The Implementation of a Virtual Home Dialysis Mentoring Program for Nephrologists

Graham Abra 1,2, Ali Poyan Mehr 3, Christopher T. Chan 4 and Brigitte Schiller 1,2

Key Points
- Virtual home dialysis physician mentorship is feasible.
- In total, 53% of participants perceived the program would change the perspective of participants on prescribing home dialysis.
- More research is needed to ascertain the effect of virtual mentorship on home dialysis incidence and attrition rates in a wider audience.

Introduction
Peritoneal dialysis (PD) and home hemodialysis (HHD) offer distinct clinical advantages over conventional in-center hemodialysis. Yet, home dialysis modalities are less frequently utilized in the United States, compared with other similar socioeconomic nations (1). One of the recognized barriers to greater adoption in the United States is nephrologist comfort and confidence with managing home modalities (2). To enhance knowledge awareness and practice patterns, we proposed the development of a virtual home dialysis mentorship program for nephrologists on the basis of the principles of Project ECHO (NCT04806126) (3).

Materials and Methods
We have previously published our rationale and methods in detail (3). In brief, we used an online audio-video platform to bring expert mentors together with participants for 12 sessions, conducted every 2 weeks over a 6-month period. Interactive sessions were 60 minutes long, and included a formal slide presentation, followed by informal interactive discussions of patients and clinical practice issues. Links to important peer-reviewed literature were posted in the chat function of the platform during sessions and were available for review after completion. The sessions were recorded and posted on an anchoring website that also housed presession materials. A quality improvement exemption was granted by the institutional review board, and baseline and exit questionnaires were used to evaluate participating nephrologists’ attitudes, practice, and clinical management patterns in home dialysis. Qualitative feedback was also obtained after completion of the final session.

Education content and topics included patients on home dialysis selection and building a home-first culture, PD prescription management, PD infectious complications, HHD prescription management, PD noninfectious complications, volume management in home dialysis, patient training techniques and strategies, PD access creation and maintenance, urgent start PD, unique patient populations on home dialysis, and nocturnal HHD.

Results
In total, 369 physicians were invited to participate in the program. We assessed baseline demographics, attitudes, and perceptions about home therapies at the time of enrollment. Overall, 40 nephrologists participated in the preprogram survey. Exit evaluations were provided by 17 nephrologists. Most of our participants were >40 years old, male, and had practiced nephrology for between 5 and 19 years. All participants indicated they would personally opt for some form of home dialysis if they were faced with ESKD and did not have access to a living kidney transplant donor (60% continuous cycler PD, 20% short daily HHD, 12% nocturnal HHD, 8% continuous ambulatory PD). In total, 95% of our participants considered themselves as home dialysis advocates, and 68% indicated their personal approach to home modality counseling as “home first with in-center for those with barriers.” However, only 45% felt the culture of their nephrology practice could be considered as “home first.” The optimal distribution of patients on home dialysis was perceived to be “≥50%” by 40% of participants, but 87% stated the Advancing American Kidney Health Initiative goal of having 80% of patients begin RRT with home dialysis or a kidney transplant was “desirable but not a realistic goal.”

The average number of participants per session was 14 (range 4–24), excluding 2–3 moderators and the

1Satellite Healthcare, San Jose, California
2Department of Medicine, Stanford University School of Medicine, Palo Alto, California
3Department of Nephrology, Kaiser Permanente San Francisco Medical Center, San Francisco, California
4Division of Nephrology, University Health Network, Toronto, Canada

Correspondence: Dr. Christopher T. Chan, Toronto General Hospital, 8N room 846, Toronto, ON, M5G 2C4, Canada. Email: christopher.chan@uhn.ca
speaker. A total of 41% of postsurvey respondents attended ≥6 of the 12 sessions, whereas 59% attended 1–5 sessions. Participants’ ratings of their comfort level with PD topics pre- and post-program are shown in Figure 1A. Similarly, participants’ ratings of their comfort level with HHD topics before and after our education program are shown in Figure 1B. The net promoter score, a commonly used market research measure of the likelihood of customers to recommend a product or service to friends or colleagues, was 59. Scores >50 are generally considered as excellent. Of participants, 53% gave a score of nine or ten for how likely they perceived the program would change the perspective of participants on prescribing home dialysis (1=highly unlikely, 10=highly likely). Interestingly, 88% indicated they preferred the virtual format of the program over live, in-person.

