Coronavirus disease 2019 (COVID-19), caused by the novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has profoundly affected populations worldwide, most notably impacting vulnerable patients, including the elderly and those with chronic kidney disease. The first cases of COVID-19 were recognized in December 2019 in Wuhan, Hubei province, China, subsequently spreading widely and rapidly, and on March 11, 2020, the World Health Organization declared COVID-19 a pandemic. As of early November 2020, there were more than 50 million confirmed cases and 1.25 million confirmed deaths due to COVID-19 worldwide. COVID-19 has affected the United States severely, with more than 10 million confirmed cases and nearly 240,000 deaths due to COVID-19, and further efforts to reduce transmission, particularly among vulnerable populations, are urgently needed.

COVID-19 has substantial effects on patients with chronic kidney disease, particularly those who receive in-center hemodialysis treatment. Not only do patients requiring maintenance hemodialysis often have multiple risk factors for worse outcomes with COVID-19, including older age, obesity, other comorbid conditions and potentially an immunocompromised state, but these patients also are challenged with maintaining physical distancing. Receiving in-center hemodialysis requires repeated multiple close contacts with other individuals, including during transportation to and from dialysis, in waiting areas, and in the dialysis facility itself. With mortality rates for hemodialysis patients with COVID-19 exceeding 20%, preventing transmission is essential for dialysis patient safety.

In this issue of Kidney Medicine, Créput et al describe their experience with COVID-19 in a large hemodialysis center in Paris, composed of an in-center facility and a self-care facility, during the initial regional surge in COVID-19 in March and April 2020. At their center, the first 2 patients tested positive on March 13, 2020. Soon thereafter, the center took active steps to reduce transmission risk, including universal mask use, limiting waiting room use, excluding visitors from the facility, and triaging patients to identify symptoms (fever or respiratory issues). Most notably, at this time of peak community prevalence, the facility implemented universal COVID-19 testing of both patients and staff with nasopharyngeal swabs for real-time reverse transcription-polymerase chain reaction (RT-PCR) assays collected by trained staff in the dialysis facility. In total, 200 maintenance hemodialysis patients and 40 staff members were screened. Critically, this was at a time when testing supplies and personal protective equipment were limited.

Of the 200 patients screened between March 31 and April 4, 2020, 38 (19%) had COVID-19. Of 36 patients with a positive RT-PCR test result, 4 were asymptomatic. An additional 2 patients tested negative but had findings from chest computed tomography (CT) suggestive of COVID-19. Fever was the most common sign, affecting 68% of cases, with cough present in 63%. Elevated C-reactive protein (CRP) levels and lymphopenia were universal, with all affected patients having lymphocyte counts < 1.0 × 10^9/L. Additionally, 19 patients had ground glass opacities on CT of the chest. In total, 15 (40%) patients with COVID-19 were hospitalized and 8 (21%) patients died. Among dialysis staff, 5 had positive RT-PCR test results, 3 of whom were asymptomatic.

This report’s strengths lie in the comprehensive description of the experience at a large hemodialysis center at the center of a Paris hotspot early in the pandemic. Limitations include a relatively small sample size from a single center. Notably, precautions in the dialysis facility are likely insufficient to control risk in times of high general population transmission because some patients reside in long-term care facilities while other patients and staff return home after dialysis treatments and may not observe physical distancing or consistent mask use, increasing their vulnerability to COVID-19 in settings beyond the control of the dialysis facility. Critically, although Créput et al do not provide the broader context of the pandemic in Paris at that time, other data show uncontrolled spread of COVID-19 in late March and early April 2020 in France. At the COVID-19 peak in Paris in early April 2020, there were more than 600 intensive care unit admissions daily, and subsequent predictions estimate that by May 2020, a total of 12% of the Greater Paris population had been infected with SARS-CoV-2. This nondialysis context may be critical for optimizing screening practices for COVID-19 in dialysis facilities.

Based on their experiences early in the pandemic in the setting of a regional surge of COVID-19, Créput et al promote 3 measures to help control the transmission of COVID-19 in the hemodialysis setting: (1) enhanced personal protective equipment, a policy that has become standard in health care settings worldwide; (2) weekly assessment of lymphocyte counts and CRP levels, as well as a low threshold to perform CT of the chest, a policy that is not currently present in the United States; and (3) universal screening of patients and staff for COVID-19, with
nasopharyngeal sampling for RT-PCR testing performed in the dialysis facility at the time of high community spread, a policy that is not currently present in the United States.

The report by Créput et al prompts serious consideration of whether routine universal COVID-19 screening in hemodialysis centers should be performed. Favoring universal screening is the very high case fatality rate in dialysis patients, approximating 20% of those with COVID-19 diagnosed, making avoiding infection a life-and-death proposition for patients receiving in-center hemodialysis that is juxtaposed on the challenges of physical distancing. Little has been written about serial assessment of CRP levels or lymphocyte counts, but these are potentially attractive tests that require urgent study to evaluate a potential role in COVID-19 screening.

