers for Disease Control and Prevention (CDC).

The rise in mortality in patients with ESRD in 2020 occurred after a 2-decade decline in the mortality rate for this patient population. Patients with ESRD are at high risk for illness and death associated with COVID-19 in part because they have a weakened immune system and multiple other medical conditions, including hypertension and diabetes, that put them at high risk for severe illness from SARS-CoV-2 infection.

To investigate the COVID-19 pandemic’s effects on this patient population, the ESRD National Coordinating Center (which supports the Centers for Medicare & Medicaid Services and the ESRD Network organizations through data analysis and other efforts) analyzed deaths reported to the Consolidated Renal Operations in a Web-Enabled Network (CROWNWeb). This system is used to collect and maintain information about patients with ESRD who are treated in Medicare-certified dialysis facilities and kidney transplant centers in the United States.

The researchers estimated excess deaths associated with COVID-19 by compiling the monthly numbers of deaths among ESRD patients—including kidney transplant recipients and those receiving dialysis—during the early months of the pandemic (February 1 to August 31, 2020) and comparing those figures with the number of predicted deaths based on data from January 2016 through December 2019. Their analysis found that an estimated 8.7 to 12.9 excess deaths per 1000 patients with ESRD occurred in February through August 2020, which translates to 6953 to 10,316 excess deaths among the population of 798,611 patients with ESRD.

“These findings suggest that deaths among ESRD patients during the early phase of the pandemic exceeded those that would have been expected based on previous years’ data,” the researchers noted.

A peak in excess deaths at the national level occurred in the early months of the pandemic, with a smaller peak in late summer.

The analysis included 541,962 patients who received chronic dialysis and 256,671 patients who had received a transplanted kidney. Nationwide, an estimated 10.8 to 16.6 excess deaths per 1000 patients (5860-9019 excess deaths) occurred among dialysis patients during the 7-month observation period, and an estimated 2.6 to 5.5 excess deaths per 1000 patients (663-1403 excess deaths) occurred among kidney transplant recipients.

“The estimated number of excess deaths per 1000 patients and total excess deaths were 2 to 3 times higher among dialysis patients than among kidney transplant patients,” the authors said.

The link between the excess deaths in patients with ESRD and COVID-19 was an association, and actual cause of death was not determined, the report notes.

The authors cite possible reasons for the elevated risk of death associated with ESRD, including missed in-person medical visits, as well as acquisition of SARS-CoV-2 infection from other patients, staff members, or the wider community. Most dialysis patients did not have the option to remain at home because of their need to undergo regular hours-long dialysis treatments at facilities with many other patients and staff members present. Transplant recipients are vulnerable to infection because they must take immunosuppressive medications to avoid rejection of the transplanted kidney.
Although the CDC study found the proportion of excess deaths was higher among dialysis patients compared with kidney transplant patients, another study of patients with ESRD found the opposite. In that study, an analysis that used data from the Centers for Medicare & Medicaid Services to estimate excess deaths among US patients with ESRD, researchers found that during March 22 to July 4, 2020, compared with corresponding weeks in 2017 to 2019, both dialysis patients and kidney transplant recipients experienced excess deaths, but the rate was somewhat higher among transplant recipients.

“Further research into the difference in excess deaths between dialysis and kidney transplant patients is needed,” the CDC report says.

The CDC’s analysis found a wide variation in excess deaths both geographically and over time. The highest numbers per 1000 patients occurred in regions affected in the early months of the pandemic, such as New York and New Jersey, with most excess deaths occurring during the first 4 months of the observation period (February through May 2020).

The USRD Network organizations, which are arranged in 18 geographic service areas, identified dialysis facilities in areas experiencing the most rapid increases in new COVID-19 cases in order to target them for interventions to help reduce the spread of SARS-CoV-2. Since March 2020, the report says, these networks have implemented mitigation measures to slow transmission of the virus and distributed prevention messages to facilities and patients.

The report points to the subsequent drop in COVID-19–associated deaths among patients with ESRD during the summer of 2020, even as additional waves of infection appeared in different areas of the United States, as “worth noting,” adding that some regions had very few excess deaths, possibly because patients with ESRD experienced less exposure to the virus or because of the effectiveness of early responses to the pandemic.

“Geographic and temporal patterns of excess mortality should be considered during planning and implementation of interventions, such as COVID-19 vaccination, infection control guidance, and patient education,” the report said. “These findings underscore the importance of data-driven technical assistance and further analyses on the causes and patterns of excess deaths in ESRD patients.”

**ARTICLE INFORMATION**

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