

# COVID-19 and ESRD: Entering a New Era of Uncertainty



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The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; coronavirus disease 2019 [COVID-19]) pandemic has raised our awareness of the susceptibility of certain members of the population to this serious and often fatal infection. Across the globe, more than 5.8 million cases have been confirmed and more than 360,000 deaths reported as of the end of May 2020. Some areas have been particularly hard hit (the so-called epicenters of the pandemic) and certain populations within these epicenters have been particularly affected. Witness to this is those living in skilled nursing facilities (SNFs). A report from King County, Washington, found that as of mid-March 2020 in one SNF, more than 100 residents became infected, with 55% requiring hospitalization with a case fatality of approximately 34%.<sup>1</sup> Forbes magazine recently reported that 42% of the deaths from COVID-19 in the United States were in SNFs although they represent only 0.6% of the total

US population. In some states in the United States, they account for approximately 70% to 80% of all the deaths attributed to COVID-19 and approximately 70 to 95 deaths per 1000 SNF residents. This has been attributed to risk factors that include an older population often with multiple comorbid medical conditions, including diabetes, hypertension, and cardiovascular disease. It is also attributed to the need for close cohorting of patients to receive needed care and supervision and, thus, the inability to practice social distancing. These concerns apply to the end-stage renal disease population around the world as well. In the United States alone, more than 62,000 health care workers have also become infected, with a death rate of 0.5%. In Wuhan, China, 12% of the dialysis center staff at Renmin Hospital contracted COVID-19, whereas in Lombardy, Italy, a 33% infection rate was reported among the hospital dialysis staff.<sup>2,3</sup>

To that end, we have 4 reports published in *Kidney International Reports* from Wuhan, China; the Lombardy region of northern Italy; London, England; and Paris, France<sup>2–5</sup> detailing their early experience with COVID-19 outbreaks affecting patients with end-

stage renal disease at outpatient dialysis facilities and leading to a large number resulting in hospitalization and, often, death, similar to our experience in New York City.<sup>6</sup>

Based on the aggressiveness of testing, these reports show an infection rate of 11% to 26% among patients with end-stage renal disease. Three of these reports found that approximately 24% to 27% of patients with end-stage renal disease who tested positive had died, except for 1 report (from London, England) that found only a 9% death rate (but an approximately additional 20% of their cohort was still hospitalized at the time of the report). This is compared with the global death rate of approximately 4% as of mid-July 2020. In comparison, on routine screening of all patients regardless of symptoms, a study in more than 1500 patients with end-stage kidney disease in the epicenter of the outbreak in Wuhan and the nearby Guandong province in China reported only a 0.32% rate of active infection by reverse-transcriptase polymerase chain reaction of nasopharyngeal swabs and only a 3.3% rate of recent infection by serologic antibody testing.<sup>7</sup>

A recently published study in the *New England Journal of Medicine* by Arons *et al.*<sup>8</sup> found that in an SNF in King County, Washington (one of the first “hot spots” and epicenters of the pandemic in the United States), widespread testing demonstrated that approximately half of the infected residents were asymptomatic at the time of testing and likely contributed to the outbreak at that facility. Taking this and the lessons from hospital facilities, the use of personal protective equipment (for both patients and staff) and the cohorting of patients has helped to

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lessen the spread of the virus among susceptible individuals, as demonstrated in the reports and others from London, England, the Lombardy region, Italy, and Wuhan, China.<sup>9,S1</sup>

An additional area of concern is the high incidence of acute kidney injury in patients infected with COVID-19 requiring hospital resources that strain not only intensive care units and ventilator capacity, but also renal replacement resources, including both conventional hemodialysis and continuous renal replacement resources. One study found Acute Kidney Injury Network, stage 3 to develop in 31% of hospitalized patients with COVID-19 with 14.3% requiring renal replacement therapy, of whom 96.8% were also in the intensive care unit requiring ventilator support, whereas another study in a survey of nearby hospitals in New York City found 20% to 40% of ventilated intensive care unit patients with COVID-19 required renal replacement therapy.<sup>S2-S5</sup> This can exhaust a hospital's capacity to provide either form of renal replacement therapy. One tempo-

rizing measure is reported in this issue of *KI Reports* with the use of acute peritoneal dialysis in patients with acute kidney injury.<sup>S6</sup>

Because we do not know what the future holds for the human race as a whole in terms of repeated outbreaks or annual resurgence of this or a mutated virus, the success of vaccinations, or future pandemics, we may have entered into a new norm of infection control measures to help stem any outbreaks among the most fragile of us and to have the resources in reserve to handle such outbreaks.

### DISCLOSURE

The author declared no competing interests.

### SUPPLEMENTAL MATERIAL

[Supplementary File \(PDF\)](#)

[Supplementary References.](#)

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