In the United States, the Centers for Disease Control and Prevention (CDC) currently recommends that dialysis patients and dialysis staff be screened for fever and potential COVID-19 symptoms at arrival to a dialysis facility. The utility of this screen remains uncertain, particularly given the not infrequent occurrence of asymptomatic COVID-19–positive patients. The CDC also recommends testing in-center hemodialysis patients for COVID-19 if signs or symptoms of the virus are present or in asymptomatic individuals with possible exposure. Additionally, regarding asymptomatic screening, the CDC writes: “If there is an outbreak in the facility (i.e., evidence of transmission of SARS-CoV-2 infection in the dialysis facility or multiple patients or HCP [health care personnel] with recent-onset SARS-CoV-2 infection), consider performing expanded viral testing of all patients and HCP in the dialysis facility or all patients and HCP that had dialysis treatments or worked on the same shift or day (i.e., expanded contacts beyond close contacts).”

Initiation of testing after a multiple patient outbreak may be too late to protect many vulnerable dialysis patients given the high case fatality rate in this population, the influence of community spread on COVID-19 prevalence in the dialysis population, and the potential increased infection risk associated with in-center dialysis patients residing in long-term care facilities. Interestingly, based on current guidance from the Centers for Medicare & Medicaid Services, long-term care facilities may be required to test patients residing in these facilities frequently and require testing of staff, regardless of symptoms, based on local community prevalence (Table 1). This presents an interesting model that may be applicable to hemodialysis facilities, with testing frequency for asymptomatic patients in a high-risk population based on community prevalence, mirroring recommendations for long-term care facility residents who leave the facility and for long-term care facility staff.

One key concern with an aggressive testing protocol reflects the limitations inherent with current COVID-19 tests. Estimates of sensitivity and specificity for the RT-PCR test vary, with sensitivity ranging from 71% to 98% (but likely at the higher end of this range), and likely high specificity >95%, making consideration of false-negative and, to a lesser extent, false-positive results important when interpreting screening results at dialysis facilities, particularly if staff are not well trained in obtaining specimens for testing. Rapid antigen testing for COVID-19 is an interesting proposition, with results in as few as 15 minutes and relatively low cost, but rapid antigen testing has lower sensitivity than RT-PCR testing, particularly for asymptomatic or minimally symptomatic patients. Critically, in the setting of a high pretest probability, such as that seen with a high community prevalence of COVID-19, even in the absence of symptoms, test performance improves even with imperfect tests. Testing asymptomatic individuals therefore is of highest yield at times of heightened risk, specifically when COVID-19 is prevalent in the local community.

In conclusion, Créput et al demonstrated that universal testing during a time of high community prevalence of COVID-19 identified multiple asymptomatic positive patients and staff in the hemodialysis facility setting. The ability to cohort these patients and quarantine positive staff may reduce the spread of COVID-19 within an extremely vulnerable population, particularly when added to universal masking and other precautions. As shown by Créput et al, institution of an efficient and effective universal screening program depends on the ability to obtain samples in the hemodialysis facility and receive test results before the next dialysis session and highlights that staff should be included in this testing program. Given testing limitations, in times of low community transmission, universal screening may not be appropriate. However, mirroring current recommendations for the long-term care facility setting, universal screening seems sensible in settings of high community prevalence, providing the ability to be proactive in managing COVID-19 in hemodialysis and potentially saving lives.

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**Table 1. CMS Guidance for COVID-19 Testing in Long-term Care Facilities in the United States**

| Trigger to Initiate Testing | Staff Testing | Resident Testing |
|-----------------------------|---------------|------------------|
| Symptomatic individual identified | Test all staff with signs and/or symptoms | Test all residents with signs and/or symptoms |
| COVID-19–positive individual identified | Test all staff every 3-7 d until there are no new cases for at least 14 d | Test all residents every 3-7 d until there are no new cases for at least 14 d |
| Routine screening | Community prevalence based: Low (<5% positivity): monthly Medium (5%-10%): weekly High (>10%): twice weekly | Recommended only for residents who leave the facility |

Abbreviations: CMS, Centers for Medicare & Medicaid Services; COVID-19, coronavirus disease 2019.

Abstracted from [https://www.cms.gov/files/document/qso-20-38-nh.pdf](https://www.cms.gov/files/document/qso-20-38-nh.pdf). Accessed November 10, 2020.

*Individuals recovered from COVID do not require retesting for 90 days.

*Presumes test turnaround of less than 48 hours.*
ARTICLE INFORMATION

Authors' Full Names and Academic Degrees: Kristine Almonte, MD, and Daniel E Weiner, MD, MS.

Authors' Affiliations: Department of Medicine, Mount Auburn Hospital, Cambridge, MA (KA); and William B. Schwartz MD Division of Nephrology, Tufts Medical Center, Boston, MA (DEW).

Address for Correspondence: Daniel E. Weiner, MD, MS, William B. Schwartz MD Division of Nephrology, Tufts Medical Center, 800 Washington St, Box #391, Boston, MA 02111. E-mail: dweiner@tuftsmedicalcenter.org

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