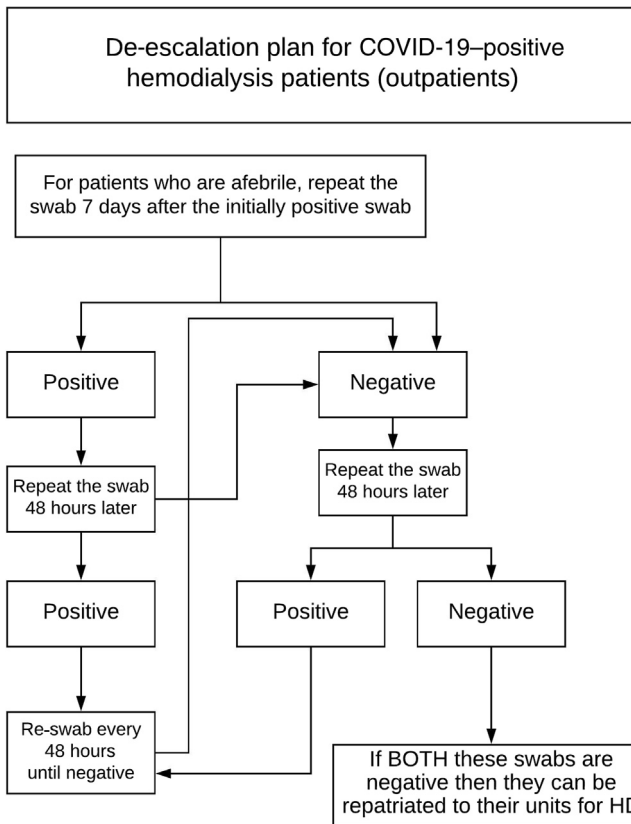




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



**Figure 1 | De-escalation plan for coronavirus disease 2019 (COVID-19)-positive dialysis patients.** HD, hemodialysis.

14 days for the household.<sup>1</sup> Dialysis patients can be considered as immunocompromised and display a decreased ability to develop seroconversion to infectious diseases.<sup>2</sup> Therefore, 7 to 14 days may not be an appropriate threshold in a dialysis population. In our center, we provide dialysis in 2 hospital-based and 6 satellite units, for a total of 664 patients (see [Supplementary Methods](#)). We isolated our COVID-19-positive dialysis outpatients in a dedicated unit and followed a pathway for de-escalation of stable patients with serial COVID-19 swabs, starting 7 days after confirmed diagnosis ([Figure 1](#), [Supplementary Table S1](#)). Thirty-four COVID-19-positive patients who had at least 3 swabs were included: 20 patients were de-isolated in less than 14 days (59%) with 9% on day 9. By day 12, 35% of patients could be dialyzed in their base unit (which is crucial for capacity). However, by day 15, 14 patients (41%) had not cleared the virus and could not be repatriated: 5 patients cleared the virus later (median of 18 days [range, 16–21]) and 9 patients were still positive or had only one negative swab at the end of follow-up. It is unclear whether detection of viral RNA represents the ability to transmit the virus,<sup>3,4</sup> but until more evidence is available, it would be prudent to isolate patients as discussed to prevent cross-contamination in this high-risk population.

**DISCLOSURE**

SG reports personal fees from Astellas, Enterobiotix, Menarini, MSD, Pfizer, and Shionogi, outside of the submitted work. All the other authors declared no competing interests.

**SUPPLEMENTARY MATERIAL**

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

**Supplementary Methods.**

**Table S1.** Demographics of the patients followed-up in a COVID-19-dedicated dialysis unit.

1. Ahmed F, Zviedrite N, Uzicanin A. Effectiveness of workplace social distancing measures in reducing influenza transmission: a systematic review. *BMC Public Health*. 2018;18:518.
2. Baragetti I, El Essawy B, Fiorina P. Targeting immunity in end-stage renal disease. *Am J Nephrol*. 2017;45:310–319.
3. To KK, Tsang OT, Leung WS, et al. Temporal profiles of viral load in posterior oropharyngeal saliva samples and serum antibody responses during infection by SARS-CoV-2: an observational cohort study. *Lancet Infect Dis*. 2020;20:565–574.
4. He X, Lau EHY, Wu P, et al. Temporal dynamics in viral shedding and transmissibility of COVID-19. *Nat Med*. 2020;26:672–675.

Caroline Dudreuilh<sup>1</sup>, Nicola Kumar<sup>1</sup>, Vicki Moxham<sup>1</sup>, Carolyn Hemsley<sup>2</sup>, Simon Goldenberg<sup>2</sup> and Dimitrios-Anestis Moutzouris<sup>1</sup>

<sup>1</sup>Renal Department, Guy's and St Thomas' NHS Foundation Trust, London, UK; and <sup>2</sup>Department of Infectious Diseases, Guy's and St Thomas' NHS Foundation Trust, London, UK

**Correspondence:** Dimitrios-Anestis Moutzouris, Renal Department, Guy's Hospital, Great Maze Pond, London SE1 9RT, UK. E-mail: [dimitrios.moutzouris@gstt.nhs.uk](mailto:dimitrios.moutzouris@gstt.nhs.uk)

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## SARS-CoV-2 in the peritoneal waste in a patient treated with peritoneal dialysis



