



The Importance of COVID-19 Prevention and Containment in Hemodialysis Unit

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Dear Editor,

Coronavirus Disease 2019 (COVID-19) is a contagious human threat that has swept the world's population while vaccines and therapeutics are still under development. Mitigation approaches, including personal protective measures, social distancing, and environmental surface cleaning, have been implemented to contain disease transmission, but the number of new infections and deaths continue to increase worldwide.¹ This pandemic is particularly threatening for certain groups of people, including patients on dialysis. Hemodialysis (HD) facilities are categorized as exceptionally high risk of areas for COVID-19 spread to patients, families, and relatives, as well as health care workers (HCWs) and staff.

During this outbreak period, the high numbers of patients and visitors coming and leaving to receive dialysis for some time places HD units with a very high risk of nosocomial transmission. Inhalation of infectious aerosols and close contact are the main routes of COVID-19 transmission. HD patients tend to be of advanced age, be immunocompromised, and have underlying comorbidities, which makes them particularly susceptible to developing more severe COVID-19 with complications.^{2,3} The deaths in dialysis patients with COVID-19 were not always directly related to pneumonia, but might be due to cardiovascular and cerebrovascular diseases, and hyperkalaemia.^{4,5}

Due to proximity within the HD facility, any infected or carrier individuals can transmit the disease to each other despite the practice of mitigation approaches. Before admission, patient may travel and have exposure from high-risk areas and therefore must be considered as an infection vector. Strict transportation protocols should be encouraged for all patients and HCWs.⁴ The high rate of nosocomial spread is further aggravated because of some patients being transferred from the outpatient or emergency departments to the HD centers. Facilitating home dialysis is a possible alternative that incorporates dialysis with social distancing and elimination of transportation needs. However, the placement of vascular access and peritoneal catheters should be considered urgent surgical procedures rather than elective.²

Based on our previous and ongoing studies^{6–9} related to the association between various comorbidities, including chronic kidney disease (CKD), with severe COVID-19 disease, angiotensin converting enzyme 2 (ACE2) has been suggested as a rational explanation for renal involvement in COVID-19, while virally driven hyperinflammation of cytokine storm is

another possible pathomechanism. Regular dialysis is frequently offered for patients with advanced CKD while continuous renal replacement therapy (RRT) could save the life of critically ill patients with end-stage kidney disease (ESKD) as it improves respiratory distress, neutralizes cytokine storm, and normalizes the levels of blood urea nitrogen (BUN), serum creatinine, potassium, uric acid, and C-reactive protein (CRP).¹⁰ Therefore, it is logical to believe that CKD and RRT are associated with poor outcomes in patients with COVID-19.

A markedly increased number of patients has resulted in a working environment where HCWs deliver services near their maximum capacity. Dialysis treatment depends on the availability of beds, machines, and personnel taking care of the patients, including the machine operators. Overwork can make these HCWs vulnerable to infections and other illnesses, and infected HD nurses and staff require isolation and quarantine for a minimum of 2 weeks, which results in a lack of human resources. Similar to other people, HCWs are urged to stay at home and report to their team leader if they feel unwell. The use of personal protective equipment (PPE), including face masks, eye protection, and isolation gown is mandatory for any staff directly providing care to the patients.¹¹ Preserving and prioritizing PPE for patients and HCWs is a challenge.² Without knowing when the pandemic would end, effective resource usage is important for the continuity of HD facility as well as other medical services.

Strict infection prevention, mitigation, and containment strategy must be developed by HD units to protect both patients and HCWs. Hand hygiene should be conducted on arrival and departure from the HD center.⁴ Universal screening and education for patients, visitors, HCWs, and staffs are equally important as the use of PPE and isolation measures.⁵ Patient identification and classification according to the risk for infection and regular monitoring for potential signs and symptoms (eg, fever, cough, sore throat, shortness of breath) throughout dialysis session can help to limit in-hospital COVID-19 transmission. Upon screening and education, patients with suspected or confirmed COVID-19 cases, or those who develop warning signs during admission need to be diagnosed early and dialyzed in a separate isolation room.^{11,12} The practice of isolation can be effective for preventing secondary transmission of viruses closely related to COVID-19.¹³ Alleviating public health burden is not only the concern of government, but it begins with disease containment in health-care facilities.




Author Contributions

MAL and RP were involved in conception and the writing of this manuscript.

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