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Increasing Peritoneal Dialysis Use in Response to the COVID-19 Pandemic: Will It Go Viral?

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JASN 31: 1928–1930, 2020. doi: <https://doi.org/10.1681/ASN.2020050729>

As the novel coronavirus disease 2019 (COVID-19) global pandemic has unfolded, efforts to facilitate social distancing while minimizing person-to-person transmission of severe acute respiratory syndrome coronavirus 2 has resulted in unprecedented changes across all facets of society. The COVID-19 pandemic represents an opportunity to reevaluate and refine existing models of health care delivery to enable provision of high-quality, comprehensive care traditionally offered within health care facilities in the home. In the United States and most high-income countries, dialysis is predominantly delivered as in-center hemodialysis, although the minority of patients who undergo dialysis at home, either as home hemodialysis or peritoneal dialysis (PD), have comparable, if not better, outcomes.¹ Frequent, routine trips for dialysis treatments at health care facilities, where individuals with advanced age, a large comorbidity burden, and high rates of hospitalization are cohorted together, foster a high-risk situation for COVID-19 transmission and related morbidity and mortality. COVID-19 outbreaks across hemodialysis facilities have been described, placing patients, their families, and the health care workers who care for these patients at risk.²

The notion that individuals receiving center-based hemodialysis are at higher risk of acquiring communicable diseases is not novel, given that transmission of viral hepatitis and colonization with

drug-resistant bacteria remain major concerns across dialysis facilities. Organizing patient transport while maintaining effective infection prevention and control measures has also been a major challenge during the COVID-19 pandemic. With fewer health care facility visits and greater ability to adhere to social distancing measures, individuals receiving home-based dialysis have a clear advantage. This is reflected in the data relating to COVID-19 infection being collected prospectively by the United Kingdom Renal Registry and the Ontario Renal Network. In the United Kingdom, by April 29, 2020, 2.9% of patients on PD were reported to have contracted COVID-19 compared with 9% of patients on hemodialysis.³ Also, as of May 22, preliminary data from the Ontario Renal Network demonstrated that, in Ontario (where the overall prevalence of COVID-19 among the ESKD population was 1%), the rate of increase in COVID-19 positivity among patients on center-based hemodialysis was threefold that experienced among those receiving home dialysis. Data from the United States are still forthcoming.

Two ESKD health care reform initiatives in the United States have increased support for home-based dialysis, which may prove useful in reducing risks presented by the COVID-19 pandemic. The first, the ESKD Prospective Payment System, created a favorable reimbursement structure that has realized increasing use of home-based dialysis in the United

States. The second initiative, the recently signed Executive Order on Advancing American Kidney Health, directly set targets aimed at increasing home-based dialysis in an effort to reduce ESKD-related costs while improving care. Given the lower risk of COVID-19 exposure from home-based dialysis compared with in-center dialysis, enabling more patients to undergo dialysis at home will protect individuals from COVID-19-related morbidity and mortality and will help limit spread of infection into the community. We are now only at the start of the COVID-19 pandemic, so it is a matter of urgency to consider what resources will be required to facilitate a rapid increase in the use of home-based dialysis and what barriers must be overcome to accomplish this goal.

Studies already show a strong association between appropriate education and the proportion of patients who subsequently choose PD.⁴ The “stay-at-home” messages related to the pandemic are likely to further increase this choice. Because both COVID-19 mortality

Published online ahead of print. Publication date available at www.jasn.org.

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and the need for maintenance dialysis increase with age, older patients are particularly going to benefit from dialysis at home. But it is precisely these individuals who have been less likely to receive home dialysis than in-center hemodialysis in the United States. In the United Kingdom and Canada, assistance is available for older people to have PD in their home or nursing homes. Indeed, studies show that patient satisfaction is higher for assisted PD compared with in-center hemodialysis.⁵ Ensuring patients receive education about PD and exploring models of providing assistance that may also include reimbursement to family care partners seem likely to increase PD eligibility and use.

Supporting growth in PD will require increasing resources for PD catheter placement to make this procedure available in the setting of COVID-19. It is also important to ensure universal availability of both surgical and percutaneous approaches for PD catheter insertion. In many regions, the demand for ventilators, operating room closures, and the risk of aerosol spray associated with laparoscopic procedures for PD catheter placement have curtailed access to surgery. As a result, in many places, PD catheter insertion has been limited to percutaneous procedures. Percutaneous PD access insertion remains underused in the United States compared with other countries because of historically low rates of training across interventional radiology and nephrology training programs in how to perform these procedures. Despite a recommendation by the Centers for Medicare and Medicaid Services to prioritize PD catheter insertion during the COVID-19 pandemic, it remains poorly remunerated relative to other procedures. This creates challenges for financially constrained health care facilities already struggling with how to prioritize surgical procedures in the face of relaxing COVID-19-related restrictions.

COVID-19 resilience also includes developing robust telemedicine strategies that minimize in-person interactions with health care. Experience from the COVID-19 pandemic so far has

shown that patients using PD can be monitored remotely by telephone, with or without video.⁶ Those on automated PD can take advantage of the remote monitoring technology that is now available on many automated PD cyclers, enabling PD teams to monitor dialysis performance and change the prescription remotely if needed. Temporary regulatory concessions to enhance greater use of telemedicine during the COVID-19 pandemic should prompt consideration of a long-term shift to telehealth among patients receiving home dialysis, with a critical evaluation of this approach's effect on patient-reported and clinical outcomes.