**To the editor:** We describe for the first time the detection of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the peritoneal waste of a patient with coronavirus disease 2019 and end-stage kidney disease on peritoneal dialysis. A 53-year-old Caucasian female affected by fibrillary glomerulonephritis and on peritoneal dialysis since November 2019 was admitted to our hospital on March 9 with fever, cough, headache, myalgia, and mild hypoxemia. Chest computed tomography showed bilateral multiple ground-glass opacities but the initial nasopharyngeal swab for SARS-CoV-2 was negative. Her laboratory tests showed mild lymphopenia ( $0.87 \times 10^9$ ) and increased C-reactive protein (128 mg/l) and D-dimer (2213 ng/ml) levels. Because her computed tomography, clinical, and laboratory findings were highly suspicious for coronavirus disease 2019, the patient was isolated and treated with lopinavir and (with) ritonavir, hydroxychloroquine, low-molecular weight heparin, and tocilizumab. One month after admission, a second nasopharyngeal swab was positive. During this period, she became anuric. Despite increasing the osmolarity of peritoneal dialysis solutions, she developed pulmonary edema. At that time, we

## Editor's Note

We hope this interesting case will motivate the nephrology community to look at our patients on peritoneal dialysis and consider testing their dialysate. We suggest that it will be of critical importance to go beyond polymerase chain reaction testing and actually attempt to culture the virus from the fluid. At this time it is not clear whether a positive polymerase chain reaction for SARS-CoV-2 means contagious virus is present.

tested her peritoneal dialysate for SARS-CoV-2 by polymerase chain reaction, and this was positive. She received 8 hemodialysis treatments and following 40 days of hospitalization, the patient was discharged and peritoneal dialysis was gradually resumed although her nasopharyngeal swab and peritoneal dialysate remained positive on discharge. Seven days after discharge, SARS-CoV-2 testing was negative in the peritoneal dialysate and nasopharyngeal swab. To our knowledge, this is the first case in the literature demonstrating SARS-CoV-2 positivity in peritoneal dialysate. Notably, SARS-CoV-2 positivity corresponded with peritoneal dialysis failure, suggesting a potential effect of the virus on the peritoneal membrane.

Gisella Vischini<sup>1</sup>, Silvia D'Alonzo<sup>1</sup>,  
Giuseppe Grandaliano<sup>1,2</sup> and Francesca  
Maria D'Ascenzo<sup>1</sup>

<sup>1</sup>Department of Medical and Surgical Sciences, Nephrology Unit Fondazione Policlinico Universitario "A. Gemelli" Istituto di Ricovero e Cura a Carattere Scientifico, Rome, Italy; and <sup>2</sup>Department of Translational Medicine and Surgery, Nephrology Unit, Catholic University of the Sacred Heart, Rome, Italy

**Correspondence:** Gisella Vischini, Department of Medical and Surgical Sciences, Nephrology Unit Fondazione Policlinico Universitario "A. Gemelli" Istituto di Ricovero e Cura a Carattere Scientifico, Largo Agostino Gemelli 1, Rome 00168, Italy. E-mail: [vischini.gisella@gmail.com](mailto:vischini.gisella@gmail.com)

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## Adding insult to injury: kidney replacement therapy during COVID-19 in India



**To the editor** The coronavirus disease 2019 (COVID-19) pandemic has challenged the resilience of health care systems worldwide. Governments have ordered nationwide lockdowns (often suddenly) in an attempt to contain the spread of infection. Such measures have posed unexpected challenges to patients with pre-existing diseases, especially in limited-

resource settings. In the current report, we describe the unique hardships confronted by treatment of in-center hemodialysis patients and kidney transplant recipients in India during the current lockdown period.

With public transport shut down and movement of private vehicles severely restricted, patients were unable to reach the dialysis facilities, often located at considerable distances.<sup>1–3</sup> Nongovernment organizations and self-help groups have stepped in to help these patients, but sometimes are stopped by the police enforcing the lockdown. The majority of dialysis units are located in private hospitals. As part of the COVID-19 response, governments have taken over management of a number of private hospitals<sup>4</sup> and ordered the closure of dialysis units. In some instances, units were closed down and staff were placed in quarantine after a patient or health care worker was found to be COVID-19 positive.<sup>5</sup> In all such instances, patients are asked to go to other dialysis facilities, which in many instances already are working to capacity. Moreover, dialysis centers are not willing to accept newly diagnosed end-stage renal disease patients or patients shifted from closed units as a result of panic and misinformation and insist that they produce a COVID-19 test result.<sup>6</sup> These problems are getting compounded by the lack of a clear and rational guidance that balances the need to contain spread while maintaining essential lifesaving treatments like dialysis. Deaths have been reported as a result of such delays.<sup>7</sup>

A lack of appropriate education of the dialysis workforce, combined with stigma and misinformation on social media, has created apprehension among dialysis staff. Despite the general recommendation that any quarantine should not result in loss of pay, this remains a real risk to staff in private settings.

Operations have been impacted by interruptions in medication and dialysis disposable supply chains (dialysis tubings, catheters, fluids, and drugs and/or expendables). The sudden demand for personal protective equipment led to a surge in pricing of items such as surgical masks. Some private dialysis units ask patients to pay for personal protective equipment. All elective surgical procedures have been cancelled at most centers, leading to cessation or severe curtailment of arteriovenous fistula surgery, tunneled catheter insertion, or peritoneal dialysis catheter insertion.

Kidney transplant surgeries, including those involving living donors, have been stopped in most centers. In a country where high-quality dialysis is not universally available, delaying transplant increases the risk of adverse outcomes for those who are forced to wait, especially when access to dialysis also is uncertain. Kidney transplant recipients living in remote areas are unable to obtain lifesaving immunosuppressive drugs, available only in specialized pharmacies, or undergo mandatory investigations such as monitoring of graft function or therapeutic drug levels.

COVID-19 is exposing the deficiencies in care delivery in countries with weak health systems. Although patients with all chronic conditions are disadvantaged, patients on dialysis and kidney transplant recipients need special attention. We