Qualitatively, respondents enjoyed the convenient interactive format and collegial dialogue addressing practical common home dialysis issues. Participants recommended broadening the invited audience and using additional tools within the online platform to increase engagement. In particular, respondents recommended sessions should include training nephrologists, with a focus on home dialysis–related research.

Discussion

In summary, our group demonstrated the feasibility of implementing a virtual home dialysis mentorship program.

![Figure 1. | Participant ratings.](image)

(A) Participant comfort with managing peritoneal dialysis issues. Participant comfort on baseline survey and on exit survey after completion of the virtual mentoring program. PD, peritoneal dialysis; SC, subcutaneous. (B) Participant comfort with managing HHD issues. Participant comfort on baseline survey and on exit survey after completion of the virtual mentoring program. HHD, home hemodialysis.
for practicing nephrologists. Our education intervention was associated with a consistent and a qualitative positive shift in participants’ comfort and confidence in home dialysis.

Our demonstration project is limited by its small sample size and incomplete exit questionnaire assessment of all enrolled participants. We acknowledged that our program required a significant effort to enroll participants. Specifically, nephrologists were recruited from the network of referring physicians to the collaborating nonprofit dialysis provider. Potential participants were invited through a variety of mediums, including live presentation, direct personal outreach by local home dialysis enthusiasts to colleagues, digital newsletters, and emails. Despite these outreach efforts, it was challenging to recruit physicians who did not have a pre-existing interest in home dialysis. These may have been exacerbated by barriers including the need to fill out a robust presurvey. Removing barriers to entry and broader repeated outreach for each session through social media might help reach a broader group of nephrologists. Although most participants identified themselves as “home dialysis champions” at baseline, it is interesting to note the present education program was associated with an overall shift in positive attitudes toward home dialysis. Equally important, more implementation research is required to understand the best approach to engage more physicians in a sustained manner. We are also uncertain about the effect of our mentorship program on home dialysis incidence and attrition rates. It is tempting to speculate that our education initiative may have a differential effect if applied to a broader audience.

Home dialysis expertise is geographically dispersed, and is not commonly available to all communities, especially in those with low home dialysis utilization rates. Using an online scalable platform to bring experts to learners in any community holds promise for overcoming home dialysis knowledge barriers in the United States. A national longitudinal delivery of home dialysis mentorship system is urgently needed, which may ultimately translate into a greater adoption of home modalities in America.

**Disclosures**

A. Poyan Mehr reports receiving research funding from Retrophin, as site PI for the DUPLEX Study, a phase 3 randomized trial in primary FSGS, under review, and considerations with industry-sponsored clinical trial agreements with OMEROS, Roche, and Vertex; reports having an advisory or leadership role as Board member of the Glomerular Disease Study and Trial Consortium, a nonprofit 501(c) (3) charitable organization; and reports having other interests or relationships as a Board member and Director of the Glomerular Disease Study and Trial Consortium, an initiative to enhance education about glomerular disorders; this project is collaborating closely with the NephCure Foundation, which has provided financial and in-kind support for a CME accredited conference series focused on clinical trials; and reports their employer does not permit serving on any speaker bureau, advisory board, performing consultancy, or receiving industry honoraria. B. Schiller reports having consultancy agreements with Unicycive Therapeutics Inc.; reports having an ownership interest in CVS, Quanta, and Rockwell Medical; reports having an advisory or leadership role on the Board of Directors at Unicycive; and reports receiving speakers bureau from AstraZeneca. C. T. Chan reports having consultancy agreements with DaVita, Dialco, Medtronic, Quanta, and Redsense Inc.; reports receiving research funding from Medtronic through their external grant program; reports having an advisory or leadership role with DaVita, Medtronic, and Quanta; and reports other interests or relationships through holding the R. Fraser Elliott Chair in Home Dialysis. G. Abra reports receiving honoraria from Akebia; and reports having an advisory or leadership role with Nephrology News & Issues.

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**Author Contributions**

G. Abra, C. Chan, and B. Schiller conceptualized the study; G. Abra and C. Chan were responsible for data curation, formal analysis, and the investigation; G. Abra, C. Chan, and B. Schiller were responsible for the funding acquisition; G. Abra, C. Chan, A. Poyan Mehr, and B. Schiller were responsible for the methodology; G. Abra, C. Chan, and A. Poyan Mehr were responsible for the project administration; G. Abra, C. Chan, and B. Schiller were responsible for the resources; A. Poyan Mehr was responsible for the software; G. Abra and C. Chan provided supervision, were responsible for the validation, and wrote the original draft; G. Abra, A. Poyan Mehr, and B. Schiller reviewed and edited the manuscript.

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