Recently updated International Society for Peritoneal Dialysis guidelines for prescribing PD have stated that the prescription should focus on the patient's well-being and enable achievement of the patient's goals, de-emphasizing small-solute clearance alone as a measure of high-quality dialysis.⁷ The relaxed requirements for PD adequacy measures and reporting during this period also provide a unique opportunity for reappraisal of these and other quality improvement measures. If routine blood work for a patient receiving PD before the pandemic has been stable,

within target, and the person is clinically well, frequency of blood work may also be reconsidered, particularly in the face of recent evidence in the hemodialysis population that did not demonstrate deleterious consequences with regular but less-frequent blood sampling.⁸

Blake *et al.*⁹ have described six steps for patients to access PD: identifying candidates for PD, assessing candidates for eligibility, offering PD, choosing of PD by the patient, inserting the PD catheter, and training to start PD. For use of PD to increase, prejudices regarding which patients are eligible for PD will have to change. The wide variation among kidney care practitioners about PD eligibility may stem from a lack of exposure to home dialysis training and education during nephrology fellowship.¹⁰ Virtual instruction about PD therefore needs to be made readily available for all kidney care practitioners. Patients facing making a choice about dialysis modality will also need robust online educational resources, because social distancing will make face-to-face education sessions difficult to organize (Figure 1).

In the United States and elsewhere, a disproportionate burden of COVID-19

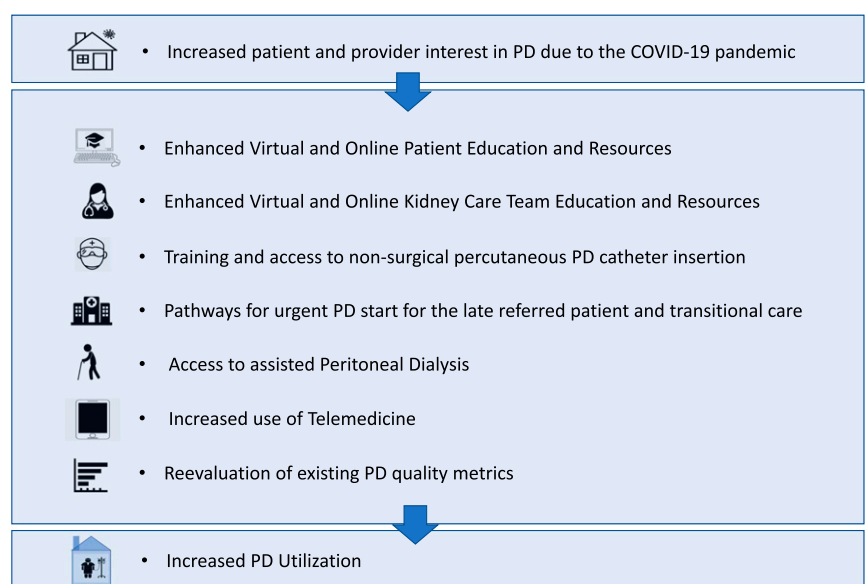


Figure 1. Selected strategies to increase PD use after the COVID-19 pandemic. Image for PD modified from reference 12, with permission.

illness and death has occurred among racial and ethnic minority groups. It is no coincidence that home dialysis is underused in the very same groups and that, when it is used in these groups, it is associated with inferior outcomes.¹¹ Both of these sobering observations underscore social determinants of health (which include socioeconomic status, living conditions, access to health care, and other factors) that need to be addressed to facilitate greater use of home dialysis and improved health outcomes.

It has taken the COVID-19 pandemic to highlight the advantage of having dialysis at home. It is now up to the kidney care community to ensure that all people faced with starting dialysis have the opportunity to choose whether to have their dialysis at home, and to receive the assistance to do so when they need it.

DISCLOSURES

E. Brown has received speaking honoraria from Baxter Healthcare UK, and has served as a consultant for AWAK, Baxter Healthcare, and LiberDi. J. Perl has received speaking honoraria from Astra-Zeneca, Baxter Healthcare, DaVita Healthcare Partners, Dialysis Clinics Incorporated, Fresenius Medical Care, and Satellite Healthcare, and has served as a consultant for Baxter Healthcare, DaVita Healthcare Partners, Fresenius Medical Care, and LiberDi.

FUNDING

None.

ACKNOWLEDGMENTS

The content of this article reflects the personal experience and views of the author and should not be considered medical advice or recommendations. The content does not reflect the views or opinions of the American Society of Nephrology (ASN) or *JASN*. Responsibility for the information and views expressed herein lies entirely with the author(s).

The author(s) acknowledge that the data used in this publication was obtained through the Ontario Renal Reporting System and the ORN COVID-19 Data Tracker, collected and provided by Ontario Health and Ontario Renal Network.

Dr. Jeffrey Perl thanks the home dialysis subcommittee of the ASN COVID-19 Response Team for their contributions to this article. Dr. Jeffrey Perl has received personal fees from Dialysis Clinics Incorporated and Otsuka, outside the submitted work.

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