



Hemodialysis centers among the highest risk areas for COVID-19 transmission

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Dear Editor,

During this Coronavirus Disease 2019 (COVID-19) pandemic, the traffic of health services has increased exponentially globally. To date, there is no definitive treatment or vaccine for managing COVID-19 infection. Most authorities worldwide implemented old-style public health measures, including Isolation, Quarantine, Social Distancing, and Community Containment [1], to contain disease spread, but the number of new cases and deaths continues to rise at an alarming rate. Despite the mandatory use of protective equipment effected in healthcare facilities, medical front liners and patients are still vulnerable to contracting the infection.

The extraordinary rate of nosocomial transmission adds a burden to the health system, with hemodialysis (HD) centers, in particular, among the highest risk areas [2]. These areas are environments where many people (patients, doctors, nurses, support staff, etc) gather and stay in a confined space for many hours, and therefore have a high risk of contracting COVID-19 infection. High volumes of HD patients moving back and forth to receive lengthy treatments put these areas at a remarkably high risk of exposure during this outbreak period. These individuals could potentially serve as vectors of infection due to their mobility, traveling between their residential areas, healthcare settings, HD units, and to various places [3]. Some hospitals may transfer patients from emergency departments or outpatient clinics to the HD facilities, further compounding in-hospital transmission [2].

One possible mechanism for renal involvement in COVID-19 patients is the abundant expression of

angiotensin converting enzyme 2 receptors in podocytes and proximal convoluted tubules, which act as potential host cells targeted by the novel coronavirus. Other possibilities are virus-driven cytokine storm leading to hypoxia, shock, and rhabdomyolysis, and microthrombi formation causing acute ischemia and eventually resulting in acute kidney injury [4]. Patients with advanced CKD often require regular dialysis and the use of continuous renal replacement therapy (RRT) could be life-saving in critically ill patients with end-stage kidney disease (ESKD) as it helps relieve respiratory distress, counterbalance cytokine cascade, and improve the levels of blood urea nitrogen, serum creatinine, uric acid, potassium, and C-reactive protein [5].

Infected respiratory droplets and close contact are the primary routes of COVID-19 transmission. Individuals receiving RRT, generally regarded as immunocompromised and having various comorbid conditions, are more likely to contract infection and develop severe illness due to close contact in medical units [3]. Hence, it is rational to support the hypothesis that CKD and RRT are associated with severe COVID-19. By any means, effective infection prevention and control is among the highest necessities to be addressed by any healthcare facility to protect those who have comorbidities as well as general patients and medical staff. The mandatory use of personal protective equipment within hospital area and the practice of hand sanitizing whenever medical staff return to HD unit, as well as educating the patients about maintaining social distancing and self-protection, are considered key preventive measures. Prior to admission, records relating to temperature, contact history, and poten-

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tial warning symptoms must be obtained for every incoming patient and followed by regular check throughout each dialysis session [2].

The surge in the number of patients stretches the capacity of healthcare facilities in delivering services to the breaking point. In HD units, therapy depends not only on the quantity of machines and the availability of beds, but also human resources. Like many healthcare workers, infected HD nurses and machine operators also need to be isolated or quarantined, which further exacerbates shortages. If we consider the risk of infection in nurses could determine the closure of HD center and consequently lead to impossibility to treat the patients, the importance of prevention is evident. With an unknown end date for the pandemic, effective resource allocation is extremely crucial to the continuity of any medical services. HD centers are urged to identify and classify patients based on the risk for infection and adopt robust infection control protocols to minimize COVID-19 transmission. Early diagnosis, isolation, and treatment of patients undergoing dialysis are key in avoiding nosocomial spread. Easing the burden of public health starts with disease containment in medical facilities.

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Conflict of interest

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Author contributions

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References

- [1] Henry BM, Oliveira MHS de, Benoit S, Plebani M, Lippi G. Hematologic, biochemical and immune biomarker abnormalities associated with severe illness and mortality in coronavirus disease 2019 (COVID-19): a meta-analysis. *Clin Chem Lab Med* 2020; 20200369. doi:10.1515/cclm-2020-0369
- [2] Chen G, Zhou Y, Zhang L, Wang Y, Hu R-R, Zhao X, et al. Core principles for infection prevention in hemodialysis centers during the COVID-19 pandemic. *Infect Control Hosp Epidemiol* 2020; 1–2. doi:10.1017/ice.2020.109
- [3] Wang H. Maintenance hemodialysis and coronavirus disease 2019 (COVID-19): saving lives with caution, care, and courage. *Kidney Med* 2020; doi:10.1016/j.xkme.2020.03.003
- [4] Gopalakrishnan A, Mossaid A, Lo KB, Vasudevan V, McCullough PA, Rangaswami J. Fulminant acute kidney injury in a young patient with novel coronavirus 2019. *Cardiorenal Med* 2020; 1–6; doi:10.1159/000508179
- [5] Fu D, Yang B, Xu J, Mao Z, Zhou C, Xue C. COVID-19 Infection in a patient with end-stage kidney disease. *Nephron* 2020; 1–3; doi:10.1159/000507261