

Core principles for infection prevention in hemodialysis centers during the COVID-19 pandemic

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To the Editor—The COVID-19 outbreak began at the end of December 2019, and >600,000 confirmed cases had been reported worldwide by the end of March 2020. The World Health Organization declared a global pandemic.¹ Nosocomial transmission was severe in some locations, and the burden to the health system was extreme.² Hemodialysis centers, which generally serve high volumes of highly mobile dialysis patients, have an exceptionally high risk of exposure during this outbreak period. In a general tertiary-care hospital, dialysis centers routinely accept patients from outpatient clinics and emergency rooms, further adding to the difficulty of preventing nosocomial infection.³ Dialysis patients, commonly regarded as immune compromised, are likely to develop severe illness as a result of close contact in a medical unit.

Droplet spread and close contact are the main routes of COVID-19 transmission.⁴ Thus, the hemodialysis center in our hospital implemented multiple strategies for infection prevention, including area management and integrated symptom monitoring, in the context of this pandemic.

Based on various levels of exposure to the mobile population, our hospital environments were classified as low-risk, medium-risk, high-risk, and extremely high-risk, and the dialysis center belongs to the high-risk category. We avoid moving across the area by designing a specific walking route for our patients entering the hemodialysis center. Medical staff wears personal protective equipment (PPE) when inter-area contact is inevitable. For example, N95 masks and protective glasses are required when entering the fever clinic. We advise the use of hand sanitizer whenever staff return to the hemodialysis center. In the dialysis center, a 1-way route is followed by our patients, and mask-wearing and hand sanitizing by the patients are ensured. During the dialysis session, we provide necessary education on maintaining social distancing and self-protection. Between the 2 dialysis shifts, we strictly leave at least 30 minutes for environmental and air disinfection, and we utilize a chlorine-containing disinfectant to clean our dialysis facilities.^{6–8}

We monitor and respond to our regular patients' symptoms in an integrated way. Between the dialysis sessions, we strictly record the body temperatures and any suspicious respiratory symptoms of our patients. For patients referred from other departments in the hospital, we collect records of their contact history, temperature, and potential warning symptoms before admission. Based on this information, all of our patients are classified into 3 categories (Table 1). A negative SARS-CoV-2 swab test is needed for patients

Table 1. High-Risk and Suspicious Patient Identification and Classification Management

Category	Definition	Management
A: Temperature warning	Temperature 37.0–37.2°C in the past 14 d, without other symptoms	Close observation
B: Symptom warning	Suspicious symptoms (ie, sore throat, cough, and diarrhea, etc) in the past 14 d; but the temperature within the normal range	Separate dialysis and close observation
C: High-risk warning	Temperature >37.3°C within 14 d, together with suspicious history, or respiratory symptoms, or chest imaging abnormalities	Screen SARS-CoV-2 swab; send positive patients to the specific hospitals; arrange negative patients for separate dialysis and close observation

in category C before their dialysis session can be scheduled. In emergency cases, we perform continuous renal replacement therapy (CRRT) in a separate place, preferably in a negative-pressure ward, before completely ruling out COVID-19 for these patients.^{5,6} Notably, patients with a positive swab test are sent to designated hospitals for further treatment.

Medical staff are strictly required to maintain hand hygiene and to wear a mask at work. N95 masks and protective goggles are used when operating CRRT for patients in category C. The equipment used is disinfected between patients, and medical waste is packed and labeled separately to avoid potential contamination.⁷ The waste liquid generated during CRRT is discharged according to the requirements of the medical wastewater discharge standards.⁸

In addition to the strategies summarized above, we promote work–life balance for staff and encourage patients to take the initiative to participate. Our hemodialysis center has strived to achieve zero infection during the ongoing COVID-19 outbreak.

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Rapid nosocomial spread of SARS-CoV-2 in a French geriatric unit

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To the Editor—SARS-CoV2 nosocomial transmission has been reported among healthcare professionals and patients.¹ However, few studies have focused on nosocomial clusters in elderly patients at high risk of morbidity and mortality.¹

With >6,600 cases, France is the fourth most affected European country. Edouard Herriot University Hospital (1,100 beds) is the largest emergency hospital in the Lyon area. We report the extremely rapid spread of COVID-19 in a 24-bed geriatric unit.

Epidemiological investigation revealed the existence of 2 potential index cases. The first was a 97-year-old male admitted to the emergency room (ER) with fever and dyspnea on February 29. The nasal swab for influenza and respiratory syncytial virus collected the same day was negative by polymerase chain reaction assay (PCR). The patient was transferred to the geriatric ward without complementary precautions. A second nasal swab was collected on March 7 and was positive for SARS-CoV2 by reverse-transcriptase PCR (RT-PCR). The second potential index case was a 76-year-old man admitted to the ER with cough and fever on February 1. Infection control measures were set up and nasal swab for influenza and respiratory syncytial virus (RSV) was negative by PCR. On March 3, the patient was transferred to the geriatric ward, where preventive air and contact measures were in place. The nasal swab previously collected was retested on March 6 and confirmed positive for SARS-CoV2 by RT-PCR.

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The first secondary case of COVID-19 was diagnosed on March 10, and 5 other cases (including a medical doctor) occurred in the same unit until March 13 (Fig. 1). Strict infection control measures and close monitoring of suspected cases of patients and healthcare professionals were subsequently performed to contain the intraunit transmission of the SARS-CoV-2 virus. The infection rate among patients was 20%. Two patients (28.6%) died on March 14. No additional cases occurred.

The likelihood of other sources of infection remains low, and no cases occurred in other areas of the ward. The area where the cases occurred was not primarily selected for COVID-19 hospitalizations, and only 123 cases had been reported to the Lyon Regional Health Agency as of March 14, for a metropolitan area of 2,300,000 inhabitants.

The rapid spread of nosocomial COVID-19 in this ward confirms the contagiousness of SARS-CoV-2 in healthcare settings and the high mortality rates in this population. The existence of super-shedders has been suggested,^{2,3} which could facilitate cluster emergence.

We wish to stress the urgency of strict application of COVID-19 infection control guidelines in healthcare facilities, particularly in geriatric units.

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